Specification

Metchosin BC
William Head Institution

Fire Alarm Replacement

Requisition No. EZ899-170601/A

Project No. R.071314.001
May 2016

APPROVED BY:

Regional Manager, AES — Date: 2016-05-09.

for C. Patterson — 2016-06-08
Construction Safety Coordinator — Date

TENDER:

2016-06-08
Project Manager — Date

SPECIFICATION

OTHER DOCUMENTS

LIST OF DRAWINGS

Bound Separately

END OF INDEX

Discipline	Seal / Signature / Date
Electrical	PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. P. ROBERTSHAW JUN 01 2016

END OF SECTION

1 CODES

.1 Perform work to all current Codes, Construction Standards and Bylaws, including Amendments up to the tender closing date.

2 SUMMARY OF WORK

.1 Work under this Contract is at William Head Institution, 6000 William Head Road, Metchosin BC. This is a minimum-security institution.

.2 Work generally includes
- .1 Replacement of an existing fire alarm system for a 52-building site.
- .2 Fibre-optic backbone network for the fire alarm system.
- .3 There is a limited amount of misc non-electrical items of work including:
  - .1 Sprinkler supervisory switches.
  - .2 Sprinkler valves.
  - .3 Sprinkler flow switches.
  - .4 Framing, drywall and painting.
  - .5 Silt fence
  - .6 Excavation for a ductbank and associated concrete work.
  - .7 Security caulking.

3 CONTRACTOR'S USE OF PREMISES

.1 Contractor has controlled use of site within the areas of work as directed by Departmental Representative.

.2 Use of all areas are controlled by the Departmental Representative.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 William Head Institution site will be operational during work of this Contract.

4 WORK RESTRICTIONS

.1 Notify, Departmental Representative of intended interruption of any services and provide schedule for review.

.2 Security Requirements: refer to Section 01 14 10 – Security Requirements.

.3 Hours of work:
- .1 Perform work during normal working hours of the site (0730 to 1600), Monday through Friday except holidays.

.2 Work may be performed after normal working hours of Institution, Monday through Friday, on weekends and holidays, with a minimum forty-eight (48) hours advance notice and approval of the Departmental Representative.

.3 Provide schedule for prior approval by Departmental Representative.

.4 Access into Institution:

.1 Vehicular access through the Principal Entrance Sally Port will be restricted during the Inmate "count" at breakfast, lunch and dinner hours.

.2 Confirm "count" times with Departmental Representative. Delays may occur when entering and exiting the Institution with vehicles during "count" times and due to security situations and heavy traffic.

.3 Construction escorts will be provided by the Departmental Representative, at no cost to the Contract. Notify Departmental Representative minimum 48 hours in advance of when Construction Escort is required.

.5 Refer to Section 28 31 00 Fire Alarm for additional detailed work restrictions.

5 CONSTRUCTION WORK SCHEDULE

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within 52 weeks from the date of such notification.

.2 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Certificate and Final Certificate as defined times of completion are essence of this contract.

.3 Carry on Work as follows:

.1 Within 10 working days after Contract Award, provide a schedule showing anticipated progress stages and final completion of the work within the time period required by the Contract documents. Indicate the following:

.1 Submission of shop drawings, product data, MSDS sheets and samples.

.2 Commencement and completion of work for each phase/task.

.3 Final completion date within the time period required by the Contract documents.

.4 Project Scheduling Reporting:

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

.5 Project Meetings:

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered

behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

.3 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. After approval by Departmental Representative cost breakdown will be used as basis for progress payments.

6 SUBMITTAL PROCEDURES

.1 Administrative:

.1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work.

.2 Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.3 Do not proceed with work affected by submittal, until review is complete.

.4 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.5 Where items or information is not produced in SI Metric units converted values are acceptable.

.6 Review submittals prior to submission to Departmental Representative . This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Verify field measurements and affected adjacent Work are coordinated.

.9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittals.

.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.11 Keep one reviewed copy of each submission on site.

.2 Shop Drawings:

.1 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.

.3 Product Data:

.1 Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop

drawings, provided that the product concerned is clearly identified. Submit in sets, not as individual submissions.

.4 Submission Requirements:
- .1 Schedule submissions at least ten days before dates reviewed submissions will be needed.
- .2 Submit number of copies of product data, shop drawings which Contractor requires for distribution plus four (4) copies which will be retained by Departmental Representative.
- .3 Accompany submissions with transmittal letter in duplicate.
- .4 Submit either bond copies or one (1) electronic pdf file of each shop drawing and product data as directed by Departmental Representative.

.5 Coordination of Submissions:
- .1 Review shop drawings, product data and samples prior to submission.
- .2 Coordinate with field construction criteria.
- .3 Verify catalogue numbers and similar data.
- .4 Coordinate each submittal with requirements of the work of all trades and contract documents.
- .5 Responsibility for errors and omissions in submittals is not relieved by Departmental Representative's review of submittals.
- .6 Responsibility for deviations in submittals from requirements of Contract documents is not relieved by Departmental Representative's review of submittals, unless Departmental Representative gives written acceptance of specified deviations.
- .7 Notify Departmental Representative, in writing at time of submission, of deviations in submittals from requirements of Contract documents.
- .8 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents and re-submit as directed by Departmental Representative.
- .9 After Departmental Representative's review, distribute copies.
- .10 Shop Drawings Review:
  - .1 Review of shop drawings by Public Works and Government Services Canada (PWGSC) is for the sole purpose of ascertaining conformance with the general concept.
  - .2 The Departmental Representative's review does not mean that PWGSC approves the detail design inherent in the shop drawings, responsibility remains with the contractor submitting same, and such review will not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents.
  - .3 Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of the work of all subtrades.

7 HEALTH AND SAFETY

.1 Specified in Section 01 35 33 - Health and Safety Requirements.

8 ENVIRONMENTAL PROCEDURES

.1 Fires and burning of rubbish on site not permitted.

.2 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.

.3 Do not dispose of waste or volatile materials such as oil, paint thinner or mineral spirits into waterways, storm or sanitary systems.

.4 Control disposal of run-off of water containing suspended materials or other harmful substances in accordance with local authority requirements. Construct settlement ponds and silt fences as required by the Provincial Environmental authority.

.5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.6 Under no circumstances dispose of rubbish or waste materials on property or CSC waste bins.

9 REGULATORY REQUIREMENTS

.1 References and Codes:
- .1 Perform Work in accordance with National Building Code of Canada (NBCC2010) including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

10 QUALITY CONTROL

.1 Inspection:
- .1 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .2 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .3 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

.2 Procedures:
.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

.3 Rejected Work:
.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.4 Reports:
.1 Submit (4) four copies or one scanned pdf copy of inspection and test reports to Departmental Representative.

11 TEMPORARY UTILITIES

.1 Water Supply:
.1 Existing water supply system may be used for construction purposes provided that damaged components are replaced when damaged. Provide own hoses from source.

.2 Temporary Power and Light:
.1 Electrical power and lighting in existing buildings may be used for construction purposes at no extra cost, provided that electrical components used for temporary power are replaced when damaged.

.3 Temporary Communication Facilities:
.1 Temporary telephone and fax hook up, line(s) are not permitted on site. Conform to Section 01 14 10 Security Requirements for use of cell phones inside institution.

12 CONSTRUCTION FACILITIES

.1 Installation and Removal:
.1 Provide construction facilities in order to execute work expeditiously.
.2 Remove from site all such work after use.

.2 Scaffolding:
.1 Design, construct and maintain scaffolding in rigid, secure and safe manner, in accordance with WCBBC regulations and Section 01 35 33.

.2 Erect scaffolding independent of walls. Remove promptly when no longer required.

.3 Site Storage/Loading:
- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

.4 Construction Parking:
- .1 Parking space is available outside double fence.

.5 Equipment, Tools and Material Storage:
- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials outside the double fence.

.6 Sanitary Facilities:
- .1 Sanitary facilities for work force are available on site as directed by Departmental Representative.

13 COMMON PRODUCT REQUIREMENTS

.1 Reference Standards:
- .1 If there is a question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .2 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .3 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

.2 Quality:
- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in

prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

.3 Storage, Handling and Protection:
- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store products subject to damage from weather in weatherproof enclosures.
- .3 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative .
- .4 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

.4 Transportation:
- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Departmental Representative will be paid for by Departmental Representative. Unload, handle and store such products.

.5 Manufacturer's Instructions:
- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

.6 Quality of Work:
- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

.7 Co-ordination:
- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

.8 Remedial Work:
- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

.9 Location of Equipment:
- .1 Inform Departmental Representative of conflicting installation. Install as directed.
- .2 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

.10 Fastenings:
- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

.11 Fastenings - Equipment:
- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

.12 Protection of Work in Progress:
- .1 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

.13 Asbestos
- .1 Asbestos containing materials (ACM) are not permitted.

14 EXAMINATION AND PREPARATION

.1 Location of Equipment and Fixtures:
- .1 Location of equipment indicated or specified are to be considered as approximate.

.2 Locate equipment to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
.3 Inform Departmental Representative of impending installation and obtain approval for actual location.
.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

15 EXECUTION REQUIREMENTS

.1 Preparation:
.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
.2 After uncovering, inspect conditions affecting performance of Work.
.3 Beginning of cutting or patching means acceptance of existing conditions.
.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
.5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

.2 Execution:
.1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.
.2 Fit several parts together, to integrate with other Work.
.3 Uncover Work to install ill-timed Work.
.4 Remove and replace defective and non-conforming Work.
.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
.9 Restore work with new products in accordance with requirements of Contract Documents.
.10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
.12 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.
.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

16 CLEANING

.1 Project Cleanliness:
- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Provide on-site containers for collection of waste materials and debris.
- .4 Provide and use clearly marked separate bins for recycling. Refer to-

  Construction/Demolition Waste Management And Disposal.
- .5 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.2 Final Cleaning:
- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products from site.

17 CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

.1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials and waste. Separate non-salvageable materials from salvaged items. Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes. Transport and deliver non-salvageable items to licensed disposal facility.

.2 Provide containers to deposit reusable and/or recyclable materials. Locate containers in locations, to facilitate deposit of materials without hindering daily operations. Provide containers to deposit reusable and/or recyclable materials.

.3 Collect, handle, store on-site and transport off-site, salvaged materials in separate condition. Transport to approved and authorized recycling facility and/or users of material for recycling.

.4 Locate waste and salvage bins on site as directed by Departmental Representative.

18 CLOSEOUT PROCEDURES

.1 Inspection and Declaration:
- .1 Contractor's Inspection: Conduct an inspection of Work with all subcontractors, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.3 Request Departmental Representative's Inspection.

.2 Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:
.1 Work has been completed and inspected for compliance with Contract Documents.
.2 Defects have been corrected and deficiencies have been completed.
.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
.4 Operation of systems have been demonstrated to Department's personnel.
.5 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

19 CLOSEOUT SUBMITTALS

.1 Record Drawings:
.1 As work progresses, maintain accurate records to show all deviations from the Contract Drawings. Note on as-built drawings as changes occur. Provide AutoCAD drafting services to transfer all changes to electronic copy of drawings. At completion supply:
.1 Three paper sets of as-built drawings,
.2 Three copies of as-built drawings in dwg and pdf formats, on USB storage devices.
.3 Place "As Built" and the date on the drawings.

.2 Operation and Maintenance manuals:
.1 On completion of project submit to Departmental Representative three (3) electronic (pdf) copies on USB storage devices and four paper copies (in loose leaf type binder) of Operations Manual and the Maintenance Manual, made up as follows:
.1 Organize manuals into industry standard maintenance manual tabs with links in index to each descriptive section describing the component or maintenance procedure etc.
.2 Organize files into CSI Masterformat numbering system or other approved descriptive titles.
.3 Label binders "Operation Manual" and "Maintenance Manual", project name, date, names of Contractor, subcontractors, consultants and subconsultants.

.4 Include scanned guarantees, diagrams and drawings.
.5 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs (navigational buttons).
.6 Drawings, diagrams and manufacturer's literature must be legible.

.3 Maintenance Materials, Special Tools and Spare Parts:
.1 Specific requirements for maintenance materials, tools and spare parts are specified in individual sections.
.2 Deliver maintenance materials, special tools and spare parts to Departmental Representative and store in designated area as directed by Departmental Representative.
.3 Prepare lists of maintenance materials, special tools and spare parts for inclusion in Manual specified in Clause 19.2.
.4 Maintenance materials:
.1 Deliver wrapped, identify on carton or package, colour, room number, system or area as applicable where item is used.
.5 Special tools:
.1 Assemble as specified;
.2 Include identifications and instructions on intended use of tools.
.6 Spare parts:
.1 Assemble parts as specified;
.2 Include part number, identification of equipment or system for which parts are applicable;
.3 Installation instructions;
.4 Name and address of nearest supplier.

.4 Warranties and Bonds:
.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing in maintenance manual.
.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
.4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Interim Completion is determined.
.5 Verify that documents are in proper form, contain full information, and are notarized.
.6 Retain warranties and bonds until time specified for submittal.

20 DEMONSTRATION AND TRAINING

.1 Demonstration and Training:
.1 Demonstrate operation and maintenance of equipment and systems to maintenance personnel following interim Completion and prior to date of final certificate of completion.

.2 Departmental Representative will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

END OF SECTION

1 PURPOSE

.1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

2 DEFINITIONS

.1 "Contraband" means:
(a) an intoxicant, including alcoholic beverages, drugs and narcotics
(b) a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling
a person, when possessed without prior authorization,
(c) an explosive or a bomb or a component thereof,
(d) currency over any applicable prescribed limit, $25.00; and
(e) any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.

.2 "Unauthorized smoking and related Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.

.3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.

.4 "CSC" means Correctional Service Canada.

.5 "Director" means Director or Warden of the Institution as applicable or their representative.

.6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies. Workers 18 years or younger are not permitted within Institution.

.7 "Departmental Representative" means the Public Works and Government Services Canada representative defined in General Conditions.

.8 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.

.9 "Construction zone" means the area, as indicated in the contract documents, that the contractor will be allowed to work". This area may or may not be isolated from the security area of the institution. Limits to be confirmed at construction start-up meeting.

3 PRELIMINARY PROCEEDINGS

.1 At construction start-up meeting:
- .1 Discuss the nature and extent of all activities involved in the Project.
- .2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.

.2 The contractors's responsibilities:
- .1 Ensure that all construction employees are aware of the CSC security requirements.
- .2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.
- .3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

4 CONSTRUCTION EMPLOYEES

.1 Submit to the Departmental Representative a list of the names with date of birth of all construction employees to be employed on the construction site and a security clearance form for each employee.

.2 Allow 10 working days for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at this Institution except as approved otherwise.

.3 The Director may require that facial photographs may be taken of construction employees and these photographs may be displayed at appropriate locations in the Institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all construction workers. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the construction employees clothing at all time while employees are at the institution.

.4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.

.5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
- .1 appear to be under the influence of alcohol, drugs or narcotics.
- .2 behave in an unusual or disorderly manner.
- .3. are in possession of contraband.
- .4 are 18 years old or younger.

5 VEHICLES

.1 All unattended vehicles on CSC property must have windows closed; fuel caps locked, doors and trunks locked and keys removed. The keys must be securely in the possession of the owner or an employee of the company that owns the vehicle.

.2 The director may limit at any time the number and type of vehicles allowed within the Institution.

.3 Drivers of delivery vehicles for material required by the project will require security clearances and must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or PWGSC Construction Escorts while in the Institution.

.4 If the Director permits trailers to be left inside the secure perimeter of the Institution, the trailer doors must be locked at all times. All windows must be securely locked bars when left unoccupied. Cover all windows with expanded metal mesh. When not in use lock all storage trailers located inside and outside the perimeter. All storage trailers inside and outside the perimeter must be locked when not in use.

6 PARKING

.1 The parking area(s) to be used by construction employees will be designated by the Director. Parking in other locations will be prohibited and vehicles may be subject to removal.

7 SHIPMENTS

.1 To avoid confusion with the Institution's own shipments, address all shipments of project material, equipment and tools in the Contractor's name and have a representative on site to receive any deliveries or shipments. CSC or PWGSC staff will **NOT** accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

8 TELEPHONES

.1 The installation of telephones, facsimile machines and computers with Internet connections is not permitted within the Institution perimeter.

.2 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, Blackberries, PDAs, telephone used as 2-way radios are not permitted within the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.

.3 The Director may approve but limit the use of 2-way radios.

9 WORK HOURS

.1 Work hours within the Institution are: conform to Division 1.

.2 Work is not permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waved by the Director.

10 OVERTIME WORK

.1 Conform to Division 1.

.2 Provide 48 hours advance notice to Director for all work to be performed after normal working hours of the Institution. Notify Director immediately if emergency work is required, such as to complete a concrete pour or make the construction site safe and secure.

11 TOOLS AND EQUIPMENT

.1 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required by the Institution.

.2 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.

.3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridgedriven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.

.4 Store all tools and equipment in approved secure locations.

.5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor. Secure and lock scaffolding when not erected and when erected Secure in a manner agreed upon with the Institution designate.

.6 Report all missing or lost tools or equipment immediately to the Departmental Representative/Director.

.7 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:

.1 At the beginning and conclusion of every work day or shift upon entering and exiting the Institution.

.2 At any time when contractor is on Institution property.

.8 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day. Maintain up to date inventory of all used blades/cartridges.

.9 If propane or natural gas is used for heating the construction, the institution will require that the contractor supervise the construction site during non-working hours.

12 PRESCRIPTION DRUGS

.1 Employees of the contractor who are required to take prescription drugs during the workday shall obtain approval of the Director to bring a one day supply only into the Institution.

13 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside correctional facilities or outdoors within the perimeter of a correctional facility and persons must not possess unauthorized smoking items within the perimeter of a correctional facility.

.2 Persons in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist will be directed to leave the Institution.

.3 Smoking is permitted outside the perimeter of a correctional facility in an area designated by the Director.

14 CONTRABAND

.1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.

.2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.

.3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.

.4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

15 SEARCHES

.1 All vehicles and persons entering institutional property may be subject to search.

.2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband, he may order that person to be searched.

.3 All employees entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

16 ACCESS TO AND REMOVAL FROM INSTITUTIONAL PROPERTY

.1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Director.

17 MOVEMENT OF VEHICLES

.1 Escorted commercial vehicles may not be allowed to enter or leave the institution through the vehicle access gate during the regular "inmate count" occurring at breakfast, lunch and dinner hour as established by the institution. Confirm "count times" with Director or Departmental Representative to reduce down times for deliveries to institution and movement of contractors vehicles through institution vehicle access gate.

.2 Construction vehicles will not be allowed to leave the institution until an inmate count is completed.

.3 The contractor will advise the Director twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.

.4 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or PWGSC construction escorts working under the authority of the Director.

.5 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.

.6 Vehicles will be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the Institution.

.7 Private vehicles of construction employees will not be allowed within the security fence of the Institution without the authorization of the Director.

.8 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Director may require that the equipment be secured with a chain and padlock to another solid object.

18 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

.1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.

.2 However, notwithstanding paragraph above, the Director may:
.1 Prohibit or restrict access to any part of the Institution.
.2 Require that in certain areas of the Institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when accompanied by a member of the CSC Security Staff or PWGSC Construction Escort Officer.

19 SURVEILLANCE AND INSPECTION

.1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.

.2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the construction project.

20 STOPPAGE OF WORK

.1 The director may request at any time that the contractor, his employees, sub-contractors and their employees not enter or leave the work site immediately due to a security situation occurring within the Institution. The contractor's site supervisor will note the name of the staff member giving the instruction, the time of the request and obey the order as quickly as possible.

.2 The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

21 CONTACT WITH INMATES

.1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any employee doing any of the above will be removed from the site and his security clearance revoked.

.2 Digital cameras (or any other type) are not allowed on CSC property.

.3 Notwithstanding the above paragraph, if the director approves of the use of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

22 COMPLETION OF CONSTRUCTION PROJECT

.1 Upon completion of the construction project or, when applicable, the takeover of a facility, the Contractor shall remove all remaining construction material, tools and equipment that are not specified to remain in the Institution as part of the construction contract.

END OF SECTION

1 GENERAL

1.1 REFERENCES

.1 Government of Canada.

.1 Canada Labour Code - Part II.

.2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC):

.1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 Canadian Standards Association (CSA) as amended:

.1 CSA Z797-2009 Code of Practice for Access Scaffold.

.2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.

.3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.

.4 Fire Protection Engineering Services, HRSDC:

.1 FCC No. 301, Standard for Construction Operations.

.2 FCC No. 302, Standard for Welding and Cutting.

.5 American National Standards Institute (ANSI):

.1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.6 Province of British Columbia::

.1 Workers Compensation Act Part 3-Occupational Health and Safety.

.2 Occupational Health and Safety Regulation.

1.2 RELATED SECTIONS

.1 Refer to the following current NMS sections as required:

.1 Submittals procedures: Section 01 01 50

1.3 WORKERS' COMPENSATION BOARD COVERAGE

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.5 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review in accordance with Section 01 01 50.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Submit the following:

.1 Health and Safety Plan.

.2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.

.3 Copies of incident and accident reports.

.4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.

.5 Emergency Procedures.

.4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

.1 Be construed to imply approval by the Departmental Representative.

.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.

.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract.

.2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.7 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator must:

.1 Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

.2 Be responsible for implementing, daily enforcing, and monitoring the sitespecific Health and Safety Plan.

.3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.9 PROJECT/SITE CONDITIONS

.1 Provide electrical lock-out procedures when working with electricity and safety harness when working at height.

1.10 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.11 WORK PERMITS

.1 Obtain specialty permit[s] related to project before start of work.

1.12 FILING OF NOTICE

.1 The General Contractor is to file Notice of Project with Provincial authorities prior to beginning of work.

.2 Provide copies of all notices to the Departmental Representative.

1.13 HEALTH AND SAFETY PLAN

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

.3 Definition of responsibilities for project safety/organization chart for project.

.4 General safety rules for project.

.5 Job-specific safe work, procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 Occupational Health and Safety communications and record keeping procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work.

.4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.14 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

.1 Designated personnel from own company.

.2 Regulatory agencies applicable to work and as per legislated regulations.

.3 Local emergency resources.

.4 Departmental Representative and site staff.

.2 Include the following provisions in the emergency procedures:

.1 Notify workers and the first-aid attendant, of the nature and location of the emergency.

.2 Evacuate all workers safely.

.3 Check and confirm the safe evacuation of all workers.

.4 Notify the fire department or other emergency responders.

.5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.

.6 Notify Departmental Representative and site staff.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

.1 Work at high angles.

.2 Work in confined spaces or where there is a risk of entrapment.

.3 Work with hazardous substances.

.4 Underground work.

.5 Work on, over, under and adjacent to water.

.6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

.5 At least once each year, emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures, and a record of the drills must be kept.

.6 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.15 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 01 50.

.2 In conjunction with Departmental Representative schedule to carry out work during "off hours" when tenants have left the building.

1.16 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.

.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.17 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

.3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.18 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.19 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.20 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.21 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.22 FIRE PROTECTION AND ALARM SYSTEM

.1 Fire protection and alarm systems shall not be:

.1 Obstructed.

.2 Shut off.

.3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.23 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.24 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:

.1 Health and Safety Plan.

.2 Sequence of work.

.3 Emergency procedures.

.4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.

.5 Notice of Project.

.6 Floor plans or site plans.

.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.

.8 Workplace Hazardous Materials Information System (WHMIS) documents.

.9 Material Safety Data Sheets (MSDS).

.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.25 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.26 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if noncompliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies the requirements for commissioning of the fire alarm system, systems interconnected with the fire alarm system, and all other work included within this contract.

.2 Coordinate related commissioning with all divisions.

.3 Commission all work.

1.2 REFERENCES

.1 Perform commissioning in general conformance with the principles stated in NFPA 3 (2015) *Recommended Practice for Commissioning of Fire Protection and Life Safety Systems*, and as stated within this specification section.

.2 Perform integrated systems commissioning in accordance with ULC S1001-11 *Integrated Systems Testing of Fire Protection and Life Safety System.*

.3 Perform on site verification, tests and commissioning in accordance with:

.1 The Contract Documents.

.2 Manufacturer's published instructions.

.3 Applicable CSA, ULC, IEEE, NFPA, NETA and ASTM standards.

1.3 COMMISSIONING AGENCY

.1 Provide third party commissioning agent (CA). Include commissioning costs in tender price.

.2 Retain services of independent Electrical Commissioning Agency with demonstrated minimum 10 years of experience in commissioning of electrical and fire alarm systems.

.3 After close of tenders, submit name and experience of proposed Commissioning Agency and evidence they are qualified to perform commissioning for this project.

1.4 COMMISSIONING AUTHORITY

.1 PWGSC will be the Commissioning Authority.

1.5 GENERAL REQUIRMENTS

.1 Test all systems prior to acceptance testing by the Departmental Representative and/or the Authority Having Jurisdiction and prior to the ULC verification test. Prior to requesting acceptance testing, provide a report stating that the individual system has been tested, all deficiencies corrected and the work is in compliance with the Contract Documents.

.2 Tests shall also include periodic inspections for quality of work and ensuring the work is compliant with codes and standards. Test all components.

.2 Test systems at critical stages during construction, and at the least once per month.

.3 Each building and the site communications network shall be treated as separate systems for the purposes of testing and acceptance.

.4 Maintain logs of tests, deficiencies, corrective actions and verification of resolution. Provide the updated logs to the Departmental Representative each month.

.5 Test interconnected systems such as the sprinkler system, fan shutdown systems, cooking suppression systems, elevators and door hold-open devices.

.6 Tests and inspections are separate and distinct from the ULC verification of the fire alarm system.

.7 Create and submit for review test checklists and the stages when tests will be performed.

.8 Stress test the fire alarm system for the purpose of finding hidden flaws, by placing the system in various modes such as generator power, battery power, disconnection of cables, etc. Submit proposed stress testing procedures and interconnection test procedures.

.9 Perform audibility tests of notification appliances.

.10 Ensure record drawings are marked up as changes occur. Review marked up drawings with the Departmental Representative on a monthly basis.

.11 Review, test and ensure the fire alarm system complies with the sequence of operation statement. Update sequence of operation statement and include in operation and maintenance manuals.

.12 Attend regular construction meetings and report on status of commissioning activities.

.13 Coordinate and cooperate with the Authority Having Jurisdiction and the Departmental Representative.

.14 Coordinate assembly of paper copies and pdf copies of operation manual and maintenance manual.

.15 Coordinate operator training and maintenance training.

.16 Coordinate assembly of simplified single-page operator instruction sheet.

.17 Coordinate all keys including

- .1 distribution of keys
- .2 ensuring locks keyed alike where required
- .3 record of keys

.18 Provide transmittal forms when distributing items.

.19 Coordinate and ensure all details are correct for the warranties included in the maintenance manuals.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 11 50 - General Instructions

.2 Section 01 35 33 - Health and Safety Requirements

.3 Section 02 82 00.01 - Asbestos Abatement - Minimum Precautions

.4 Section 02 82 00.02 - Asbestos Abatement - Intermediate Precautions

.5 Section 02 82 00.03 – Asbestos Abatement – Maximum Precautions

1.2 REFERENCES

.1 Reports:

.1 "Project-Specific Hazardous Building Materials Assessment – William Head Institution Fire Alarm Replacement", prepared by Stantec Consulting Ltd., dated 12 April 2016 (Assessment Report).

.2 Definitions:

.1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.3 Reference Standards:

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

.1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).

.2 Department of Justice Canada (Jus)

.1 Transportation of Dangerous Goods Act, 1992 (TDG Act) [1992], (c. 34).

.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

.3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 National Research Council Canada Institute for Research in Construction (NRC-IRC)
  .1 National Fire Code of Canada 2010.
.5 WorkSafe BC
  .1 British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)
  .2 "Safe Work Practices for Handling Asbestos" (2012 Edition)
  .3 "Lead-Containing Paints and Coatings; Preventing Exposure in the Construction Industry", 2011
.6 The current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88)
.7 The Federal Transportation of Dangerous Goods Regulation
.8 The Federal PCB Regulations (SOR/2008-273).
.9 The British Columbia Waste Management Act - Ozone Depleting Substances and Other Halocarbons Regulation (BC Reg. 387/99).
.10 The Federal Halocarbons Regulation, July 2003

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 11 50 - General Instructions.

.2 Product Data:

  .1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.
  .2 Submit two copies of WHMIS MSDS in accordance with Sections 01 35 33 - Health and Safety Requirements to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.
  .3 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.
  .4 Construction Waste Management:
    .1 Submit project Demolition Waste Management Plan highlighting recycling and salvage requirements.
    .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating percentage of construction wastes were recycled or salvaged
  .5 Low-Emitting Materials: submit listing of adhesives and sealants used in building, comply with VOC and chemical component limits or restrictions requirements.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.4 Storage and Handling Requirements:

.1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.

.1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

.2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.

.7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.

.9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

.1 Store hazardous materials and wastes in closed and sealed containers.

.2 Label containers of hazardous materials and wastes in accordance with WHMIS.

.3 Store hazardous materials and wastes in containers compatible with that material or waste.

.4 Segregate incompatible materials and wastes.

.5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.

.6 Store hazardous materials and wastes in secure storage area with controlled access.

.7 Maintain clear egress from storage area.

.8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.

.9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.

.10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 When hazardous waste is generated on site:

.1 Co-ordinate transportation and disposal with Departmental Representative.

.2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.

.3 Use licensed carrier authorized by provincial authorities to accept subject material.

.4 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide photocopy of shipping documents and waste manifests to Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Departmental Representative.

.9 Report discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

.12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.13 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

.5 Develop Demolition Waste Management Plan related to Work of this Section.

Part 2 Products

2.1 MATERIALS

.1 Description:

.1 Bring on site only quantities hazardous material required to perform Work.

.2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 HAZARDOUS MATERIALS ABATEMENT

.1 Scope of Abatement Activities (other than Asbestos – specified elsewhere) for the fire alarm replacement at William Head Institution.

.1 Abatement shall be conducted to remove and dispose of hazardous building materials as identified in the Stantec Report in accordance with applicable regulations, guidelines, standards and/or best practices for such work, where such identified hazardous building materials will be impacted (altered, damaged, removed) by the Work.

.2 The listing below is a summary of the identified hazardous building materials (other than asbestos) and associated removal and disposal regulations, guidelines and/or standards.

.1 Lead

Actions that will disturb lead-containing materials are to be conducted in accordance with the requirements of the current version of the WorkSafe BC publication "Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry", keeping airborne exposure to lead dust to less than the 8-hour Occupational Exposure Limit (OEL) for lead of 0.05 milligram per cubic metre (mg/m^3).

Waste transportation to be conducted in accordance the Federal Transportation of Dangerous Goods Regulation.

Waste disposal to be conducted in accordance with the current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88). If the Contractor chooses to dispose of identified lead-containing materials or materials with identified lead-containing paints via landfill in BC, the Contractor will be responsible for applicable leachate testing of waste materials to determine landfill options.

Lead-containing materials to be considered during demolition are summarized below:

1. Lead-containing paints
    1. Refer to the Assessment Report for identities and locations of lead-containing paints that may require disturbance or area-specific removal to facilitate the Work.
2. As indicated in the Assessment Report, lead is also expected to be present in various buildings, in materials such as lead-acid batteries

used in emergency lighting, older electrical wiring materials and sheathing, solder used on domestic water lines, solder used in bell fittings for cast iron pipes, solder used in electrical equipment and vent and pipe flashings.

.2 Polychlorinated Biphenyls (PCBs)

For fluorescent light fixtures that require removal and disposal:

1. Remove all fluorescent lamp fixtures. Assess all ballasts in comparison to the Environment Canada document entitled "Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2", dated August 1991 (or equivalent reference).
2. Sort PCB-containing lamp ballasts from non-PCB-containing lamp ballasts.

Waste transportation to be conducted in accordance the Federal Transportation of Dangerous Goods Regulation.

Dispose of ballasts in accordance with the current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88) and The Federal PCB Regulations (SOR/2008-273).

Information pertaining to buildings with fluorescent lamps that may have PCB-containing ballasts can be found in the Assessment Report.

.3 Mercury

Remove all thermostats with mercury-containing switches, fluorescent light tubes and high intensity discharge lights (mercury vapour) and/or other mercury-containing items, in locations and to the extent(s) required to facilitate the Work.

Waste transportation to be conducted in accordance with the Federal Transportation of Dangerous Goods Regulation.

Dispose of waste in accordance with the current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88).

Information pertaining to buildings with fluorescent lamps with mercury vapour-containing tubes and/or thermostats with mercury switches can be found in the Assessment Report.

.4 Ozone-Depleting Substances (ODSs)

No ODS-containing equipment was identified within the buildings/areas included in the Assessment Report.

.5 Silica

Silica may be present in concrete, cement, floor tiles, drywall, and acoustic ceiling tiles, which are present in various locations throughout.

When silica-containing materials are to be altered or disturbed during the Work, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (0.025 mg/m^3). This would include, but not be limited to, the following:

1. Providing workers with respiratory protection
2. Wetting the surface of the materials to prevent dust emissions
3. Providing workers with facilities to properly wash prior to exiting the work area
4. Providing dust control to mitigate the potential for demolition dust to escape from the work area into public and/or adjacent areas

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 11 50 - General Instructions. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 11 50 - General Instructions.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 11 50 - General Instructions.

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
- .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
- .6 Dispose of hazardous wastes in timely fashion in accordance with applicable federal and provincial regulations.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
  - .1 Hazardous wastes recycled in manner constituting disposal.
  - .2 Hazardous waste burned for energy recovery.
  - .3 Lead-acid battery recycling.
  - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Refer to following reports attached in the Appendices for information pertaining to the asbestos-containing materials (ACMs) that have been identified in William Head Institution and that may be impacted by the Work.

.1 "Project-Specific Hazardous Building Materials Assessment – William Head Institution Fire Alarm Replacement", prepared by Stantec Consulting Ltd., dated 12 April 2016 (Assessment Report).

.2 Unless otherwise determined through risk assessment conducted by a qualified person, comply with requirements of this Section when disturbance to the following materials is required to complete the Work:

.1 Asbestos-containing vinyl floor tiles.
.2 Asbestos-containing vent and pipe sealants.
.3 Asbestos-containing caulkings.
.4 Asbestos-containing mastics.
.5 Asbestos-containing heat shields.
.6 Asbestos-containing duct tape.
.7 Asbestos-containing cement panel and cement board.
.8 Asbestos-containing vinyl sheet flooring (for areas less than 1 square metre).

1.2 SECTION INCLUDES

.1 Requirements and procedures for applicable procedures and personal protective equipment to be utilized during set-up of asbestos abatement work areas and for abatement of ACMs of the type described within.

1.3 RELATED REQUIREMENTS

.1 Section 01 11 50 - General Instructions

.2 Section 01 35 33 - Health and Safety Requirements

.3 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions

1.4 REFERENCES

.1 Department of Justice Canada (Jus)

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

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.3 Transport Canada (TC)

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

.4 Underwriters' Laboratories of Canada (ULC)

.5 WorkSafe BC

.1 British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)

.2 "Safe Work Practices for Handling Asbestos" (2012 Edition)

.6 The current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

1.5 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight (or vermiculite insulation materials with any asbestos) and are identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.5 Authorized Visitors: Departmental Representative and representatives of regulatory agencies.

.6 Competent worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Friable material: means material that:

.1 When dry, can be crumbled, pulverized or powdered by hand pressure, or

.2 is crumbled, pulverized or powdered.

.8 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.9 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.

.10 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 11 50 - General Instructions.

.2 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.7 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.2 Safety Requirements: worker protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.4 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be supplied by the Contractor.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 11 50 - General Instructions

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Separate and place in designated containers steel metal plastic waste in accordance with Waste Management Plan.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for recycling.

.8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.9 EXISTING CONDITIONS

.1 Reports and information pertaining to ACMs that may be handled, removed, or otherwise disturbed and disposed of during this project are bound into this specification in the appendices.

.2 Notify Departmental Representative of additional suspected ACMs discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Departmental Representative.

1.10 SCHEDULING

.1 Hours of Work: perform work during normal working hours.

1.11 OWNER'S INSTRUCTIONS

.1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:

.1 Fitting of equipment.
.2 Inspection and maintenance of equipment.
.3 Disinfecting of equipment.
.4 Limitations of equipment.

.3 Instruction and training must be provided by a competent, qualified person.

Part 2 Products

2.1 MATERIALS

.1 Drop Sheets:

.1 Polyethylene: 0.15 mm thick.
.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene waste bag.
.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
.3 Labelling requirements: affix pre-printed cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

.4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.5 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

Part 3 Execution

3.1 PROCEDURES

.1 Do construction occupational health and safety in accordance Section 01 35 33 - Health and Safety Requirements.

.2 Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages that are visible at access routes to Asbestos Work Area.

.1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

.2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.3 Do not use compressed air to clean up or remove dust from any surface.

.3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in Asbestos Work Area where dust and contamination cannot otherwise be safely contained. Drop sheets are not to be reused.

.4 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity fine - mist sprayer.

.2 Perform Work to reduce dust creation to lowest levels practicable.

.3 Work will be subject to visual inspection and air monitoring.

.4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.5 Frequently and at regular intervals during Work and immediately on completion of work:

.1 Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a waste container, and

.2 Drop sheets to be wetted and placed in a waste container as soon as practicable.

.6 Cleanup:

.1 Place dust and asbestos containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.

.2 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.

.3 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that the appropriate guidelines and regulations for asbestos disposal are followed.

.4 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

3.2 AIR MONITORING

.1 From beginning of Work until completion of cleaning operations, Departmental Representative to take air samples inside and outside of Asbestos Work Area enclosure[s] in accordance with British Columbia's Occupational Health and Safety Regulation and the current version of the WorkSafeBC Manual entitled "Safe Work Practices for Handling Asbestos".

.1 Departmental Representative will be responsible for monitoring inside enclosure in accordance with applicable Provincial Occupational Health and Safety Regulations.

.2 If air monitoring shows that areas outside Asbestos Work Area enclosure[s] are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract

.3 Ensure that respiratory safety factors are not exceeded.

.4 During the course of Work, Departmental Representative to measure fibre content of air outside Work areas by means of air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Refer to following reports attached in the Appendices for information pertaining to the asbestos-containing materials (ACMs) that have been identified in William Head Institution and that may be impacted by the Work.

.1 "Project-Specific Hazardous Building Materials Assessment – William Head Institution Fire Alarm Replacement", prepared by Stantec Consulting Ltd., dated 12 April 2016 (Assessment Report).

.2 Unless otherwise determined through risk assessment conducted by a qualified person, comply with requirements of this Section when disturbance to the following materials is required to complete the Work:

.1 Asbestos-containing parging cement, when using Glove Bag methodology.

.2 Asbestos-containing drywall joint compound.

1.2 SECTION INCLUDES

.1 Requirements and procedures for asbestos abatement of asbestos containing materials of the type described within.

1.3 RELATED REQUIREMENTS

.1 Section 01 11 50 - General Instructions

.2 Section 01 35 33 - Health and Safety Requirements

.3 Section 02 82 00.01 – Asbestos Abatement Minimum Precautions

1.4 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.205-[94], Sealer for Application of Asbestos Fibre Releasing Materials.

.2 Department of Justice Canada (Jus)

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

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Transport Canada (TC)

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

.5 Underwriters' Laboratories of Canada (ULC)

.6 WorkSafe BC

.1 British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)

.2 "Safe Work Practices for Handling Asbestos" (2012 Edition)

.7 The current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

1.5 DEFINITIONS

.1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.2 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight (or vermiculite insulation materials with any asbestos) and are identified under Existing Conditions including fallen materials and settled dust.

.3 Asbestos Work Area: area where work takes place which will, or may disturb ACMs.

.4 Authorized Visitors: Departmental Representative and representatives of regulatory agencies.

.5 Competent worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.6 Friable Materials: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.7 Glove Bag: prefabricated glove bag as follows:

.1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.

.2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.

.3 Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.

.4 Straps for sealing ends around pipe.

.8 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

.9 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.10 Occupied Area: any area of building or work site that is outside Asbestos Work Area.

.11 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.12 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 11 50 - General Instructions.

.2 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos containing waste has been received and properly disposed.

.6 Submit proof satisfactory to Departmental Representative that all asbestos workers have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration. Minimum of one supervisor for every ten workers.

.8 Submit Worker's Compensation Board status and transcription of insurance.

.9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:

.1 Encapsulants;

.2 Amended water;

.3 Slow drying sealer.

.10 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Full-facepiece powered, air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn.

.3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the

protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area..

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.7 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 11 50 - General Instructions.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Separate for reuse and recycling and place in designated containers steel, metal, and/or plastic waste in accordance with Waste Management Plan.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for recycling.

.8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

1.9 EXISTING CONDITIONS

.1 Reports and information pertaining to ACMS that may be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification in the appendices

.2 Notify Departmental Representative of additional suspected ACM discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.10 SCHEDULING

.1 Hours of Work: perform work during normal working hours.

1.11 OWNER'S INSTRUCTIONS

.1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, in use of glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, at minimum:

.1 Fitting of equipment.
.2 Inspection and maintenance of equipment.
.3 Disinfecting of equipment.
.4 Limitations of equipment.

.3 Instruction and training must be provided by competent, qualified person.

Part 2 Products

2.1 MATERIALS

.1 Drop and Enclosure Sheets:

.1 Polyethylene: 0.15 mm thick.
.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene bag or where glove bag method is used, glove bag itself.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

.4 Glove bag:

.1 Acceptable materials: safe-T-Strip products in configuration suitable for Work, or Alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.

.2 The glove bag to be equipped with:

.1 Sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period.

.2 Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.

.3 A tool pouch with a drain.

.4 A seamless bottom and a means of sealing off the lower portion of the bag.

.5 A high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.

.5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.6 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.1 Sealer: flame spread and smoke developed rating less than 50.

.7 Encapsulant: penetrating type conforming to CAN/CGSB-1.205.

Part 3 Execution

3.1 SUPERVISION

.1 Minimum of one Supervisor for every ten workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

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

.3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

.1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

.2 Do not use compressed air to clean up or remove dust from any surface.

.4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.

.5 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Perform Work in a manner to reduce dust creation to lowest levels practicable.

.6 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.7 Cleanup:

.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

3.3 AIR MONITORING

.1 From beginning of Work until completion of cleaning operations, Departmental Representative to take air samples inside and outside of Asbestos Work Area enclosure[s] in accordance with British Columbia's Occupational Health and Safety Regulation and the current version of the WorkSafeBC Manual entitled "Safe Work Practices for Handling Asbestos".

.1 Departmental Representative will be responsible for monitoring inside enclosure in accordance with applicable Provincial Occupational Health and Safety Regulations.

.2 If air monitoring shows that areas outside Asbestos Work Area enclosure[s] are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract

.3 Ensure that respiratory safety factors are not exceeded.

.4 During the course of Work, Departmental Representative to measure fibre content of air outside Work areas by means of air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

.5 Final air monitoring to be conducted as follows: After Asbestos Work Area has passed visual inspection and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period has passed, Departmental Representative will perform air monitoring within Asbestos Work Area.

.1 Final air monitoring results must show fibre levels of less than 0.01 f/cc.

.2 If air monitoring results show fibre levels in excess of 0.01 f/cc, re-clean work area and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 0.01 f/cc, at no cost to Contract.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Refer to following reports attached in the Appendices for information pertaining to the asbestos-containing materials (ACMs) that have been identified in William Head Institution and that may be impacted by the Work.

.1 "Project-Specific Hazardous Building Materials Assessment – William Head Institution Fire Alarm Replacement", prepared by Stantec Consulting Ltd., dated 12 April 2016 (Assessment Report).

.2 Unless otherwise determined through risk assessment conducted by a qualified person, comply with requirements of this Section when disturbance to the following materials is required to complete the Work:

.1 Asbestos-containing mechanical insulation (parging cement) when using methods other than Glove Bag methodology.

.2 Asbestos-containing texture coat.

.3 Asbestos-containing skim coat.

.4 Asbestos-containing vinyl sheet flooring (for areas greater than one square metre).

1.2 SECTION INCLUDES

.1 Requirements and procedures for asbestos abatement of asbestos containing materials of the type described within.

1.3 RELATED REQUIREMENTS

.1 Section 01 11 50 - General Instructions

.2 Section 01 35 33 - Health and Safety Requirements

.3 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions

1.4 REFERENCES

.1 Government of Canada.

.1 Canada Labour Code - Part II

.2 Canada Occupational Health and Safety Regulations.

.2 Department of Justice Canada (Jus)

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

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Transport Canada (TC)

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

.5 Underwriters' Laboratories of Canada (ULC)

.6 WorkSafe BC

.1 British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)

.2 "Safe Work Practices for Handling Asbestos" (2012 Edition)

.7 The current version of the British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

1.5 DEFINITIONS

.1 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.

.2 Amended Water: water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.3 Asbestos Containing Materials (ACMs): materials that contain any asbestos and are identified under Existing Conditions, including fallen materials and settled dust.

.4 Asbestos Work Areas: area where work takes place which will, or may disturb ACMs.

.5 Authorized Visitors: Departmental Representative, Consultant, and representatives of regulatory agencies.

.6 Competent worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:

.1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of polyethylene with duct tape and weight bottom edge to ensure proper closing.

.3 Overlap each polyethylene sheet at openings not less than 1.5 m on each side.

.8 DOP Test: testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.

.9 Friable Materials: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.10 Glove Bag: prefabricated glove bag as follows:

.1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.

.2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.

.3 Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.

.4 Straps for sealing ends around pipe.

.11 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.12 Negative pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.

.1 System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.

.13 Non-Friable Materials: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.14 Occupied Areas: any area of building or work site that is outside Asbestos Work Area.

.15 Polyethylene sheeting sealed with tape: polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.

.16 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 11 50 - General Instructions.

.2 Before beginning work:

.1 Obtain from appropriate agency and submit to Departmental Representative necessary permits for transportation and disposal of asbestos waste. Ensure that dump operator is fully aware of hazardous nature of material being dumped, and proper methods of disposal. Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to receive and properly dispose of asbestos waste.

.2 Submit proof satisfactory to Departmental Representative that all asbestos workers have received appropriate training and education by a competent person on hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Submit proof of attendance in form of certificate.

.3 Ensure supervisory personnel have attended asbestos abatement course, of not less than two days duration. Submit proof of attendance in form of certificate. Minimum of one Supervisor for every ten workers.

.4 Submit layout of proposed enclosures and decontamination facilities to Departmental Representative for review.

.5 Submit documentation including test results for sealer proposed for use.

.6 Submit Provincial and/or local requirements for Notice of Project form.

.7 Submit proof of Contractor's Asbestos Liability Insurance.

.8 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

.9 Submit Worker's Compensation Board status and transcription of insurance.

.10 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including but not limited to following:

.1 Encapsulants.

.2 Amended water.

.3 Slow drying sealer.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:

.1 Powered air purifying respirator (PAPR) with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn. Requirements for each worker:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.

.2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated work suits in receptacles for disposal with other asbestos - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap

and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.

.3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If re-entering work area, follow procedures outlined in paragraphs above.

.4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.

.4 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.

.5 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.6 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 11 50 - General Instructions.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.

.4 Separate for reuse and recycling and place in designated containers steel, metal, and plastic waste.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Provincial, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for recycling.

.8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6mil bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

1.9 EXISTING CONDITIONS

.1 Reports and information pertaining to ACMS that may be be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification in the appendices.

.2 Notify Departmental Representative of suspected asbestos-containing material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.10 SCHEDULING

.1 Submit to Departmental Representative copy of notifications prior to start of Work.

.2 Hours of Work: perform work during hours as stipulated in this Contract.

1.11 OWNER'S INSTRUCTIONS

.1 Before beginning Work, provide to Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from Asbestos Work Area, in aspects of work procedures including glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, at minimum:

.1 Proper fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by competent, qualified person.

.4 Supervisory personnel to complete required training.

Part 2 Products

2.1 MATERIALS

.1 Polyethylene: minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.2 FR polyethylene: minimum 0.15 mm thick, woven fibre reinforced fabric bonded both sides with polyethylene.

.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

.4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by Departmental Representative, mixed with water in concentration to provide adequate penetration and wetting of asbestos containing material.

.5 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.

.6 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.7 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.8 Sealer: flame spread and smoke developed rating less than 50.

.9 Encapsulants: Type 1 penetrating type Class A water based conforming to CAN/CGSB-1.205 and approved by the Fire Commissioner of Canada having following characteristics:

.10 Sprayed fireproofing: ULC labelled and listed asbestos-free to provide degree of fire or thermal protection required.

Part 3 Execution

3.1 PREPARATION

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.2 Work Areas:

.1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.

.2 Clean proposed work areas using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.

.3 The spread of dust from the work area to be prevented by:

.1 Using enclosures of polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls.

.2 Using curtains of polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.

.4 Put negative pressure system in operation and operate continuously from time first polyethylene is installed to seal openings until final completion of work including final cleanup. Provide continuous monitoring of pressure difference using automatic recording instrument. The system to maintain a negative air pressure, relative to the area outside the enclosed area. The system to be inspected and maintained by a competent person prior each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it to be replaced before the ventilation system is used.

.5 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.

.6 Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Cover floors first so that polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.

.7 Build airlocks at entrances to and exits from work areas so that work areas are always closed off by one curtained doorway when workers enter or exit.

.8 At each access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used: "CAUTION ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".

.9 After work area isolation, remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste. Remove ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by Departmental Representative. Use localized water spraying during fixture removal to reduce fibre dispersal.

.10 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Fire Commissioner of Canada and Provincial Fire Marshall Authority having jurisdiction.

.11 Where application of water is required for wetting asbestos containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

.12 After preparation of work areas and Decontamination Enclosure Systems, for the removal of all other asbestos containing materials, remove within work area and dispose of as contaminated waste in specified containers. Spray asbestos debris and immediate work area with amended water to reduce dust, as work progresses.

.3 Worker Decontamination Enclosure System:

.1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:

.1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work area[s], with two curtained doorways, one to Shower Room and one to work area[s]. Install waste receptor and storage facilities for workers' shoes and protective clothing to be reworn in work area[s]. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.

.2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two curtained doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five workers. Provide constant supply of hot and cold or warm water. Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.

.3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

.4 Container and Equipment Decontamination Enclosure System:

.1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.

.1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to Washroom. Equip Staging Area with curtained doorway to Washroom.

.2 Washroom: build Washroom between Staging Area and Holding Room with two curtained doorways, one to Staging Area and one to Holding Room. Provide high - pressure low - volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.

.3 Holding Room: build Holding Room between Washroom and Unloading Room, with two curtained doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used.

.4 Unloading Room: build Unloading Room between Holding Room and outside, with two curtained doorways, one to Holding Room and one to outside.

.5 Construction of Decontamination Enclosures:

.1 Build suitable framing for enclosures or use existing rooms where convenient, and line with polyethylene sheeting sealed with tape. [.

.2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.

.6 Maintenance of Enclosures:

.1 Maintain enclosures in tidy condition.

.2 Ensure that barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

.3 Visually inspect enclosures at beginning of each working period.

.4 Use smoke methods to test effectiveness of barriers when directed by Departmental Representative.

.7 Do not begin Asbestos Abatement work until:

.1 Arrangements have been made for disposal of waste.

.2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.

.3 Work area[s] and decontamination enclosures are effectively segregated.

.4 Tools, equipment, and materials waste containers are on hand.

.5 Arrangements have been made for building security.

.6 Warning signs are displayed where access to contaminated areas is possible.

.7 Notifications have been completed and other preparatory steps have been taken.

3.2 SUPERVISION

.1 Minimum of one Supervisor for every ten workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos containing materials.

3.3 ASBESTOS REMOVAL

.1 Before removing asbestos:

.1 Prepare site.

.2 Where possible, spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Remove saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brushed and wet sponged surfaces from which asbestos has been removed to remove visible material. During this work keep surfaces wet.

.5 Where Departmental Representative decides complete removal of asbestos containing material is impossible due to obstructions such as structural members or major service elements, and provides written direction, encapsulate material as follows:

.1 Apply penetrating type sealer to penetrate existing sprayed asbestos surfaces uniformly to substrate.

.6 After wire brushing and wet sponging to remove visible asbestos, and after encapsulating asbestos containing material impossible to remove, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA vacuum followed by wet cleaning. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of negative pressure units during this period.

.7 Work is subject to visual inspection and air monitoring by the Departmental Representative. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.8 Cleanup:

.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped, and that guidelines and regulations for asbestos disposal are followed.

.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

3.4 FINAL CLEANUP

.1 Following cleaning specified above, and when air sampling shows that airborne asbestos levels on both sides of seals do not exceed 0.01 fibres/cc as determined by membrane filter method at 400-500X magnification phase contrast illumination, as described in NIOSH Analytical Method 7400, "Asbestos and Other Fibres" or equivalent, proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos containing particles observed during cleanup, immediately, using HEPA vacuum equipment.

.3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.

.5 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.

.6 Conduct final check to ensure that no dust or debris remains on surfaces as result of dismantling operations and carry out air monitoring again to ensure that asbestos levels in building do not exceed 0.01 fibres/cc. Repeat cleaning using HEPA vacuum equipment, or wet cleaning methods where feasible, in conjunction with sampling until levels meet this criteria.

.7 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

3.5 AIR MONITORING

.1 From beginning of Work until completion of cleaning operations, Departmental Representative will take air samples on daily basis outside of work area enclosure in accordance with Provincial Occupational Health and Safety Regulations and industry standard practices, whichever is more stringent.

.1 Departmental Representative will be responsible for monitoring inside enclosure.

.2 Use results of air monitoring inside work area to establish type of respirators to be used. Workers may be required to wear sample pumps for up to full-shift periods.

.1 If fibre levels are above safety factor of respirators in use, stop abatement, apply means of dust suppression, and use higher safety factor in respiratory protection for persons inside enclosure.

.2 If air monitoring shows that areas outside work area enclosures are contaminated, enclose, maintain and clean these areas, in same manner as that applicable to work areas.

.3 During course of Work, Departmental Representative will measure fibre content of air outside work areas by means air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

.4 Final air monitoring to be conducted as follows: After Asbestos Work Area has passed visual inspection and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period has passed, Departmental Representative will perform air monitoring within Asbestos Work Area.

.1 Final air monitoring results must show fibre levels of less than 0.01 f/cc.

.2 If air monitoring results show fibre levels in excess of 0.01 f/cc, re-clean work area and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 0.01 f/cc, at no additional cost to Owner.

3.6 INSPECTION

.1 Perform inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviations from these requirements that have not been approved in writing by Departmental Representative may result in Work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect Work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.3 When asbestos leakage from Asbestos Work Area has occurred or is likely to occur Departmental Representative may order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 All labour, Material, services, and equipment necessary and incidental for the cast-in-place concrete as specified herein and indicated on the Drawings. All material and work specified in this Section shall be the responsibility of one contractor who will be held solely responsible for providing and co-ordinating all parts and installation.

1.2 DOCUMENTS

.1 This section of the Specifications forms part of the Contract Documents and is to be read, interpreted, and coordinated with all other parts.

1.3 REFERENCE

.1 Do work in accordance with CAN/CSA-A23.1-09 and CAN/CSA A23.2-09, except where specified otherwise.

1.4 CERTIFICATES

.1 Provide certification that plant, equipment and materials to be used in concrete comply with the requirements of CAN/CSA-A23.1.

.2 Provide certification that mix proportions selected will produce concrete of specified quality and yield, and that strength will comply with CAN/CSA-A23.1.

1.5 QUALITY CONTROL

.1 Submit proposed quality control procedures for Departmental Representative's review.

1.6 SAMPLES AND PROTOTYPES

.1 Material samples: submit the following samples of materials for approval to the Departmental Representative. Approved samples shall be used as the acceptable standard for all materials used on the project.

.2 Forming materials,

.3 Gaskets, sealing materials, and form jointing system (as applicable).

.4 Form release agent.

Part 2 Products

2.1 MATERIALS

.1 Portland cement: Type GU and to CAN/CSA-A3000-08. No mixing of brands permitted.

.2 Water: to CAN/CSA-A23.1-09.

.3 Aggregates: to CAN/CSA-A23.1-09. Coarse aggregates to be normal density.

.4 Air entraining admixture: to CAN3-A266.1.

.5 Chemical admixtures: to CAN3-A266.2 and CAN/CSA S413-07. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

.6 Super-plasticizer: to CAN3-A266.5 "Guidelines for the use of Super-plasticizing Admixtures in Concrete".

.7 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticising agents of pouring consistency, capable of developing a compressive strength of 50 MPa at 28 days.

.8 Concrete curing and sealing compound: Where slabs are to receive resilient flooring or carpeting, use curing compounds compatible with flooring adhesive. Do not use where bond required for additional concrete or surface coating. Acceptable products are as specified in Section 03 36 20.

.9 Bonding agent: formulated for bonding new concrete to cured concrete.

2.2 CONCRETE MIXES

.1 Design concrete mixes in accordance with CAN/CSA-A23.1 alternate 1, to give the properties shown in tabular form on structural drawings.

Part 3 Execution

3.1 GENERAL

.1 Do cast-in-place concrete work in accordance with CAN/CSA-A23.1.

3.2 WORKMANSHIP

.1 Obtain Departmental Representative's approval before placing concrete. Provide 24 hours' notice, minimum, prior to placing concrete.

.2 Pumping of concrete is permitted only after approval of equipment and mix design.

.3 Ensure reinforcement and inserts are not disturbed during concrete placement.

.4 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing. Provide minimum of 7 day moist curing for all slabs.

.5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.6 Do not place concrete over snow or ice.

.7 Follow cold weather concrete procedures in CAN/CSA A23.1 and as noted on the drawings.

.8 Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or plains of weakness. If a section cannot be placed continuously, construction joints shall be located as permitted by the Departmental Representative. All pour and construction joints shall be formed with a straight-edge fixed to formwork. Placing shall be carried out at such a rate that concrete which is being integrated with fresh concrete is still plastic.

.9 Compact concrete with high-frequency vibrators applied directly to concrete by experienced personnel. Do not over-vibrate.

.10 In locations where new concrete is dowelled to existing work, drill holes in existing concrete. Attach steel dowels of deformed steel reinforcing bars with Hilti RE 500 epoxy adhesive to the depths shown on the drawings or specified by the manufacturer.

.11 Take every precaution to protect finished surfaces from stains and abrasions. Surfaces and edges likely to be damaged during the construction period shall be especially protected.

.12 Do not place load upon new concrete until authorized by Departmental Representative.

3.3 INSERTS

.1 NO sleeves, ducts, pipes or other openings shall pass through joists, beams, slab bands, column capitals or columns, except where expressly detailed on structural drawings or approved by the Departmental Representative.

.2 Anchor bolts: Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.

3.4 TOLERANCES

.1 Concrete tolerances to be in accordance with CAN/CSA-A23.1.

3.5 PATCHING

.1 General:

.1 Areas to be repaired shall be determined by the Departmental Representative and shall not exceed 0.2 m^2 for each 100 m^2 of surface area, and shall be widely dispersed. Repairs shall match the surrounding area. Patching of slabs and concrete paving will not be accepted. Removal and replacement of work shall be at no additional cost.

.2 Before commencing any repair work, the Contractor shall confirm repair procedures with the Departmental Representative and establish the formula required by trial mix. The Contractor shall demonstrate his repair techniques on a prototype sample panel.

.2 Repair of cracks in concrete slabs and slabs-on-grade shall be the sole responsibility of the Contractor at no expense to the Departmental Representative to satisfy the installation and performance requirements of the floor finishes. This may include grinding off curled edges at slab cracks.

3.6 FINISHING

.1 Formed surface: The finishes to be provided for the various formed surfaces shall be:

.1 Unexposed Finish:

.1 This finish shall apply to formed surfaces which are not exposed to view and where roughness is not objectionable.

.2 The surface, in general, shall not require any treatment after form removal, other than repair of defective concrete, snap-tie holes, and the removal of ridges and surface irregularities.

.2 Unformed surface: The finish to be provided for the various unformed surfaces shall be:

.1 Final finishing shall be accomplished by mechanical floating, mechanical trowelling, creation of the specified surface finish, and tooling or edges and joints, in that order. Exposed edges and corners shall be as detailed. Surfaces at tooled edges shall be trowelled and sand-blasted to remove tool edge marks. Hand floating and trowelling shall only be permitted in small areas of restricted access. All final finishing procedures shall conform to the requirements of CAN/CSA-A23.1, Clause 7.

.2 Final finishing shall commence after bleed water has disappeared from the surface and when the concrete has stiffened sufficiently to prevent the working of excess water to the surface. No additional dry cement or water shall be used to facilitate finishing.

3.7 HOUSEKEEPING AND EQUIPMENT PADS

.1 Provide concrete pads and curbs under equipment where indicated on drawings and as specified in Division 26 and to approved shop drawings. Prepare base concrete with a rough scratch finish and use an approved bonding agent to bond concrete pad to base course. Dowel pads and curbs to base slab in accordance with details on the drawings.

3.8 QUALITY CONTROL

.1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory pre-approved by the Departmental Representative in accordance with CAN/CSA-A23.1. Non-destructive Methods for Testing Concrete shall be in accordance with CAN/CSA-A23.2.

.2 Contractor will pay for costs of tests.

.3 Testing Laboratory will take additional test cylinders during cold weather concreting. Cure cylinders on job site under the same conditions as concrete which they represent.

.4 If results of tests show concrete to be less than specified in quality or strength, the Departmental Representative shall have the right to have the mix designs altered for the remainder of the work at no cost. Further testing and remedial measures required by CAN/CSA-A23.1 shall be done, the costs of this work paid for by the Contractor.

.5 Inspection or testing will not augment or replace Contractor quality control nor relieve him of his contractual responsibilities.

.6 Contractor to coordinate testing agency with concrete placement providing testing agency with sufficient time to provide personnel and equipment.

.7 Where field tests show that concrete is not within tolerance for slump and air, the truck shall be returned to the batch plant as soon as the results are obtained. The contractor shall not place concrete that has been shown not to meet the specifications.

.8 For additional information see Section 01 01 50 General Instructions.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Underwriter's Laboratories of Canada (ULC)

.1 ULC-S115-11, Fire Tests of Firestop Systems.

1.2 SAMPLES

.1 Submit samples in accordance with Section 01 01 50 – General Instructions.

.2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 01 50 – General Instructions.

.2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

.3 Show location of all seals covered under this section including numbered index of seals and applicable underwriter's listing design.

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 01 50 – General Instructions.

.2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

1.5 QUALIFICATIONS

.1 Manufacturer: Company specializing in manufacturing Products of this section with a minimum of three (3) years experience.

.2 Applicator: Approved, certified, licensed or otherwise qualified by the manufacturer of firestopping materials with a minimum of three (3) years proven experience.

.3 Product: Manufactured under a underwriter's follow-up program and bearing listing ULC or cUL label.

.4 Equivalencies: For those firestop applications that exist for which no ULC or cUL tested system is available through a manufacturer, a manufacturer's engineering judgement derived from similar ULC or cUL system designs or other tests shall be submitted to local authorities having jurisdiction for their review and approval prior to installation.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 01 50 – General Instructions.

.2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 GENERAL

.1 General: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire resistance rated systems.

2.2 MATERIALS

.1 Firestopping Systems: Tested in accordance with ULC S-115 or CAN4-S115M, listed and certified by a third party testing agency, asbestos free, ULC or cUL labelled, and bearing the following rating:

.1 Firestop System Rating: In accordance with the National Building Code.

.2 Firestop system shall act as an effective smoke seal and have a flame spread rating less than 25.

.2 Service penetration assemblies: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.

.3 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.13 and ULC Guide No.40 U19.15 under the Label Service of ULC.

.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 The fire protection rating of installed firestopping assembly in a non rated floor or wall assembly shall not be less than twenty (20) minutes when tested in accordance with CAN4-S115M.

.6 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.7 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.8 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.9 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.10 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.11 Sealants for vertical joints: non-sagging.

Part 3 Execution

3.1 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to a neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.3 INSPECTION

.1 Notify Departmental Representative when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 SCHEDULE

.1 Firestop and smoke seal at:

.1 Penetrations through a fire separation.

.2 Penetrations through fire-resistance rated floor slabs, ceilings and roofs where the assembly is required by the NBCC to have a fire resistance rating.

3.5 CLEAN UP

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

.2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

1 General

1.1 SUMMARY

.1 This Section specifies security sealants in the following areas:
.1 Cell rooms in building 109.

1.2 SAMPLES

.1 Submit duplicate samples of each type of material and colour to be used in accordance with Section 01 01 50.

1.3 SUBMITTALS

.1 Submit duplicate samples of each type of material and colour to be used in accordance with Section 01 01 50.

.2 Submit product data including full identification of the material or products selected for this project in accordance with Section 01 01 50. Submit copies of manufacturer's printed trade specifications and installation procedure.

.3 Submit duplicate samples to Departmental Representative for colour selection. Include on back side, project name, date, material identification and colour identification.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials undamaged, in original containers, with manufacturer's labels and seals intact.

1.5 JOB CONDITIONS

.1 Ensure substrate is sound, dry, free of dust, dirt, paint, grease, oil or other foreign substances.

.2 Ensure substrates are installed in accordance with referenced standards in other sections prior to start of this work.

.3 Ensure surfaces and ambient air temperature are maintained at least 10°C for a minimum of 72 hours before, during and after caulking application and for storage areas.

.4 Ensure adequate ventilation required is provided during installation.

.5 Protect adjacent surfaces from damage resulting from work of this trade. If necessary, mask and/or cover adjacent surfaces, fixtures, equipment, etc. by suitable means. Make good such damage.

1.6 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Sealant and substrate materials to be minimum 5°C.

.4 Should it become necessary to apply sealants below 5°C, consult sealant manufacturer and follow their recommendations.

2 Products

2.1 SEALANT MATERIAL DESIGNATIONS

.1 Pick-proof sealant: two component pure epoxy, styrene-free technology and low VOC, odourless, fast drying, self priming, non-sag for use on horizontal and vertical services. Cure time 15 minutes at 15 to 20°C and conforming to ANSI/NSF Standard 61 approved for contact with potable water. Cure time 15 minutes at 20°C. Acceptable Product:
.1 Sika Anchor Fix 3001.

2.2 SEALANT SELECTION

.1 Cell rooms: pick-proof sealant.

.2 Colour of sealants: selected by Departmental Representative from manufacturer's standard range to match adjacent surfaces.

.3 Joint cleaner: xylol, methyl ethyl ketone or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

2.3 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

3 Execution

3.1 PREPARATION OF JOINT SURFACES

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, paint and other matter which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.2 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.3 APPLICATION

.1 Sealant.

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.4 Seal joints in Cell rooms: include all joints between new conduits, new junction boxes and walls/ceilings, other installed items and as indicated.

END OF SECTION

PART 1 GENERAL

1.1 Related Sections

.1	Section 01 01 50	General Instructions
.2	Section 01 35 33	Health and Safety Requirements
.3	Section 28 31 00	Fire Alarm

1.2 References

.1 American National Standards Institute/National Fire Prevention Association (ANSI/NFPA)

- .1 ANSI/NFPA 13-2013, Installation of Sprinkler Systems.
- .2 ANSI/NFPA 25-2014, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS).

.3 Underwriter's Laboratories of Canada (ULC).

.4 Fire Commissioner of Canada FC 403, "Sprinkler System".

1.3 Design Requirements

.1 Provide fire protection devices in accordance with required and advisory provisions of NFPA 13.

.2 The "Authority Having Jurisdiction" will be designated by the Departmental Representative.

.3 Devices and equipment for fire protection service: ULC approved for use in sprinkler systems.

1.4 Submittals

.1 Product Data:

- .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 01 50 – General Instructions.
- .2 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 01 50 – General Instructions.

.2 Shop Drawings:

- .1 Submit shop drawings in accordance with Section 01 01 50 – General Instructions.

.3 Closeout Submittals:

- .1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 01 50 – General Instructions in accordance with ANSI/NFPA 13.

1.5 Quality Assurance

.1 Qualifications:

.1 Installer: company or person specializing in sprinkler systems with documented experience.

.2 All work shall be carried out by Sprinkler Pipe Fitters who carry a "Certificate of Qualification" for this trade as issued by the Ministry of Labour.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.3 Inspections and Tests:

.1 All inspections, examinations and tests required by the "Authorities and Agencies having jurisdiction" specified shall be arranged and paid for by the fire protection contractor, as necessary to obtain complete and final acceptance of the fire protection system.

.2 Provide Contractor's Material and Test Certificates and all required test papers as may be requested by all parties having jurisdiction and duly witnessed by Departmental Representative.

.3 If welding is required, the Contractor shall submit a copy of the welder's certification to the Sprinkler Engineer for Record purposes prior to starting work.

1.6 Delivery, Storage and Handling

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with Section 01 01 50 – General Instructions.

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Storage and Protection:

.1 Store materials indoors in dry location.

.2 Store and protect materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

.3 Waste Management and Disposal:

.1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 01 50 – General Instructions.

PART 2 PRODUCTS

2.1 Pipe, Fittings & Valves

.1 Pipe:

.1 Piping shall meet or exceed one of the following standards:

.1 Black and Hot-Dipped Galvanized Welded and Seamless Steel Pipe – ASTM A795

.2 Welded and Seamless Steel Pipe – ANSI/ASTM A53

.3 Wrought Steel Pipe – ANSI B36.19M

.4 Elec.-Resistance Welded Steel Pipe – ASTM A135

.2 All thickness for pressures up to 2070 kPa (300 psi) shall be as follows:

.1 Joined by shop welding or roll grooving:

.1 Up to and incl. 125mm (5") – Schedule 10

.2 150mm (6") – 3.40mm (0.134)

.3 200mm, 250mm (8", 10") – 4.78mm (0.188")

.2 Joined by threaded fittings or cut grooves:

.1 Up to 200mm (8") – Schedule 40

.2 200mm (8") and larger – Schedule 30

.2 Fittings and joints to ANSI/NFPA 13:

.1 Ferrous: screwed, welded, flanged or roll grooved.

.2 Copper tube: screwed, soldered, brazed. Not permitted in any inmate areas.

.3 System piping 50mm (2") and smaller shall be Schedule 40 and threaded joints, or Schedule 10 lightwall with grooved joints, material and IPS dimensions conforming to NFPA 13. Larger sizes shall be Schedule 10 and joined by welding or groove joining methods in accordance with NFPA 13.

.4 All grooved products shall be of one manufacturer. All grooved end fittings shall be of "full flow" design and manufactured from ductile iron conforming to ASTM A-536. Grooved coupling shall be designed with angle bolt pads to provide a rigid joint except where flexibility is required. "Flush cap" or "flush seal" gaskets shall be used with couplings in dry pipe systems.

.5 Cast iron floor and ceiling plates with set screws shall be provided whenever pipe passes through walls, floors and partitions. In finished areas, plates shall be chrome plated.

.6. CPVC piping is not acceptable for this project.

.3 Valves:

.1 ULC listed for fire protection service.

.2 Up to NPS 2: bronze, screwed ends, O. S. & Y. gate.

.3 NPS 2 1/2 and over: cast iron, flanged or roll grooved ends, indicating butterfly valve; OS & Y gate.

.4 Swing check valves.

.5 Ball drip.

.6 All water supply and zone isolation valves shall be monitored with tamper switches. Electric wiring for control and alarm components will be provided Under Division 16.

.7 Valves controlling water supply and alarm shut-off shall be of O. S. & Y. type with rising stem or approved gear operated butterfly valves with supervisory switch. Where a grooved piping system is installed, grooved end isolation/control valves may be used. Valves shall be supervised by a factory installed double throw/double pole switch.

.8 All O. S. & Y. gate vales shall be monitored with tamper switches. Electric wiring for control and alarm components shall be provided under Division 26.

.4 Pipe hangers:

.1 ULC listed for fire protection services.

.2 Hanger standards shall conform to Section 3-10 of NFPA 13. Use "C" clamps complete with lock nuts and restraining straps. Hangers shall be supplied and installed in accordance with NFPA 13. C-type clamps used to attach hangers to the building structure shall be equipped with lock nuts and retaining straps.

.3 Sway bracing shall be installed as per Section 3-5.3.5 of NFPA 13.

2.2 Supervisory Switches

.1 General: to ANSI/NFPA 13 and ULC listed for fire service.

.2 Valves:

.1 Mechanically attached to valve body, with normally open and normally closed contacts and supervisory capability.

.3 Pressure or flow switch type:

.1 With normally open and normally closed contacts and supervisory capability.

.2 Provide switch with circuit opener or closer for automatic transmittal of alarm over facility fire alarm system.

.3 Connect into building fire alarm system.

.4 Connection of switch: Section 28 31 00 – Fire Alarm.

2.3 Flow Switches

.1 Provide alarm indication for each system or zone indicated. Flow switches shall be vane type with retard for pipes 50mm [2"] or larger; without retard for smaller pipe sizes.

.2 All zones shall have a flow switch, an isolation valve and an integral test and drain.

2.3 Signs

.1 Attach properly lettered and approved metal signs to each valve and alarm device to ANSI/NFPA 13.

PART 3 EXECUTION

3.1 Manufacturer's Instruction

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 Above Ground Piping Systems

.1 Provide fittings for changes in direction of piping and for connections.

.1 Make changes in piping sizes through tapered reducing pipe fittings, bushings will not be permitted.

.2 Perform welding in shop; field welding will not be permitted.

3.3 Pipe Installation

.1 Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings.

.2 Keep interior and ends of new piping and existing piping thoroughly cleaned of water and foreign matter.

.3 Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping to prevent entry of water and foreign matter.

.4 Inspect piping before placing into position.

.5 Install spare parts cabinet as indicated.

.6 Valve identification:

.1 Identify drain valve and auxiliary valves.

3.4 Field Quality Control

.1 Site Test, Inspection:

.1 Perform test to determine compliance with specified.

.3 Preliminary Tests:

.1 Hydrostatically test each system at 200 psig for a 2 hour period with no leakage or reduction in pressure.

.2 Flush piping with potable water in accordance with NFPA 13.

.3 Test alarms and other devices.

.4 Formal Tests and Inspections:

.1 Do not submit request for formal test and inspection until preliminary test and corrections are completed and approved.

.2 Submit written request for formal inspection at least 15 days prior to inspection date.

.3 Repeat required tests as directed.

.4 Correct defects and make additional tests until systems comply with contract requirements.

.5 Furnish appliances, equipment, instruments, connecting devices, and personnel for tests.

.6 Authority of Jurisdiction, will witness formal tests and approve systems before they are accepted.

3.7 Placing In Service

.1 When the entire fire protection system has been completed to the satisfaction of the Departmental Representatives and when operating and maintenance instructions have been provided, the Fire Protection Contractor shall demonstrate the complete operation and maintenance required to the operating personnel. A complete operational test conducted on the entire installation for the purpose of verification of compliance with all applicable standards and codes shall be carried out.

.2 Operating manual shall include the following:

.1 Detailed instructions for the normal maintenance of all installed equipment including operational procedures, frequency of operational checks, service instructions and trouble shooting instructions.

.2 Valve schedule for all valves including location, service type and normal position for all systems.

.3 Warranties and certificates.

.4 Manufacturer's operating and maintenance manuals.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 This section covers items common to all Electrical sections and is intended to supplement the requirements of Division 01.

.2 Reference to "Electrical Divisions" shall mean all related Electrical Sections and components including Divisions 26, 27, and 28.

.3 The word "Provide" shall mean "Supply and Install" the products and services specified. "As Indicated" means that the item(s) specified are shown on the drawings. This applies to the entire Contract.

.4 Provide materials, equipment and plant, of specified design, performance and quality; and, current models with published certified ratings for which replacement parts are readily available. Provide project management and on-site supervision to undertake administration, meet schedules, ensure timely performance, ensure coordination, establishing orderly completion and the delivery of a fully commissioned installation.

.5 The most stringent requirements of this, other electrical Sections and Division 01 shall govern.

.6 All work shall be in accordance with the Project Drawings and Specifications and their intents, complete with all necessary components, including those not normally shown or specified, but required for a complete installation.

.7 Connect to equipment specified in other Sections and to equipment supplied and installed by other Contractors or by the Owner. Uncrate equipment, move in place and install complete; start-up, test and commission. Include all field assembly of loosely/separately packaged accessories.

.8 Obtain and pay for an electrical permit. Provide electronic copy to Departmental Representative.

1.02 REFERENCES

.1 Canadian Standards Association (CSA International)
  .1 CSA C22.1-2012 Canadian Electrical Code, Part 1

1.03 DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals: in accordance with Section 01 01 50 – General Instructions.

.2 Shop drawings:
  .1 Submit drawings as specified in other Sections.

.3 Quality Control:
  .1 Provide CSA certified equipment and material.
  .2 Where CSA certified equipment and material is not available, submit such equipment and material to authority having jurisdiction for special approval before delivery to site.
  .3 Submit test results of installed electrical systems and instrumentation.
  .4 Permits and fees: in accordance with General Conditions of contract.
  .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.

1.05 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 01 50 – General Instructions.

.2 Qualifications: electrical Work to be carried out by qualified, licensed electricians or apprentices.

.3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

1.06 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates and labels for control items in English.

2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

.1 Provide material and equipment in accordance with Section 01 01 50 – General Instructions.

.2 Material and equipment to be CSA certified. Where CSA certified material and equipment is not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

2.02 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.03 EQUIPMENT IDENTIFICATION

.1 Identify equipment with lamicoid nameplates.

2. Wording on nameplates to be approved by Departmental Representative prior to manufacture.

2.04 WIRING IDENTIFICATION

.1 Identify cabling with permanent indelible identifying labels.

3 EXECUTION

3.01 INSTALLATION

.1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

3.02 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.03 CONDUIT AND CABLE INSTALLATION

.1 Install conduit and sleeves prior to pouring of concrete.
- .1 Sleeves through concrete: plastic, sized for free passage of conduit, and protruding 50 mm.

3.04 FIELD QUALITY CONTROL

.1 Conduct following tests in accordance with Section 01 01 50 – General Instructions and commissioning specifications.
- .1 Fire Alarm Systems
- .2 UPS system
- .3 Control systems
- .4 Fibre optic cables

.2 Carry out tests in presence of Departmental Representative.

.3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.05 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

1 GENERAL

1.01 PRODUCT DATA

.1 Provide product data in accordance with Section 01 01 50.

2 PRODUCTS

2.01 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE. .

2.02 TECK 90 CABLE

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Conductors:
- .1 Grounding conductor: copper.
- .2 Circuit conductors: copper.

.3 Insulation:
- .1 [Cross-linked polyethylene XLPE].
- .2 Rating: 600V.

.4 Inner jacket: [polyvinyl chloride] material.

.5 Armour: interlocking, aluminum.

.6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project.

.7 Fastenings:
- .1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.
- .2 Channel type supports for two or more cables
- .3 Threaded rods: 6 mm diameter to support suspended channels.

.8 Connectors:
- .1 Approved for TECK cable.

2.04 ARMOURED CABLES

.1 Conductors: insulated, copper.

.2 Type: AC90.

.3 Armour: interlocking type fabricated from aluminum.

.4 Connectors: anti short connectors.

3 EXECUTION

3.01 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Perform tests before energizing electrical system.

3.02 GENERAL CABLE INSTALLATION

.1 Cable Colour Coding: to Section 26 05 00 Common Work Results for Electrical.

.2 Conductor length for parallel feeders to be identical.

.3 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.

.4 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.

.5 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

3.03 INSTALLATION OF BUILDING WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

3.04 INSTALLATION OF TECK90 CABLE (0 -1000 V)

.1 Group cables wherever possible on channels.

.2 Install cable exposed, securely supported by straps.

3.06 INSTALLATION OF ARMOURED CABLES

.1 Group cables wherever possible on channels.

.2 Install cable concealed, securely supported by straps.

END OF SECTION

1 GENERAL

1.01 REFERENCES

.1 Canadian Standards Association (CSA International)
  .1 CSA C22.1-12, Canadian Electrical Code, Part 1, 22nd Edition.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 01 50.

.2 Product Data:
  .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Provide shop drawings: in accordance with Section Section 01 01 50.

2 PRODUCTS

2.02 JUNCTION AND PULL BOXES

.1 Construction:welded steel enclosure.

.2 Covers Flush Mounted: 25 mm minimum extension all around.

.3 Covers Surface Mounted: screw-on turned edge covers.

2.03 CABINETS

.1 Construction: welded sheet steel, hinged door, padlock hasp, latch.

3 EXECUTION

3.02 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Mount cabinets with top not higher than 2 m above finished floor except where indicated otherwise.

.4 Junction and pull boxes are typically not indicated on the drawings. Install boxes as required by CSA C22.1.

3.03 IDENTIFICATION

.1 Equipment Identification: to Section 26 05 00- Common Work Results for Electrical.

.2 Identification Labels: Departmental Representative will provide wording for labels.

.3 Where junction and pull boxes are used for fire alarm wiring, apply a lamicoid label "FIRE ALARM" (black with white letters) on the outside cover of the box. This requirement applies to all new boxes and to any existing box where the cover is removed. This requirement does not apply to boxes for notification appliances, pull stations, detectors or any box housing fire alarm equipment. There is no requirement to paint anything other than the fire alarm breaker red.

END OF SECTION

1 GENERAL

1.01 REFERENCES

.1 Canadian Standards Association (CSA International)
- .1 CAN/CSA C22.2 No. 18.1-13, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
- .2 CSA C22.2 No. 45-M1981(R2008), Rigid Metal Conduit.
- .3 CSA C22.2 No. 56-13, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
- .4 CSA C22.2 No. 83-M1985(R2013), Electrical Metallic Tubing.
- .5 CSA C22.2 No. 211.2-06 (R2011), Rigid PVC (Unplasticized) Conduit.

2 PRODUCTS

2.01 CABLES AND REELS

.1 Provide cables on reels or coils.
- .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.

.2 Each coil or reel of cable to contain only one continuous cable without splices.

.3 Identify cables for exclusively dc applications.

.4 Reel and mark shielded cables rated 2,001 volts and above.

2.02 CONDUITS

.1 Rigid metal conduit: to CSA C22.2 No. 45, hot dipped galvanized steel, threaded.

.2 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.

.3 Rigid pvc conduit: to CSA C22.2 No. 211.2.

.4 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal.

2.03 CONDUIT FASTENINGS

.1 Two hole steel straps to secure surface conduits.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits.

.4 Threaded rods, 6 mm diameter, to support suspended channels.

2.04 CONDUIT FITTINGS

.1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.

.2 Ensure factory "ells" where 90 degrees bends for 27 mm and larger conduits.

.3 Steel EMT fittings.

2.06 FISH CORD

.1 Polypropylene.

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in

.1 mechanical and electrical service rooms

.2 unfinished spaces such as bare concrete walls

.3 Use rigid hot dipped galvanized steel threaded conduit where conduits exposed to mechanical damage from vehicles, hazardous installations and similar situations.

.4 Use electrical metallic tubing (EMT) except in cast concrete.

.5 Install conduit sealing fittings in hazardous areas.

.1 Fill with compound.

.6 Minimum conduit size 21 mm.

.7 Bend conduit cold:
.1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.8 Mechanically bend steel conduit over 19 mm diameter.

.9 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.10 Install fish cord in empty conduits.

.11 Remove and replace blocked conduit sections.
.1 Do not use liquids to clean out conduits.

.12 Dry conduits out before installing wire.

3.03 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.

.3 Run conduits in flanged portion of structural steel.

.4 Group conduits wherever possible on surface channels.

.5 Do not pass conduits through structural members except as indicated.

.6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.04 CONCEALED CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Do not install horizontal runs in masonry walls.

.3 Do not install conduits in terrazzo or concrete toppings.

3.05 CONDUITS IN CAST-IN-PLACE CONCRETE

.1 Locate to suit reinforcing steel.
.1 Install in centre one third of slab.

.2 Protect conduits from damage where they stub out of concrete.

.3 Install sleeves where conduits pass through slab or wall.

.4 Provide oversized sleeve for conduits passing through waterproof membrane, before membrane is installed.
.1 Use cold mastic between sleeve and conduit.

.5 Conduits in slabs: minimum slab thickness 4 times conduit diameter.

.6 Encase conduits completely in concrete with minimum 25 mm concrete cover.

.7 Organize conduits in slab to minimize cross-overs.

3.06 CONDUITS IN CAST-IN-PLACE SLABS ON GRADE

.1 Run conduits 27 mm and larger below slab and encase in 75 mm concrete envelope.
.1 Provide 50 mm of sand over concrete envelope below floor slab.

3.07 CONDUITS UNDERGROUND

.1 Slope conduits to provide drainage.

.2 Waterproof joints (pvc excepted) with heavy coat of bituminous paint.

3.08 CLEANING

.1 Proceed in accordance with Section 01 01 50.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1 GENERAL

1.01 REFERENCES

.1 Underwriter's Laboratories of Canada (ULC)
  .1 CAN/ULC-S524-06, Standard for the Installation of Fire Alarm Systems.
  .2 CAN/ULC-S526-07, Visible Signal Devices for Fire Alarm Systems, Including Accessories.
  .3 CAN/ULC-S527-99, Standard for Control Units for Fire Alarm Systems.
  .4 CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories.
  .5 CAN/ULC-S529-09, Smoke Detectors for Fire Alarm Systems.
  .6 CAN/ULC-S530-91(R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
  .7 CAN/ULC-S531-02, Standard for Smoke Alarms.
  .8 CAN/ULC-S537-13, Standard for the Verification of Fire Alarm Systems.
.2 CSA-B44 – Safety Code for Elevators and Escalators.
.3 CSA C22.1- 2015 Canadian Electrical Code.
.4 National Building Code of Canada 2015.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 01 50.

.2 Product Data:
  .1 Submit manufacturer's instructions, printed product literature and data sheets for fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
  .1 Indicate on shop drawings:
    .1 Detail assembly and internal wiring diagrams for control units.
    .2 Overall system network riser showing fibre optic configurations at each building and in each control panel.
    .3 Details for devices.
    .4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
    .5 Step-by-step operating sequence, cross referenced to logic flow diagram.

1.03 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 01 50.

.2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manuals.

.3 Include:
- .1 Instructions for complete fire alarm system to permit effective operation and maintenance.
- .2 Technical data - illustrated parts lists with parts catalogue numbers.
- .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
- .4 List of recommended spare parts for system.

1.04 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section [01 01 50 and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
- .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.

1.05 SOURCE OF SUPPLY

.1 Fire alarm system shall be supplied from a single manufacturer, unless indicated otherwise.

2 PRODUCTS

2.01 DESCRIPTION

.1 Fully supervised, microprocessor-based, addressable, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission.

.2 System to carry out fire alarm and protection functions; including receiving alarm signals; initiating general and two-stage alarms; supervising components and

wiring; actuating annunciators and auxiliary functions; initiating trouble signals and capability of signalling to fire department.

.3 Zoned, single stage and two stage.

.4 Modular in design to allow for future expansion.

.5 Operation of system shall not require personnel with special computer skills.

.6 System to include:
- .1 Networked Central Control Units in separate enclosure with power supply, stand-by batteries, central processor with microprocessor and logic interface, main system memory, input-output interfaces for alarm receiving, annunciation/display, and program control/signalling.
- .2 Power supplies.
- .3 Initiating/input circuits.
- .4 Output circuits.
- .5 Auxiliary circuits.
- .6 Wiring.
- .7 Manual and automatic initiating devices.
- .8 Audible and visual signalling devices.
- .9 End-of-line resistors where required.
- .10 Local and Remote annunciators.
- .11 Historic event recorder.

.7 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

.8 Power supply: to CAN/ULC-S524.

.9 Audible signal devices: to CAN/ULC-S524.

.10 Visual signal devices: to CAN/ULC-S526.

.11 Control unit: to CAN/ULC-S527.

.12 Manual pull stations: to CAN/ULC-S528.

.13 Thermal detectors: to CAN/ULC-S530.

.14 Smoke detectors: to CAN/ULC-S529.

.15 Regulatory Requirements:
- .1 Subject to Correctional Service Canada Fire Authority (CSCFA) approval.
- .2 Subject to CSCFA inspection for final acceptance.
- .3 System components: listed by ULC and comply with applicable provisions

of NBCC.

.16 Each fire alarm system within a building shall be capable of operating as either a single or two-stage system.

.17 Each fire alarm system within a building shall operate independently and also transmit information to the fire alarm netwrk. Upon failure of the data communication link to the fire alarm network, the fire alarm system within the building shall remain operational and a trouble signal will be imitated on the fire alarm network and be annunciated at the Main System Annunciator and the Network Annunciator Workstation.

2.02 SYSTEM OPERATION: SINGLE STAGE - SIGNALS ONLY

.1 Actuation of any alarm initiating device to:
- .1 Cause electronic latch to lock-in alarm state at building central control unit.
- .2 Indicate zone of alarm at building central control unit, building annunciator, main system annunciator in building 104 and at network annunciator workstation in building 107.
- .3 Cause audible/visual signalling devices to sound and flash in temporal pattern 3 continuously throughout building and at the building central control unit.
- .4 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.
- .5 Cause fire doors and smoke control doors, if normally held open, to close automatically.

.2 Acknowledging alarm: indicated at building central control unit.

.3 Ensure that it is possible to silence signals by "alarm silence" switch at building control unit, after 60 seconds period of operation.

.4 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.

.5 Actuation of supervisory devices to:
- .1 Cause electronic latch to lock-in supervisory state at building central control unit and data gathering panel/transponder.
- .2 Indicate respective supervisory zone at building central control unit, building annunciators, main system annunciator in building 104 and at network annunciator workstation in building 107.
- .3 Cause audible signal at building central control unit to sound.
- .4 Activate common supervisory sequence.

.6 Resetting alarm or supervisory device not to return system indications/functions

back to normal until control unit has been reset.

.7 Trouble on system to:
.1 Indicate circuit in trouble at building central control unit, building annunciators, main system annunciator in building 104 and at network annunciator workstation in building 107.
.2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; whereas visual indication to remain until trouble is cleared and system is back to normal.

.8 Trouble on system: suppressed during course of alarm.

.9 Trouble condition on any circuit in system not to initiate alarm conditions.

.10 Provide the capability to connect to the fire department upon activation of alarms via the central control unit in building 106.

.11 Configure system so that no audible alerts for any alarm, trouble or supervisory condition occurs at the network annunciator workstation in building 107. Provide the capability to enable the audible alerts.

.12 Actuation of any smoke detector in Private Family Visit Units 1 and 2, or any smoke detector other than in the mechanical room in the Neighbourhood Living Units, to activate the sounder bases in the smoke detectors for the Private Family Visit Unit and in the applicable half of the Neighbourhood Living Unit, and activate a trouble signal. The system shall be automatically reset after the smoke is no longer detected. If the alarm lasts longer than 2 minutes, a general alarm is initiated. All other devices within the buildings operate in accordance with the standard fire alarm sequence of operation. This special sequence is intended to be for smoke detectors installed in lieu of smoke alarms.

2.03 SYSTEM OPERATION: TWO STAGE - SIGNALS ONLY

.1 Actuation of any alarm initiating device on first stage to:
.1 Cause electronic latch to lock-in alarm state at building central control unit.
.2 Indicate zone of alarm at building central control unit, building annunciator, main system annunciator in building 104 and at network annunciator workstation in building 107.
.3 Cause audible/visual devices throughout building to sound and flash at 20 strokes per minute.
.4 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.

.2 Actuation of any alarm initiating device on second stage to:
.1 Cause audible/visual signalling devices to sound and flash in temporal

pattern 3 throughout building.

.3 If first stage alarm is not acknowledged within 5 minutes, ensure system automatically goes into second stage.

.4 Acknowledging alarm: indicated at building central control unit.

.5 Ensure that it is possible to silence signals by "alarm silence" switch at building central control unit, after 60 seconds period of operation.

.6 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.

.7 Actuation of any supervisory device to:
- .1 Cause electronic latch to lock-in supervisory state at building central control unit, building annunciator, main system annunciator in building 104 and at network annunciator workstation in building 107.
- .2 Indicate respective supervisory zone at building central control unit, building annunciator, main system annunciator in building 104 and at network annunciator workstation in building 107.
- .3 Cause audible signal at building central control unit to sound.
- .4 Activate common supervisory sequence.

.8 Resetting alarm or supervisory device not to return system indications/functions back to normal until control unit is reset.

.9 Trouble on system to:
- .1 Indicate circuit in trouble at building central control unit, building annunciator, main system annunciator in building 104 and at network annunciator workstation in building 107.
- .2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; visual indication to remain until trouble is cleared and system is back to normal.

.10 Troubles on system: suppressed during course of alarm.

.11 Trouble condition on any circuit in system not to initiate alarm conditions.

.12 Provide the capability to connect to the fire department upon activation of alarms via the central control unit in building 106.

.13 No audible alerts for any alarm, trouble or supervisory condition to occur at the network annunciator workstation in building 107.

.14 Two stage system for building 109, all others single stage.

2.04 CONTROL PANEL

.1 Central control unit (CCU).
- .1 Suitable for DCLA, DCLB and DCLC communication style: to CAN/ULC-S524.
- .2 Features specified are minimum requirements for microprocessor-based system with digital data control and digital multiplexing techniques for data transmission.
- .3 Minimum capacity of 2000 addressable monitoring and 500 addressable control/signal points.
- .4 System to provide for priority reporting levels, with fire alarm points assigned highest priority, supervisory and monitoring lower priority, and third priority for troubles. Possible to assign control priorities to control points in system to guarantee operation or allow emergency override as required.
- .5 Integral power supply, battery charger and standby batteries.
- .6 Basic life safety software: retained in non volatile Erasable Programmable Read-Only-Memory (EPROM). Extra memory chips: easily field-installed. Random-Access-Memory (RAM) chips in panel to facilitate password-protected field editing of simple software functions (i.e. zone labels, priorities) and changing of system operation software.
- .7 Circuitry to continuously monitor communications and data processing cycles of microprocessor. Upon failure, audible and visual trouble indication to activate.
- .8 Communication between CCU and remote CCUs to be supervised, DCLB or DCLA as indicated. Should communications fail between CCU and remote units, audible and visual trouble to be indicated at CCU. Data communication to be binary DC, baseband, time-division multiplex, half-duplex. Each data channel: capable of communicating up to distance of 3,000 m.
  - .1 Communication between nodes in networked system to be supervised, DCLB or DCLA as indicated. Should communications fail between any 2 nodes, other nodes on loop to continue to communicate with each other and programmed functions on communicating nodes to continue operating.
- .9 Equipped with software routines to provide Event-Initiated-Programs (EIP); change is status of one or more monitor points, may be programmed to operate any or all of system's control points.
- .10 Software and hardware to maintain time of day, day of week, day of month, month and year.
- .12 Software to operate variable sensitivity addressable smoke detectors and annunciate their status and sensitivity settings at control panel.
- .13 All control panels to be lockable, keyed alike.
- .14 All control panels to be the same model, including the hub node.

.15 Each control panel shall be sized to accommodate all present devices plus an additional 50% future devices.

.16 Overall system shall be capable of adding at least 15 additional control panels.

2.05 POWER SUPPLIES

.1 120 V, 60 Hz as primary source of power for system.

.2 Voltage regulated, current limited distributed system power.

.3 Primary power failure or power loss (less than 102 V) will activate common trouble sequence.

.4 Interface with battery charger and battery to provide uninterruptible transfer of power to standby source during primary power failure or loss.

.5 During normal operating conditions fault in battery charging circuit, short or open in battery leads to activate common trouble sequence and standby power trouble indicator.

.6 Standby batteries: sealed, maintenance free.

.7 Continuous supervision of wiring for external initiating and alarm circuits to be maintained during power failure.

.8 Provide batteries for all fire alarm panels.

2.06 INITIATING/INPUT CIRCUITS

.1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors and water flow switches, wired in DCLB configuration to central control unit.

.2 Alarm receiving circuits (active and spare): compatible with smoke detectors and open contact devices.

.3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".

.4 Receiving circuits for supervisory, N/O devices. Devices: wired in DCLB configuration to central control unit.

.5 Actuation of supervisory initiating device: cause system to operate as specified in

"System Operation".

2.07 ALARM OUTPUT CIRCUITS

.1 Alarm output circuit: connected to signals, wired in class B configuration to central control unit.
- .1 Signal circuits' operation to follow system programming; capable of sounding audible/visual devices at 20 spm and in temporal code 3. Each signal circuit: rated at 2 A, 24 VDC; fuse-protected from overloading/overcurrent.
- .2 Manual alarm silence, automatic alarm silence and alarm silence inhibit to be provided by system's common control.

2.08 AUXILIARY CIRCUITS

.1 Auxiliary contacts for control functions.

.2 Alarm and or supervisory trouble on system to cause operation of programmed auxiliary output circuits.

.3 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.

.4 Fans: stagger-started upon system reset; timing circuit to separate starting of each fan or set of fans connected to auxiliary contact on system.
- .1 Timing circuit: controlled by CCU.

.5 Auxiliary circuits: rated at 2 A, 24 Vdc or 120 Vac, fuse-protected.

2.9 WIRING

.1 Twisted copper conductors, rated 300 V. Listed by CSA and ULC as suitable for fire alarm duty. Red pvc jacket.

.2 Twisted copper conductors, rated 300 V. Listed by CSA and ULC as suitable for fire alarm duty. Red pvc jacket. Red-tinted aluminum interlocked armour.

.3 Minimum size copper conductors 16 gauge.

.3 Fibre optic cable:
- .1 Suitable for outdoor buried conduit use and suitable to be pulled into buried conduits.
- .2 Indoor/outdoor rated
- .3 50 micron, 6-strand, multi-mode, OM-3, all dielectric, plenum rated, gel free, uv resistant, water-blocking.
- .4 Patch cable to connect to fire alarm panels from fibre termination enclosure, 50 micron, OM-3.

2.10 FIBRE OPTIC TERMINATION

.1 Wall-mounted steel enclosure with modular bulkhead fibre termination modules, bend radius spools, fibre routing kit.

.2 Size enclosure to match number of terminated fibres. Terminate all fibres in each cable.

.3 Connect fibres to bulkhead fittings.

.4 Match fire alarm system fibre connectors, LC duplex preferred.

.5 Provide locks on enclosures, all keyed alike.

2.11 MANUAL ALARM STATIONS

.1 Addressable manual pull station.

.1 Pull lever, surface or semi-flush wall-mounted type, single or 2 stage, electronics to communicate station's status to addressable module/transponder over 2 wires and to supply power to station. Bilingual English & French signage. Station address to be set on station in field.

2.12 AUTOMATIC ALARM INITIATING DEVICES

.1 Addressable thermal fire detectors, combination fixed temperature and rate of rise, non-restorable fixed temperature element, self-restoring rate of rise, fixed temperature 57 degrees C normal, 88 degrees C high temp, rate of rise 8.3 degrees C per minute.

.1 Electronics to communicate detector's status to addressable control unit.
.2 Detector address to be set on detector base in field.
.3 Built-in LED.

.2 Addressable variable-sensitivity smoke detectors.

.1 Photo-electric type.
.2 Electronics to communicate detector's status to addressable control unit.
.3 Detector address to be set on detector base in field.
.4 Sensitivity settings: 7 settings, determined and operated by control panel. No shifting in detector sensitivity due to atmospheric conditions (dust, dirt) within certain parameters.
.5 Ability to annunciate minimum of 2 levels of detector contamination automatically with trouble condition at control panel.
.6 Built-in LED.

.3 Smoke detector: addressable photo-electric type air duct type with sampling tubes with protective housing.

.1 Same specification as smoke detector
.2 Twistlock Plug-in type.
.3 Wire-in base assembly with integral red alarm LED, and terminals for remote relay.

.4 Addressable combination smoke detector and carbon monoxide detector,
.1 Same specification as smoke detector
.2 Base contains carbon monoxide sensing module.
.3 Set to multi-sensor mode to detect smoke and carbon monoxide, and reduce false alarms from shower vapour.
.4 Distinct audible temporal notification for carbon monoxide detection from sounder base. Carbon monoxide detection to be annunciated on fire alarm network creating alarms in building 104 (main system annunciator – audible alert) and building 107 (network annunciator workstation – no audible alert).
.5 Electronics to communicate detector's status to addressable control unit.

.5 Locking device to lock detector to base, requiring a special tool to unlock.

.6 Sounder bases for smoke detectors in the Private Family Visit Units and in the Neighbourhood Living Units (except for the mechanical room). Refer to the sequence of operation specification, Section 2.02.12.

2.13 AUDIBLE/VISUAL ALARM SIGNAL DEVICES

.1 Multi-candela, xenon strobe, synchronized, 520 Hz.

.2 Designed for surface mounting on walls.

.3 Red cover with "FIRE" identification.

.4 Selectable horn output level.

.5 Temporal pattern 3 for most applications.

.6 20 spm (alert) + temporal 3 (alarm) for building 109 2-stage system.

.7 Visual-only device where indicated in a few specific locations.

.8 Signal devices shall have independent operation of the visual and audible outputs of the device when using a two-wire circuit. All existing wiring is two-wire.

2.14 CONTACT MONITORING INPUT MODULES

.1 Module to monitor sprinkler tamper switches, sprinkler flow switches and other contacts.

.2 End of line resistor for supervision.

.3 Addressable module.

.4 Individual annunciation for each sprinkler flow switch.

.5 Sprinkler tamper switch annunciation may be grouped together if located in the same room, except provide separate annunciation for building 110, fire pump valves and reservoir fill valves.

2.15 REMOTE ANNUNCIATORS

.1 LED type, indicating zones.

.2 Display:
- .1 Alarms and troubles for alarm initiating circuits.
- .2 Supervisory alarms and troubles, common supervisory alarm for supervisory initiating circuits.
- .3 Common system trouble.

.3 Trouble buzzer:
- .1 Acknowledging trouble at main panel to silence trouble buzzers in system.

.4 Supervised, with LED test button and alarm & trouble acknowledge button.

.5 Annunciator in building 104 set up for full annunciation of all alarms, troubles and supervisory events for the entire site, with large LCD text display, scrolling, and alarm & trouble acknowledge feature. Mount annunciator within existing console.

.6 Outdoor annunciators:

- .1 Enclosure
  - .1 Custom fabricated to suit specific annunciator electronics.
  - .2 ULC certified, weatherproof enclosure.
  - .3 Drip guard to minimize rain on lexan window.
  - .4 Aluminum enclosure, powder coated finish.
  - .5 Weather gasket.
  - .6 Keyed alike to match fire alarm panels.
- .2 LED type with no controls or buzzer. Clear indication of zone names.

2.16 NETWORK ANNUNCIATOR WORKSTATION

.1 ULC approved computer workstation, specifically manufactured for control, annunciation and maintenance of the manufacturer's fire alarm system.

.2 Colour LCD display, approximately 500mm size.

.3 120v UPS battery backup – 1 hour backup time.
.4 Desktop mounted.
.5 Capable of graphic display of floor plans of buildings with individual fire alarm devices.
.6 Connect as a node on the fire alarm network.
.7 Multiple password hierarchy.
.8 USB ports and capability of using a printer.
.9 Do not connect the workstation to the corporation LAN.
.10 Configure the workstation as a maintenance station to enable staff to monitor the condition of the fire alarm system and make maintenance adjustments as required.
.11 Do not configure the workstation as a safety monitoring station. Although all alarms, troubles and events are to be displayed, there should not be any audible annunciation. The workstation will not be monitored by staff at all times.

2.17 ANCILLARY DEVICES

.1 Remote relay unit to initiate fan shutdown.

.18 FREEZER/COOLER DEVICES

.1 Suitable for low temperature, below 0 deg C operation in a freezer.

.2 Non sub-zero degree-rated electronics not permitted within freezers or coolers.

.3 Low-profile devices.

2.19 ISOLATORS

.1 Provide isolators where Class A wiring used and wiring extends beyond a fire alarm zone.

3 EXECUTION

3.01 INSTALLATION

.1 Install systems in accordance with CAN/ULC-S524.

.2 Install central control unit and connect to ac power supply.

.3 Install manual alarm stations and connect to alarm circuit wiring.

.4 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 450mm from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors. Locate duct type detectors in straight portions of ducts.

.5 Connect alarm circuits to main control panel.

.6 Install audible/visual signal devices and connect to signalling circuits. Synchronize audible/visual devices.

.7 Connect signalling circuits to main control panel.

.8 Install end-of-line devices as required.

.9 Install remote annunciator panels and connect to annunciator circuit wiring.

.10 Install door releasing devices.

.11 Install remote relay units to control fan shut down.

.12 Sprinkler system: wire alarm and supervisory switches and connect to control panel.

.13 Splices are not permitted for lengths of new wiring.

.14 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.

.15 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.

.16 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

.17 Engage locking device to prevent inmates from removing detector from the base in the living units.

.18 Provide loss calculations to ensure entire fibre optic network is within limits as recommended by the fire alarm system manufacturer.

.19 Test all fibre optic cables with OTDR. Provide electronic record of test results compared to industry-standard expected test results for OM-3 cables. Test the fibre optic cable plant in accordance with FOA (Fiber Optic Association) Standard FOA-4: OTDR Testing of Fiber Optic Cable Plant

.20 Install all cables in conduit unless indicated otherwise.

.21 Install red un-armoured fire alarm cables in conduit.

.22 Install red armoured fire alarm cables in combustible buildings, where indicated.

.23 Lock detectors to bases. Provide 3 special locking tools.

.24 Ground/bond all new signaling and initiating circuits.

3.02 SEQUENCE OF CONSTRUCTION

.1 The facility is a minimum-security institution housing inmates. Continuity of fire alarm protection of the inmates and staff is essential.

.2 The most critical buildings are the living units.

.3 Minimize down time of the fire alarm systems.

.4 For Sequence of Construction purposes, buildings will be classified as

.1 Type 1 - Living units (20 buildings)

.2 Type 2 – Large Buildings (bldgs 104, 106, 109, 103, 101, 105)

.3 Type 3 – all other buildings

.5 There are restrictions on the number and types of buildings that may be worked on simultaneously.

.1 At any point in time, work may be done on one Type 1 building.
.2 At any point in time, work may be done on one Type 2 building, or on a maximum of three Type 3 buildings, where all the Type 3 buildings are physically clustered together.
.3 Where work is being done on any type of building, all work must be tested and verified before work on subsequent buildings may commence.
.4 Work on (a) Type 1 buildings and (b) Type 2 or Type 3 buildings must be performed by independent crews.
.5 The two Family Visit Units (PFVU) will be used as sleeping accommodation and must have a working fire alarm system when occupied. Coordinate schedule with the Departmental Representative.
.6 Building 109 is not currently used as a Detention Occupancy.

.6 Notes for Type 1 Buildings:
.1 One of the living units will be available as swing space, leaving one living unit empty of occupants.
.2 Complete all work at each living unit within a total of 7 calendar days (one week). Provide two independent crews to work on (a) the mechanical room reconfiguration and (b) the rest of the building where required to meet the schedule.
.3 Fire watch for the buildings will be performed by others during non-working hours.

.4 The first living unit shall be used as a test to establish the layout, schedule and sequence of work. Extra construction time is permitted beyond one week. Provide sketches of the proposed layout in the mechanical room. Meet with the Departmental Representative on-site to go over the proposed changes prior to the commencement of any work.

.5 Provide video recording of interior of living units prior to commencement of work. Provide copy to Departmental representative.

.6 A high-voltage upgrade project will occur roughly at the same time as this Contract. There will be periods of time with no power while temporary power is being set up and the main transformers are replaced, for each of the five neighbourhoods (four living units plus one neighbourhood bldg per neighbourhood). Coordinate work with the high voltage contractor – ensure fire alarm work and high voltage work is not being done simultaneously on the living units or neighbourhood buildings.

.7 Notes for Type 2 and 3 Buildings:

.1 Complete all work at each Type 2 building or Type 3 cluster (up to three buildings) within a total of 7 calendar days (one week).

.2 Fire watch for the buildings will be performed by others during non-working hours.

.3 A high-voltage upgrade project will occur roughly at the same time as this Contract. There will be periods of time with no power while temporary power is being set up and the main transformers are replaced for specific areas in the facility. Coordinate work with the high voltage contractor.

.4 Buildings will be occupied during construction.

.8 The maximum time without a network connection linking a building to the existing or new main system annunciator within building 104 is 24 hours, not including the time permitted for the building to be without full protection.

.9 Install main site network annunciator in building 104 installed adjacent to the existing main site annunciator in building 104. Connect main site network annunciator in building 104 to network node fire alarm panel in building 103.

.10 After completion of a building, connect to new network and ensure new building is annunciated on the site annunciator within building 104.

.11 Immediately after installation, verify fire alarm installation for the building and verify communication on the network, all in accordance with CAN/ULC-S537.

.12 At the end of the complete installation, re-verify the entire communications network.

.13 Provide a detailed overall schedule including planned shutdown times. Update schedule at least every two weeks.

.14 Provide a detailed Sequence of Construction document for each building clearly indicating the sequential steps to be followed and shutdown times.

3.03 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and CAN/ULC-S537. Coordinate with tests and inspections by Commissioning Agent specified in Section 01 91 13 Commissioning. Provide verification reports.

.2 Fire alarm system:

- .1 Test such device and alarm circuit to ensure manual stations, heat detectors, smoke detectors and sprinkler system transmit alarm to control panel and actuate first stage alarm or general alarm and ancillary devices.
- .2 Check annunciator panels to ensure zones and devices are shown correctly.
- .3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.
- .4 Addressable circuits system style DCLA:
  - .1 Test each conductor on all DCLA addressable links for capability of providing 3 or more subsequent alarm signals on each side of single open-circuit fault condition imposed near midmost point of each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
  - .2 Test each conductor on all DCLA addressable links for capability of providing 3 or more subsequent alarm signals during ground-fault condition imposed near midmost point of each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
- .5 Addressable circuits system style DCLB:
  - .1 Test each conductor on all DCLB addressable links for capability of providing 3 or more subsequent alarm signals on line side of single open-circuit fault condition imposed near electrically most remote device on each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
  - .2 Test each conductor on all DCLB addressable links for capability of providing 3 or more subsequent alarm signals during ground-fault condition imposed near electrically most remote device on each

link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.

.3 Provide interim partial verifications to suit the progress of the work and any staged occupancy. All new work to be tested and verified directly following the installation.

.4 Submit all verification reports to the Departmental Representative. Provide unconditional written test reports from the equipment manufacturer showing that the entire system has been tested, verified and commissioned in accordance with the latest edition of ULC S-537 "Standard for Verification of Fire Alarm System Installations" and that the Fire Alarm system complies with all points of the specifications. Include the verification worksheets identifying every device and its status (i.e. smoke detector - room xx, verified for operation and supervision).

.5 The qualified Fire Alarm verification agency shall be independent of the installing company.

.6 Prior to requesting the final performance verification ensure that fire alarm system is fully operable and that subsequent work to be performed on system will not invalidate examinations and tests performed during verification procedure.

.7 The Electrical Division Contractor and fire alarm system manufacturer's representative shall be present at all times during the verification procedure and shall undertake the following:

.1 Provide all required testing equipment and tools.

.2 Disassemble and reassemble system components.

.3 Disconnect and reconnect wiring.

.4 Perform required field adjustments.

.5 Repair defective work and replace defective components.

.6 Perform all other work on the system required by verification procedure.

.7 Provide portable communication devices during entire verification.

.8 Include all costs for fire alarm system verifications, including the Fire Alarm System Manufacturer's representative's costs. Take into account that the system may have to be commissioned and verified after normal working hours.

.9 Provide a minimum of ten workings days written notice ahead of the verification process to the Departmental Representative.

3.04 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 01 50.
  .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 01 50.

.3 Waste Management: separate waste materials for reuse and recycling.
  .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  .2 Place materials defined as hazardous or toxic waste in designated containers.

3.05 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by fire alarm system installation.

3.06 CLOSEOUT ACTIVITIES

.1 Provide on-site lectures and demonstration by fire alarm equipment manufacturer to train personnel in operation and maintenance of fire alarm system at locations and times designated by the Departmental Representative.

  .1 Keep a log of personnel attending the training sessions, with name, date, training session and signature. Submit scanned copy of log to Departmental Representative.

  .2 Provide a formal training agenda for review.

.2 Provide operator training.

  .1 Provide a total of two one-hour basic training sessions.

  .2 Provide a train-the-trainer comprehensive two-hour training session.
  .3 Provide informal brief familiarization training sessions for personnel at each building as each building is verified. Sessions not required at the living units.
  .4 Provide a four-hour training session for maintenance staff for the use and basic programming of the Network Annunciator Workstation. Provide full manuals.
  .5 Provide a "cheat sheet" on a single 8-1/2" x 11" page with simplified operating instructions, in a clear vinyl sheet protector. Provide 5 paper copies and an electronic copy. Include a copy within the maintenance manual.

3. Provide Maintenance Training

.1 Provide an eight-hour maintenance training session for staff.

.1 Provide familiarization with the overall configuration of the system, including the network.

.2 Provide detailed information on all fire alarm devices such as smoke detectors, heat detectors, CO detectors, notification appliances, control panels, etc. Include instructions on adjustments and testing.

.3 Provide an overview of the control panel, accessories, operation, theory, basic troubleshooting.

.4 Provide basic troubleshooting procedures.

.5 Provide basic installation procedures.

.6 Provide three copies of a training manual for the course.

3.07 FINAL PROGRAMMING

.1 Allow for device name changes as the project progresses, typically as each building is completed and at the end of the project.

3.08 SPARE MATERIAL

.1 In addition to any other materials specified elsewhere, provide the following spare components.
- .1 3 smoke detectors
- .2 3 heat detectors
- .3 2 pull stations
- .4 2 audible/visual alarm signaling devices

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 General requirements for excavating and backfilling procedures for installation of underground duct, ductbanks and manholes.

1.2 RELATED SECTIONS

.1 Section 33 65 73 – Concrete Encased Ductbanks and Manholes

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM C117- 04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
- .2 ASTM C136- 06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422- 63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m ;).
- .5 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Standards Association (CSA International)

- .1 CAN/CSA-A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .1 CSA-A3001-08, Cementitious Materials for Use in Concrete.
- .2 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.4 Worksafe B.C. Health and Safety Act

.5 Canadian Council of the Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines

.6 BC Ministry of Environment (BC MoE), pursuant to the *Environmental Management Act* (EMA, SBC 2003 Chapter 53, current to June 22, 2011).

- .1 The Contaminated Site Regulation (CSR, BC Reg. 375/96, O.C. 1480/96 and

M271/2004, including amendments up to BC Reg. 97/2011, May 31, 2011).

.2 Hazardous Waste Regulation (HWR, BC Reg.63/88, O.C. 268/88, including amendments up to BC Reg. 63/2009, April 1, 2009), which includes standards for total concentrations of select substances as well as leachate quality standards.

.3 Standards Triggering Contaminated Soil Relocation Agreements (CSRA, Schedule 7).

.7 Transportation of Dangerous Goods Regulations.

1.4 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock: any sound or solid mass material in excess of 0.5 cubic metres, of such hardness and texture that it cannot be effectively loosened or broken down by mechanical ripping equipment with a minimum drawbar pull of 360 kN and/or by means of heavy duty excavation equipment. Frozen material is not classified as rock.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Topsoil:

.1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.

.4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

.7 Unsuitable materials:

.1 Weak, chemically contaminated, and compressible materials.

.2 Frost susceptible materials:

.1 Fine grained soils with plasticity index higher than 10 when tested to ASTM D4318, and classified as CL, CH, CL-ML, ML, and SM with material fine than 0.02 mm exceeding 15%.

.2 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

.8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

.9 Classification of soils:

.1 Native Soils (Clayey silt and clay) classified as "Not Exceeding CSR Schedule 7, Column 2 Standards": Soil with concentrations of substances less than Contaminated Sites Regulation (CSR) Schedule 7, Column 2 standards or any other standard in the CSR.

.2 Soil classified as "Waste": Soil containing concentrations of substances greater than CSR Schedule 7, Column 2 standards or any other standard in the CSR, but not classified as "Hazardous Waste" under the Hazardous Waste Regulation (HWR). Soil must be disposed of at a permitted waste facility.

.3 Soil classified as "Hazardous Waste": Soil contains substance concentrations that would cause it to be classified as Hazardous Waste under the HWR. Soil must be disposed of at a permitted hazardous waste facility.

1.5 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Submit design and supporting data at least 2 weeks prior to beginning Work.

.3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of British Columbia, Canada.

.4 Keep design and supporting data on site.

.5 Engage services of qualified professional engineer who is registered or licensed in Province of British Columbia, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

.6 Health and Safety Requirements:

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling and for disposal.

.2 Divert excess aggregate materials from landfill to local quarry, recycling facility for reuse.

1.7 EXISTING CONDITIONS

.1 Buried services:

.1 Before commencing work verify and establish location of buried services on and adjacent to site.

.2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.

.3 Remove obsolete buried services within 2 m of structure: cap cut-offs.

.4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.5 Prior to beginning excavation Work, notify the Departmental Representative and authorities having jurisdiction and establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during Work.

.6 Confirm locations of buried utilities by careful test excavations, ground penetrating radar scans, soil hydrovac methods or other approved method.

.7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.8 Where utility lines or structures exist in area of excavation, obtain direction of the Departmental Representative before removing and/or re-routing.

.9 Record location of maintained, re-routed and abandoned underground lines.

.3 Existing buildings and surface features:

.1 Conduct, with the Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by the Departmental Representative.

.3 Where required for excavation, cut roots or branches as directed by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

.1 Type 1 (bedding and pipe cushion), Type 2 (Granular Sub-base), Type 3 (select subgrade material) and Type 4 (Granular Base) fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:

.1 Crushed, pit run or screened stone, gravel or sand.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.3 Table:

Sieve Designation	% Passing			
	Type 1	Type 2	Type 3	Type 4
75 mm	-	100	100	-
50 mm	-	-	70-100	-
37.5 mm	-	60-100	-	-
25 mm	100	-	50-100	-

Sieve Designation	% Passii g			
	Type 1	Type 2	Type 3	Type 4
19 mm	90-100	35-80	-	100
12.5 mm	65-85	-	-	75-100
9.5 mm	50-75	26-60	-	60-90
4.75 mm	25-50	20-40	22-100	40-70
2.36 mm	10-35	15-30	10-85	27-55
1.18 mm	6-26	10-20	-	16-42
0.600 mm	3-17	5-15	-	8-30
0.300 mm	-	-	-	5-20
0.075 mm	0-5	0-5	2-8	2-8

.2 Type 2 Fill (Granular Sub-base): Properties as follows:

.1 Los Angeles degradation: to ASTM C 131. Max % Loss by mass: 40.

.2 Particles smaller than 0.02 mm: to ASTM D 422, Maximum 3%.

.3 Soaked CBR: to ASTM D 1883, Min 40 when compacted to 95% of ASTM D 698.

.3 Type 3 Fill (Select Subgrade Material): well-graded granular material, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials meeting the requirements in the above table.

.1 Recovered rock from the work by blasting, trenching or other approved method may be used if crushed and graded to meet requirements of Type 3.

.4 Type 4 Fill (Granular Base): Properties as follows:

.1 Los Angeles degradation: to ASTM C 131. Max. % loss by weight: 45.

.5 Crushed particles: at least 60% of particles by mass within each of following sieve designation ranges to have at least one freshly fractured face. Material to be divided into ranges using methods of ASTM C 136.

.6 Unshrinkable fill: proportioned and mixed to provide:

.1 Maximum compressive strength of 0.5MPa at 28 days.

.2 Maximum cement content of 25 kg/m; with 40% by volume fly ash replacement

.3 Minimum strength of 0.07 MPa at 24 h.

.4 Concrete aggregates: to CSA A23.1/A23.2.

.5 Cement: Type 10 Portland Cement.

.6 Slump: 160 to 200mm.

Part 3 Execution

3.1 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 PREPARATION/PROTECTION

.1 Protect existing features in accordance with the applicable local regulations.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative's approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect buried services that are required to remain undisturbed. Provide silt fence as indicated.

3.3 SOILS CLASSIFIED AS "WASTE"

.1 All Soils at site are classified as "Waste" unless excavation reveals hazardous waste (HW) soils. Obtain directions from the Departmental Representative for testing and disposal of hazardous waste (HW) soils.

.2 Include the following in the Environmental Protection Plan:

.1 How excavation, handling, and disposal of the soils will be carried. Include location of disposal facility.

.3 Set up environmental and engineering controls as specified and required as per applicable regulations.

.4 Remove top soil, existing fill material if any and excavate the areas.

.5 Handle, load and transport "waste" soils as per the applicable federal, provincial and municipal regulations.

.6 Dispose as follows.

.1 "Waste": Dispose of at a permitted waste facility.

.7 Backfill excavated areas as specified and indicated.

3.4 STRIPPING OF TOPSOIL

.1 Strip topsoil where required.

.2 Strip topsoil to existing fill materials and native soil.

.1 Do not mix topsoil with existing fill or native soil.

.3 Stockpile on site within the Limit of Construction of each stage of work.

.1 Stockpile height not to exceed 2 m and should be protected from erosion.

.4 Dispose of unused topsoil off site.

3.5 STOCKPILING

.1 Stockpile fill materials on site within the Limit of Construction.

.1 Stockpile granular materials in manner to prevent segregation. Maximum stockpile height is 2.5 metres.

.2 Protect fill materials from contamination.

.3 Protect fill materials from wet weather conditions, precipitation, and excessive moisture.

.4 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.6 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Engage services of qualified professional engineer who is registered or licensed in the Province of British Columbia, Canada to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

.2 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance Health and Safety Act for the Province of British Columbia, Canada.

.3 Construct temporary Works to depths, heights and locations as required under the directions of qualified professional engineer responsible for such temporary Works.

.4 During backfill operation:

.1 Unless otherwise indicated or directed by the Departmental Representative, remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.

.5 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.6 Upon completion of substructure construction:

.1 Remove cofferdams, shoring and bracing.

.2 Remove excess materials from site.

3.7 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Avoid excavation below groundwater table if quick condition or heave is likely to occur.

.3 Protect open excavations against flooding and damage due to surface run-off.

.4 Dispose of water to approved collection areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.

.1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

.5 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.8 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions as indicated.

.2 The existing utilities information (type, location, size, elevations) provided on the existing condition drawings included in the contract documents has not been verified. In order to address this issue the following procedure will be followed:

.1 Excavate and expose all utilities within the excavation limits as indicated. Determine the extent of excavation based on site safety requirements, construction methods and schedule.

.2 Prior to carrying out further work in the excavation, jointly with the Departmental Representative inspect the excavation and identify known and unknown exposed utilities. Based upon the results of the inspection, the Departmental Representative will issue appropriate instructions. Comply with instructions and proceed with the work.

.3 For all connections of new utilities to existing utilities, expose the connection points to existing utilities for verification by the Departmental Representative. Based on the results of the verification, the Departmental Representative will issue appropriate instructions. Comply with the instructions.

.3 Excavation must not cause bearing capacity failure and settlement of adjacent foundations.

.4 For trench excavation, unless otherwise authorized by the Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

.5 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by the Departmental Representative.

.6 Restrict vehicle operations directly adjacent to open excavation and trenches.

.7 Dispose of excavated material off site as per the requirements of applicable regulations as follows:

.1 Soil classified as "Waste": Soil containing concentrations of substances greater than CSR Schedule 7, Column 2 standards or any other standard in the CSR, but not classified as "Hazardous Waste" under the Hazardous Waste Regulation (HWR). Soil must be disposed of at a permitted waste facility.

.8 Do not obstruct flow of surface drainage or natural watercourses.

.9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.10 Notify the Departmental Representative when bottom of excavation is reached.

.11 Obtain the Departmental Representative's approval of completed excavation.

.12 Remove unsuitable material from bottom including those that extend below required elevations to extent and depth as directed by the Departmental Representative.

.13 Correct unauthorized over-excavation as follows at no additional cost to the contract:

.1 Fill under bearing surfaces excluding building foundations and footings placed on bedrock with Type 1 fill compacted to not less than 100% Standard Proctor maximum dry density.

.2 Fill under other areas with Type 3 fill compacted to not less than 95% of Standard Proctor maximum dry density.

.14 Hand trim, make firm and remove loose material and debris from excavations.

.1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

.2 Clean out rock seams and fill with concrete mortar or grout to approval of the Departmental Representative.

3.9 FILL TYPES AND COMPACTION

.1 For fill types and compactions for utility trenches, utility structures (manholes/pull boxes) road structures and building and retaining wall foundations, see contract drawings.

3.10 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services as indicated.

.2 Place bedding and surround material in unfrozen condition.

3.11 BACKFILLING

.1 Do not proceed with backfilling operations until completion of following:

.1 The Departmental Representative has inspected and approved installations.

.2 The Departmental Representative has inspected and approved of construction below finish grade.

.3 Inspection, testing, approval, and recording location of underground utilities.

.4 Removal of concrete formwork.

.5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 300 mm loose thickness up to grades indicated. Compact each layer before placing succeeding layer.

.5 Backfilling around installations:

.1 Place bedding and surround material as specified elsewhere.

.2 Do not backfill around or over cast-in-place concrete within 48 hours after placing of concrete.

.3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 500 mm.

.4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:

.1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from the Departmental Representative.

.6 Place unshrinkable fill in areas as indicated.

.7 Consolidate and level unshrinkable fill with internal vibrators.

.8 Install drainage filter system in backfill as indicated.

3.12 RESTORATION

.1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by the Departmental Representative.

.2 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation as indicated.

.3 Clean and reinstate areas affected by Work as directed by the Departmental Representative.

.4 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

.5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 A complete ductbank and manhole infrastructure for general purpose services as indicated. Include excavation, trenching and backfilling to Section 31 23 33 - Excavating, Trenching and Backfilling.

.2 Coordinate the installation of ductbank with all existing civil and electrical site utilities and site works.

1.2 RELATED SECTIONS

.1 Section 31 23 33 - Excavating, Trenching and Backfilling

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A82/A82M-05a, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

.2 ASTM A185/A185M-05a, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.3 ASTM C139-05, Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.

.4 ASTM C 478/C478M-06, Standard Specification for Precast Reinforced Concrete Manhole Sections.

.5 ASTM D1056-00, Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.1 CSA-A3001-13, Cementitious Materials for Use in Concrete.

.2 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.3 CAN/CSA-G30.18-09(R2014), Billet-Steel Bars for Concrete Reinforcement.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Shop Drawings:

.1 Submit shop drawings for precast manholes or pull boxes.

.3 Quality assurance submittals:

.1 Test reports: submit certified test reports for specified materials from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.

.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures, etc.

Part 2 Products

2.1 PVC DUCTS

.1 PVC ducts, type DB-2, encased in reinforced concrete.

2.2 PVC DUCT FITTINGS

.1 Rigid PVC opaque solvent welded, translucent pushfit type couplings, bell end fittings, plugs, caps, adaptors as required to complete installation.

.2 Expansion joints.

.3 Rigid PVC 5 degree angle couplings.

2.3 MANHOLE DRAINAGE

.1 Sump pit: 300 x 300 x 125 mm.
.2 Drain rock under pull pit.
.3 Route drain pipe to soakaway pit located 4m from pull pit. Soakaway pit to consist of 1m3 drain rock encased in geotextile fabric.

2.4 CABLE PULLING EQUIPMENT

.1 Pulling iron: galvanized steel rods, size and shape as indicated.

.2 Pull rope: 6 mm stranded nylon, tensile strength 5 kN, continuous throughout each duct run with 3 m spare rope at each end.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

.1 Install underground duct banks including formwork, excavation, trenching and backfilling to Section 31 23 33 - Excavating, Trenching and Backfilling.

.2 Build duct bank on undisturbed soil or on well compacted granular fill not less than 150 mm thick, compacted to 95% of maximum proctor dry density.

.3 Open trench completely in area of work before ducts are laid and ensure that no obstructions will necessitate change in grade of ducts.

.4 Prior to laying ducts, construct "mud slab" not less than 75 mm thick.

.5 Install ducts at elevations and with slope as indicated and minimum slope of 1 to 400.

.6 Install base spacers at maximum intervals of 1.5 m levelled to grades indicated for bottom layer of ducts.

.7 Lay PVC ducts with configuration and reinforcing as indicated with preformed interlocking, rigid plastic intermediate spacers to maintain spacing between ducts at not less than 75 mm horizontally and vertically.

.1 Stagger joints in adjacent layers at least 150 mm and make joints watertight.

.2 Encase duct bank with 75mm thick concrete cover.

.3 Use galvanized steel conduit for sections extending above finished grade level.

.8 Make transpositions, offsets and changes in direction using 5 degree bend sections, do not exceed a total of 20 degree with duct offset.

.9 Use bell ends at duct terminations in pull boxes, manholes or buildings.

.10 Use conduit to duct adapters when connecting to conduits.

.11 Terminate duct runs with duct coupling set flush with end of concrete envelope when dead ending duct bank for future extension.

.12 Cut, ream and taper end of ducts in field in accordance with manufacturer's recommendations, so that duct ends are fully equal to factory-made ends.

.13 Allow concrete to attain 50% of its specified strength before backfilling.

.14 Use anchors, ties and trench jacks as required to secure ducts and prevent moving during placing of concrete.

.1 Tie ducts to spacers with twine or other non-metallic material.

.2 Remove weights or wood braces before concrete has set and fill voids.

.15 Clean ducts before laying:

.1 Cap ends of ducts during construction and after installation to prevent entrance of

foreign materials.

.16 Duct cleaning:

.1 Pull 300 mm long x diameter 6 mm less than internal diameter of duct wooden mandrel through each duct, immediately after placing of concrete.

.2 Then pull stiff bristle brush through duct; avoid disturbing or damaging ducts where concrete has not set completely.

.3 Pull stiff bristle brush through each duct immediately before pulling-in cables.

.17 Install four 3 m lengths of 10M reinforcing rods, one in each corner of duct bank when connecting duct to manholes or buildings.

.1 Wire rods to 10M dowels at manhole or building and support from duct spacers.

.2 Protect existing cables and equipment when breaking into existing manholes.

.3 Place concrete down sides of duct bank filling space under and around ducts.

.4 Rod concrete with flat bar between vertical rows filling voids.

.18 Install pull rope continuous throughout each duct run with 3 m spare rope at each end.

.19 Install drain pipe for each pull pit.

3.3 DUCTBANK

.1 Ductbank shall be encased with 30MPa concrete as shown in drawings.

3.4 RECORD DRAWINGS

.1 Indicate actual locations of ductbanks and pull pits on the record drawings.

3.5 FIELD QUALITY CONTROL

.1 Site Tests/Inspections:

.1 Inspection of duct will be carried out by Departmental Representative prior to backfilling.

.2 Placement of concrete and duct cleanout to be done when Departmental Representative present.

3.6 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

APPENDIX A

Project-Specific Hazardous Building Materials Assessment

330 pages including cover page

Project-Specific Hazardous Building Materials Assessment

William Head Institution Fire Alarm Replacement

Stantec

Prepared for:
PWGSC—Public Works and Government Services Canada
219 – 800 Burrard Street
Vancouver, BC V6Z 2V8

Prepared by:
Stantec Consulting Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6
Tel: (604) 436-3014
Fax: (604) 436-3752

April 12, 2016

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Correctional Service Canada (CSC) to conduct a project-specific hazardous building materials assessment within 45 buildings at William Head Institution, which is located at 6000 William Head Road, Victoria, BC. A list of the buildings assessed is included in Appendix A.

The purpose of the assessment was to check for potential hazardous building materials that may require special attention in accordance with the requirements of the Canada Labour Code, Part II (Canada Labour Code) and the current version of British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97) during a planned fire alarm replacement project.

Assessments were completed only pertaining to specific areas and/or materials in some buildings, while areas and/or materials throughout other buildings were assessed. The scope completed within each particular building was dictated to Stantec by PWGSC/CSC, and was based on the extent of impacts that each building was expected to incur during the planned fire alarm replacement project.

The hazardous building materials considered included asbestos-containing materials (ACMs), lead-containing materials including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mercury-containing items, ozone-depleting substances (ODSs), mould or moisture affected building materials, and silica.

Based on Stantec's visual assessment and on the laboratory analyses performed on samples collected as well as our review of information from previous assessment reports, hazardous building materials that may be impacted during the planned fire alarm replacement project were identified within many of the buildings assessed.

A summary of our findings and recommendations is presented below. It should be noted that this summary is subject to the same restrictions and limitations as presented in Section 3.0 (Assessment Limitations) and Section 6.0 (Closure) of this report. The information provided is to be read in conjunction with the remainder of this report.

NOTE: Where particular hazardous building materials are not listed in the following table, they were not identified in that particular building.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Central Stores (only specific areas/materials assessed)	**Lead** • Green coloured paint on wooden walls and floor in room 106 attic space is lead-containing. • Grey coloured paint on the concrete floor in room 106 is lead containing. • Yellow coloured paint on the metal door trim in the flammable storage is lead containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Silica** • Silica is presumed to be present in stucco, brick, mortar, asphalt, drywall, plaster, cement, and concrete materials within the assessed areas.
Chapel (only specific areas/materials assessed)	**Asbestos** • Tan vinyl floor tile with white and brown streaks within the entrance (107) is asbestos-containing. • Black interior window caulking within the entrance (107) is asbestos-containing. • White duct tape concealed beneath grey duct tape throughout is asbestos-containing. • The heat shield inside the round incandescent light fixture within the Chapel entrance (107) is asbestos-containing. • Cement panel present behind heat registers is asbestos-containing. – This material was identified in previous reports but is not present in ground floor areas included in this assessment. It may extend into the top of the crawlspace at perimeter walls. **Lead** • Grey/orange coloured paint on the metal door to the basement is lead-containing. • Brown coloured paint on the trim in the entrance (107) is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Silica** • Silica is presumed to be present in vinyl floor tiles, plaster, brick, mortar, cement, and concrete materials within the assessed areas.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Garage, Engineering & Carpenter's Shop (accessible areas of building assessed)	**Asbestos** • Drywall joint compound applied to drywall walls and ceiling within room 101 and 102 is asbestos-containing. • Blue vinyl floor tile with white streaks and underlying beige vinyl floor tile (and both associated mastics) within room 115 and 110 are asbestos-containing. • Cream duct tape throughout is asbestos-containing. • Black window pane caulking throughout is asbestos-containing. • Grey/cream exterior window frame caulking is asbestos-containing. • The cement panel within room 116 is asbestos-containing. **Lead** • Grey coloured paint on concrete floors is lead-containing. • Off-White coloured paint on brick walls is lead-containing. • Light blue coloured paint on trim and doors in room 114 is lead-containing. • Blue, red, and yellow coloured paint on the concrete floor of room 114 is lead-containing. • Bright yellow coloured paint on the concrete floor of room 100 is lead-containing. • Light blue coloured paint on drywall walls and ceiling in the room 101 is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 110 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 110 fluorescent light fixtures. **Silica** • Silica is presumed to be present in vinyl floor tiles, plaster, drywall, brick, mortar, asphalt, cement, and concrete materials within the subject building.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Greenhouse (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 18 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 18 fluorescent light fixtures. **Silica** • Silica is presumed to be present in drywall, cement, and concrete materials within the assessed areas.
Hobby Shop (only specific areas/materials assessed)	**Asbestos** • Black window caulking throughout is asbestos-containing. • Cream interior door frame caulking throughout is asbestos-containing. **Lead** • Dark grey coloured paint on doors and trim is lead-containing. • Beige coloured paint on block walls is lead-containing. • Dark teal coloured paint on doors and trim is lead-containing. • Cream/red coloured paint on open web steel joists is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 20 fluorescent light fixtures. **Silica** • Silica is presumed to be present in drywall, cement and concrete materials within the assessed areas.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Hospital/SCU (only specific areas/materials assessed)	**Asbestos** • Black window pane caulking on both partition and perimeter windows throughout is asbestos-containing. **Lead** • Grey coloured paint on the concrete floor of the mechanical room (300) is lead-containing. • Orange coloured paint on metal trim is lead-containing. • Red coloured paint on metal doors is lead-containing. • Dusty rose coloured paint on metal bar doors within room 108 is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 28 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 28 fluorescent light fixtures. **Silica** • Silica is presumed to be present in ceramic tiles, vinyl floor tiles, ceiling tiles, drywall, plaster, cement, and concrete materials within the assessed areas.
Inmate Weight Lifting (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 20 fluorescent light fixtures. **Silica** • Silica is presumed to be present in stucco, drywall, cement, and concrete materials within the areas assessed.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Kitchen & Dining (accessible areas of building assessed)	**Asbestos** • Olive green duct mastic throughout is asbestos-containing. • Black vent sealant on the seams of two roof vents is asbestos-containing. • Texture coat applied to the plaster ceiling within room 014, 015, 016, 020, 103, 104, and 108 is asbestos-containing. • The second layer of vinyl sheet flooring beneath the grey pebble patterned vinyl sheet flooring within room 015 is asbestos-containing. • Black window caulking on partition windows is asbestos-containing. • Brown duct mastic should be considered asbestos-containing. This assessment and previous assessments have conflicting lab results, additional sampling may clarify. • Vinyl sheet flooring with beige, brown, and white multi-sized cube pattern should be considered asbestos-containing. This assessment and previous assessments have conflicting lab results, additional sampling may clarify. **Lead** • White coloured paint on the exterior attic walls is lead-containing. • Teal coloured paint on metal trim is lead-containing. • Light grey coloured paint on room 114 walls is lead-containing. • Red coloured paint on the open web steel joists is lead-containing. • Orange coloured paint on block walls in room 100 is lead-containing. • Burgundy coloured paint on exterior vent covers is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 150 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 150 fluorescent light fixtures. **Silica** • Silica is presumed to be present in ceramic tiles, ceiling tiles, drywall, plaster, brick, mortar, asphalt, cement, and concrete materials within the subject building.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Laundry/Institution Services (only specific areas/materials assessed)	**Asbestos** • Black window caulking throughout is asbestos-containing. • The cement board applied to the walls above the office windows is asbestos-containing. **Lead** • Brown coloured paint on wood trim in room 117 is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 20 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 20 fluorescent light fixtures. **Silica** • Silica is presumed to be present in cement and concrete materials within the areas assessed.
Library (only specific areas/materials assessed)	**Asbestos** • Skim coat applied to concrete columns within room 105 is asbestos-containing. **Lead** • Grey coloured paint on the concrete floor of the mechanical room (106) is lead-containing. • Black coloured paint applied to the ceiling is lead-containing. • Cream/yellow coloured paint on walls is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 100 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 100 fluorescent light fixtures. **Silica** • Silica is presumed to be present in vinyl floor tiles, drywall, cement, and concrete materials within the areas assessed.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Living Units (20 Buildings - only specific areas/materials assessed)	**Asbestos** • Blue pipe sealant applied to sprinkler lines within the mechanical rooms is asbestos-containing. **Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 10 fluorescent light fixtures. **Silica** • Silica is presumed to be present in stucco, ceramic tiles, drywall, cement, and concrete materials within the areas assessed,
Native Healing Centre (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 55 fluorescent light fixtures. **Silica** • Silica is presumed to be present in drywall, cement, and concrete materials within the areas assessed.
Neighbourhood Units (5 Buildings - (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 18 fluorescent light fixtures. **Silica** • Silica is presumed to be present in stucco, drywall, cement, and concrete materials within the areas assessed.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Plumber's Shop (accessible areas of building assessed)	**Asbestos** • Plaster walls and ceiling throughout should be considered asbestos-containing. This assessment and previous assessments ("textured wall material") have conflicting lab results, additional sampling may clarify. **Lead** • White coloured paint on interior plaster and brick walls is lead-containing. • Brown coloured paint on exterior doors and trim is potentially lead-containing, additional sampling may prove otherwise. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 7 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately seven fluorescent light fixtures. **Silica** • Silica is presumed to be present in vinyl floor tiles, plaster, brick, mortar, cement, and concrete materials within the subject building.
Principal Entrance (only specific areas/materials assessed)	**Lead** • Red colored paint on open web steel joists above the suspended ceiling tile throughout is lead-containing. • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 22 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 22 fluorescent light fixtures. **Mould** • Moisture staining was observed on suspended ceiling tiles within room 102. **Silica** • Silica is presumed to be present in ceiling tiles, drywall, cement and concrete within the areas assessed.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Private Family Unit 1 (accessible areas of building assessed)	**Asbestos** • Black window pane caulking is asbestos-containing. • Black door caulking on exterior doors is asbestos-containing. **Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines and/or in electrical equipment; and as vent and pipe flashings. **Silica** • Silica is presumed to be present in vinyl floor tiles, ceramic tiles, drywall, cement and concrete materials within the subject building.
Private Family Unit 2 (accessible areas of building assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines and/or in electrical equipment; and as vent and pipe flashings. **Silica** • Silica is presumed to be present in stucco, ceramic tiles, asphalt, drywall, cement, and concrete materials within the subject building.
Staff Fitness (only specific areas/materials assessed)	**Lead** • Off-white coloured paint on drywall walls and ceiling is potentially lead-containing, additional sampling may indicate otherwise. • Lead is expected to be present in lead-acid batteries used in emergency lighting; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 20 fluorescent light fixtures. **Silica** • Silica is presumed to be present in ceramic tiles, drywall, cement, and concrete materials within the areas assessed.
Work Release (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; solder used in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately seven fluorescent light fixtures. **Silica** • Silica is presumed to be present in ceramic tiles, drywall, cement, and concrete materials within the areas assessed.

Summary of Identified Hazardous Building Materials	
Building Name/Scope	**Identified Hazardous Building Materials**
Pumphouse (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting; older electrical wiring materials and sheathing; solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment; and as vent and pipe flashings. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately eight light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately eight fluorescent light fixtures. **Silica** • Silica is presumed to be present in cement and concrete materials within the areas assessed.
Storage (only specific areas/materials assessed)	**Lead** • Lead is expected to be present in lead-acid batteries used in emergency lighting and older electrical wiring materials and sheathing. **PCBs** • PCBs may be present in the fluorescent light ballasts of the approximately 10 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons. **Mercury** • Mercury vapour is expected to be present in fluorescent light bulbs/tubes observed in approximately 10 fluorescent light fixtures. **Silica** • Silica is presumed to be present in concrete floor materials within the areas assessed.

Building-by-building summaries of the identified hazardous building materials are provided in Appendix B through Appendix V. General findings pertaining to hazardous building materials are provided in Section 4.0 and the building-by-building appendices of this report. General recommendations are provided in Section 5.0 of this report and building-specific recommendations regarding identified hazardous building materials in "non-compliant" condition (materials requiring action) are provided in the building-by-building appendices.

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Correctional Service Canada (CSC) to conduct a project-specific hazardous building materials assessment within the following buildings at William Head Institution, which is located at 6000 William Head Road, Victoria, BC (subject buildings):

- Central stores (30 and 30a)
- Chapel (29)
- Garage, engineering and carpenter's shop (03)
- Greenhouse (208)
- Hobby shop (200)
- Hospital/SCU (109)
- Inmate weight lifting (215)
- Kitchen and dining (101)
- Laundry/institutional services (108)
- Library (102)
- Living units (LU1-4, NA-NF—20 buildings)
- Native healing centre (214)
- Neighborhood units (NUA-F—5 buildings)
- Plumber's shop (04)
- Principal entrance (104)
- Private family unit 1 (PFV01)
- Private family unit 2 (PFV02)
- Staff fitness building (213)
- Work release (212)
- Pumphouse (110)
- Storage (206)

An overall plan of William Head Institution which shows the locations of the buildings assessed is presented in the drawings in Appendix A. In addition, a list of the buildings included in this assessment, with additional information pertaining to building construction dates, is also provided in Appendix A.

The purpose of the assessment was to check for potential hazardous building materials that may require special attention in accordance with the requirements of the Canada Labour Code, Part II (Canada Labour Code) and the current version of British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97), during a planned fire alarm replacement project.

The hazardous building materials considered included asbestos-containing materials (ACMs), lead-containing materials including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mercury-containing items, ozone-depleting substances (ODSs), mould or moisture affected building materials, and silica.

The site work was conducted by Keith Irwin and Amanda Bell of Stantec on from February 8 through 12, 2016.

1.1 UNDERSTANDING OF THE PROJECT

Stantec understands that the majority of the subject buildings were constructed during time periods when hazardous building materials were commonly used in construction, and that information pertaining to the identity, location and approximate extent of hazardous building materials (if any) within the subject buildings is either not on-file or outdated. As such, and in accordance with the Canada Labour Code and BC Reg. 296/97 pertaining to identifying hazards associated with hazardous building materials in the workplace, as well as for future maintenance and/or renovation planning purposes, PWGSC commissioned this assessment.

2.0 SCOPE AND METHODOLOGY

Keith Irwin and Amanda Bell of Stantec conducted visual assessments within the subject buildings from February 8 through 12, 2016. Site work was conducted in general compliance with the requirements of the Canada Labour Code, BC Reg. 296/97 and Stantec's Safe Work Practices (SWPs).

Assessments were completed only pertaining to specific areas and/or materials in some buildings, while areas and/or materials throughout other buildings were assessed. The scope completed within each particular building was dictated to Stantec by PWGSC/CSC, and was based on the extent of impacts that each building was expected to incur during the planned fire alarm replacement project.

Mechanical systems, structures and finishes of the subject buildings (or areas, depending on scope) were visually examined to determine the suspected presence of ACMs, lead including LCPs, PCBs, mercury, ODSs, mould, and silica. Where building materials were suspected but not confirmed to contain asbestos or lead (in paint) samples were collected for analysis to confirm or deny the presence of these hazardous materials. Based on analytical results, visually similar materials were referenced to specific analyzed samples to reduce the number of samples collected.

Additional background information and the methodology used for the determination of presence or absence of each specific hazardous material considered in this assessment are outlined in the following sections.

2.1 ASBESTOS

The common use of friable (materials which, when dry, can be easily crumbled or powdered by hand pressure) ACMs in construction generally ceased voluntarily in the mid-1970s but was only banned through legislation by the late 1980s. Friable asbestos was used in many building

products, primarily high temperature insulations, spray-applied structural fireproofing, and a material known as vermiculite that was commonly used as block wall insulation and may be contaminated with asbestos fibres. Asbestos was also used in many non-friable manufactured products such as floor tiles, ceiling tiles, Transite cement products, and various other construction materials. Some cement products currently used in the construction of buildings may still contain asbestos.

The presence of asbestos in federal workplaces, and pertaining to federally regulated workers is governed by the Canada Labour Code. The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. As both federally regulated workers and provincially regulated workers (e.g., contractors) are expected to carry out work activities within the subject buildings, and as the provincial regulations are generally more prescriptive pertaining to asbestos (and generally include the requirements noted in the Canada Labour Code), this assessment was conducted to meet the requirements of BC Reg. 296/97.

According to the current version of BC Reg. 296/97, ACM means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

Based on these criteria, a visual assessment of accessible areas was undertaken in order to check for the presence of materials suspected of containing asbestos. Locations to collect discrete bulk asbestos samples of suspect building materials were identified. Samples of representative materials were then collected at these locations.

Multiple samples were collected from each "homogenous application" of observed suspected ACMs (materials suspected to contain asbestos that are uniform in material type, colour, texture application and estimated installation date) and submitted to EMSL Canada Inc. (EMSL) in Mississauga, Ontario for analysis of asbestos content using polarized light microscopy (PLM) with dispersion staining, in accordance with the United States Environmental Protection Agency (EPA) 600/R-93/116 method.

The number of samples to be collected for each homogenous application of a suspected ACM was based on accepted occupational hygiene standards and protocols, along with the assessor's experience and understanding of the consistency of that building material's application.

EMSL's analytical laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

2.1.1 Sample Results Interpretation

When asbestos is detected in concentrations greater than 0.5% in one of the samples within a set that was collected to represent a "homogenous application" of a particular material (or detected in any concentration, in a set of samples collected for applications of vermiculite), the entire sample set and the entire application of that material was then considered to be an ACM.

In addition to the above, a "positive stop" option was used during the laboratory analysis of the building material samples submitted for asbestos analysis. The "positive stop" option is utilized by the laboratory when asbestos is detected at a concentration of greater than one percent in one of the samples within a set that was collected to represent a "homogenous application" of that material. At this point, further analysis of subsequent samples within the set is deemed to be unnecessary (as the entire set will be considered an ACM, per above), and the remainder of the samples within the set are not analyzed.

2.1.2 Potential Asbestos-Containing Vermiculite Insulation

As part of the assessment, Stantec assessed the subject buildings for areas where vermiculite insulation, a potential ACM, would likely be present. This included making note of and assessing attic spaces, floor cavities and masonry or brick walls, which are typical areas where vermiculite is found. Regarding this portion of the assessment, the following should be noted:

- Where masonry or brick walls were observed, destructive assessment (drilling) was conducted to assess the cavity for the presence of vermiculite.
- Where non-vermiculite attic insulation (e.g., fiberglass) was observed, inspection for the presence of vermiculite under the other insulation was conducted only at the attic access point (not throughout the attic).

2.1.3 Asbestos Sampling Quality Assurance/Quality Control

Sampling activities pertaining to asbestos were conducted in accordance with Stantec's SWPs, which take into account current provincial regulations pertaining to such work (i.e., sampling procedures, required number of samples, and laboratory analytical procedures).

Representative bulk samples were collected of accessible suspect ACMs in sufficient quantities for laboratory analyses. Suspect ACM samples were sealed in polyethylene zip-lock bags labeled with the sample number, suspect material description, and sample location. As part of sampling procedures, sampling tools were cleaned between sample collection events to avoid the potential for cross-contamination of samples.

Sample bags were compiled in order and placed into a single container accompanied with a Chain of Custody form outlining the project information, date, building location, number of samples, and sample description. Samples were submitted to the analytical laboratory in a sealed container via courier.

2.2 LEAD

Lead may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as electric storage batteries, ammunition, lead solder, radiation shields, pipes, and sheaths for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin, and antimony as lead alloys for use in the manufacture of a variety of metal products. Lead is commonly found in buildings in the solder used on copper domestic pipes, in the caulking on bell fittings of cast iron drainage pipes and in electrical equipment.

The presence of lead-containing materials (other than paint) was assessed through visual means.

With respect to paint, the lead content of interior paint was limited to 0.5% by weight (equivalent to 5,000 mg/kg or ppm) in 1976 under the Federal *Hazardous Products Act,* which governs the import, export and distribution of hazardous products in Canada. In 2005, the *Hazardous Products Act* had reduced the criteria for surface coatings (including paint) to 600 mg/kg (600 ppm) to define them as "lead-containing". This criterion has since (2010) been reduced to 90 ppm.

However, with respect to potential lead exposures associated with disturbance to surfaces coated with lead-containing products, WorkSafeBC has compiled a manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry,* (Lead Guideline) which defines a "lead-containing surface coating material" and indicates that "...the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit". As such, Stantec will reference this value (600 ppm) in defining paints as "lead-containing".

Based on this criterion, samples of suspected LCPs were collected from major paint applications, and were collected to substrate, where possible, in sufficient quantity to conduct analyses for total lead content. Samples collected were placed into separate, sealed, and labeled polyethylene bags, and submitted to EMSL for analyses of total lead content using Flame Atomic Absorption Spectrometry AAS (SW 846 3050B*/7000B).

EMSL's analytical laboratory is also accredited by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Approval Program.

2.3 POLYCHLORINATED BIPHENYLS

PCBs were used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. In fluorescent fixtures, PCBs were usually found within the small capacitors inside the ballast that controls the lamp. The Federal Chlorobiphenyls Regulation, SOR/91-152, prohibited the use of PCBs in electrical equipment manufactured after July 1, 1980.

The presence of PCB-containing equipment was assessed through visual means. With respect to fluorescent lamp ballasts, due to the risk of electrical shock associated with dismantling operating fixtures, fluorescent lamp ballasts were not removed to view identification numbers/information.

The total number of fluorescent lamp fixtures that may have ballasts that contain PCBs was approximated for each building assessed.

Suspected PCB-containing electrical equipment can be visually inspected and compared to the Environment Canada reference guide entitled *Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2*, dated August 1991 (PCB Guide).

2.4 MERCURY

Mercury is commonly found in buildings as mercury vapour lighting, thermostats/thermometers with mercury-containing glass ampoules, electrical switches and can also be found in minor amounts in fluorescent lamp tubes and vapour bulbs and may be present in stable forms in adhesives. Exposure to mercury in federal workplaces is governed by the Canada Labour Code, while provincially it is governed by BC Reg. 296/97.

The presence of mercury and mercury-containing equipment was assessed through visual means.

2.5 MOULD

Moist building materials may provide suitable conditions for mould growth, and the removal of building materials impacted by mould growth may require workers with specific training and experience using work procedures that have been developed to protect workers and work areas from exposure to elevated concentrations of airborne mould.

The presence of suspect visible mould was assessed through visual means and sampling. Material observed with dark-colored staining and/or a textured and discolored appearance is described as "suspect mould". Mould identified visually is defined as "suspect mould" unless it is confirmed as mould by laboratory analysis.

2.5.1 Mould Reference Guidelines

With respect to mould and/or moisture, the visual assessment procedures utilized during this project were based on the recommendations provided in the documents listed below:

- Standard Construction Document CCA 82 *Mould Guidelines for the Canadian Construction Industry*, Canadian Construction Association, 2004 (referred to as CCA 82)
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environment*, New York City Department of Health, Bureau of Environmental and Occupational Disease Epidemiology, April 2000 (referred to as the NYC Guidelines)
- *Fungal Contamination in Public Buildings: Heath Effects and Investigation Methods*, Federal-Provincial Committee on Environmental and Occupational Health, 2004 (referred to as the Health Canada Guide)
- *Indoor Air Quality in Office Buildings: A Technical Guide*, report of the Federal-Provincial Advisory Committee on Environmental and Occupational Health, 1995 (referred to as the IAQ Guide)
- *Bioaerosols: Assessment and Control*, American Conference of Governmental Industrial Hygienists (ACGIH), 1999 (referred to as the ACGIH Report)

2.6 OZONE-DEPLETING SUBSTANCES

Chlorofluorocarbons (CFCs) and other ODSs are often found in refrigeration units associated with air-conditioning or other refrigeration equipment. In September 1987, 47 countries agreed to the Montreal Protocol on Substances that Deplete the Ozone Layer. ODSs are regulated in BC by the *British Columbia Waste Management Act*—Ozone Depleting Substances and Other Halocarbons Regulation (BC Reg. 387/99 as amended by BC Reg. 109/2002) and the Federal Halocarbon Regulations, 2003 (FHR 2003).

The presence of ODSs and equipment containing these materials was assessed through visual means.

2.7 SILICA

Silica, also referred to as free crystalline silica, is found in concrete, cement, mortar, ceramic wall and floor tiles, stucco finishes and acoustic ceiling tiles. Prolonged exposure to, and inhalation of free crystalline silica, may result in respiratory disease known as silicosis, which is characterized by progressive fibrosis of the inner lung tissue and marked shortness of breath or impaired lung function.

Exposure to silica dust is governed by BC Reg. 296/97 According to both legislative instruments; the time-weighted average exposure limit for airborne silica dust is 0.025 mg/m^3.

The presence of silica was assessed through visual means.

2.8 REVIEW OF PREVIOUS REPORTS

The following report was provided to Stantec subsequent to the completion of our field assessment program:

- Pottinger Gaherty Environmental Consultants Ltd., Report No. 125-54.01 entitled *Asbestos Containing Material Survey Report—William Head Medium Security Institution, Metchosin, British Columbia*, dated March 2004, prepared for Public Works and Government Services Canada (Initial Assessment)

Due to the timing of receipt of the above-noted document, it was reviewed for information to provide clarity in those instances where labels indicating the presence of ACMs were observed in the field, but results from our assessment provided conflicting information.

3.0 ASSESSMENT LIMITATIONS

In preparation of this report, Stantec used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. Stantec relied on information gathered during the site investigation and laboratory analytical reports.

This report reflects the observations made within accessed areas of the subject buildings and the results of analyses performed on specific materials sampled during the assessment. Analytical results reflect the sampled materials at the specific sample locations.

Sampling was conducted pertaining to suspected ACMs and suspected LCPs only. The assessment for the presence of other hazardous building materials was visual in nature, and was conducted pertaining to readily visible surfaces within accessible spaces only. Concealed spaces were inspected via existing access panels, where present. Interior and exterior finishes, solid ceilings, walls, flooring and structural elements were not removed to access concealed areas.

It should be noted that the following building locations, although included in the proposed scope of work, were not accessed during the project due to security restrictions or the lack of keys required to provide access. As such, limited comments, if any, will be made regarding the presence, extent and/or condition of hazardous building materials in the following areas:

- Work Release (212): Rooms 104 and 106 were not accessed because the doors were locked and staff did not have a key during the assessment
- Hospital/SCU (109): Room 105 was not accessed because the staff did not have a key at the time of the assessment

It should also be noted that in various buildings (as outlined in Section 4.0 of this report and associated appendices), assessments were limited to only those specific areas and/or materials dictated for assessment by PWGSC/CSC, based on their understanding of the building areas and/or materials that would be impacted during the planned fire alarm replacement project. For those buildings where assessment was limited to specific areas or materials, this report does not constitute a comprehensive hazardous building materials assessment. The information is limited strictly to the areas assessed/materials sampled.

In addition to the above, and due to limitations on the agreed to scope of work for this project as well as physical limitations in accessing concealed areas and limitations associated with working in occupied/operational spaces, there are other specific limitations to the information that can be provided to each hazardous building material considered in this assessment, as outlined in the following sub-sections.

3.1 ASBESTOS

Suspected ACMs that were not sampled included, but were not limited to, the following (where present, based on building construction or as otherwise noted):

- Roofing materials associated with buildings where the roof could not be accessed safely with the equipment present on-site
- Sub-grade materials
- Interior components of mechanical equipment (e.g., inner linings or gaskets in boilers)
- Interior components of heating, ventilation and air conditioning (HVAC) units
- Heat protection materials inside mechanical installations (e.g., gaskets) and light fixtures (e.g., paper backing in sealed incandescent fixtures)
- Flooring material concealed beneath ceramic tile, brickwork, hardwood flooring, and/or concealed beneath existing sub-floors
- Drywall and/or wall plaster and associated finish materials concealed behind new and/or additional walls or ceilings
- Woven tape inside duct connection joints or inner ducting insulation
- Materials within sealed/hard wall cavities, hard ceiling cavities or crawlspaces without appropriate access points
- Insulation materials inside fire doors
- Insulation materials in attic, ceiling or crawlspace areas beyond reasonable reach from safe access points

If encountered during renovation, demolition or other activities, any suspected ACMs not identified within this report should be presumed to contain asbestos and handled as such until otherwise proven, through analytical testing.

3.2 LEAD

Assessment for the presence of lead or lead-containing materials was visual in nature, and was conducted pertaining to readily visible surfaces within accessible spaces of the subject buildings and/or assessed areas only. The presence of lead or lead-containing materials in inaccessible areas not assessed included, but was not limited to: ceiling spaces, wall cavities, crawlspaces, and buried materials.

With respect to paint, samples of suspected LCPs were collected within the subject buildings only from surfaces of major paint applications where visually different paint colours and/or types were identified. Although the surfaces where samples were collected may be covered with more than one coat of paint, the paint samples are described by the surface (visible) colour only.

Attempts were made to represent all layers of paint in the samples collected. As analytical results are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour will be presumed to be the same, regardless of differing sub surface paints, if any.

3.3 POLYCHLORINATED BIPHENYLS

Due to height restrictions and the risk of electrical shock in handling operational light fixtures, the ballasts present in the fixtures observed within the subject buildings were not removed for comparison to the PCB Guide. The visible labels of ballasts in several fixtures were inspected for comparison to the PCB Guide.

Conclusions and recommendations regarding the presence of PCBs within the subject buildings are based on Stantec's limited observations in combination with information provided by staff regarding lighting renovations (where requested by Stantec based on observations) and is presented to provide guidance regarding the likelihood that PCB-containing equipment is or is not present within the subject buildings. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, within the subject buildings will not be commented on.

3.4 MERCURY

Visual assessment for the presence of mercury-containing equipment within the subject buildings was conducted in accessible areas only. Additional mercury or mercury-containing equipment may be present in inaccessible areas including, but not limited to: ceiling spaces, wall cavities, and crawlspaces, or as internal parts of HVAC mechanisms.

3.5 MOULD

Visual assessment for the presence of suspected visible mould and/or suitable conditions for mould growth (e.g., moist and/or water-stained building materials) were conducted in accessed portions of the subject buildings only. The assessment was not intrusive in nature and included visual assessment of exposed surfaces and closer inspection of known problem areas.

The conclusions made in this report provide description(s) of the potential source(s) of moisture within the subject buildings that may have led to suitable conditions for mould growth, only in those cases where potential source(s) of moisture were identified. These conclusions will not necessarily identify all sources of moisture leading to suitable conditions for mould growth within the subject buildings or within the impacted area(s).

This assessment does not constitute a building envelope/building systems assessment for any of the subject buildings, which would include an intrusive investigation to assess the internal condition, potential moisture sources, and expected remaining service life of the various components and systems comprising the envelope of a building.

3.6 OZONE DEPLETING SUBSTANCES

Visual assessment for the presence of ODSs within the subject buildings was conducted in accessible areas only. Additional ODS-containing equipment may be present in inaccessible areas including, but not limited to, ceiling spaces, wall cavities and crawlspaces. In addition, portable equipment that may contain ODSs (refrigerators, drink coolers, etc.) was not considered as part of this assessment.

3.7 SILICA

Visual assessment for the presence of silica-containing materials within the subject building was conducted in accessible areas only. Additional silica-containing materials may be present in inaccessible areas including, but not limited to, ceiling spaces and wall cavities.

4.0 FINDINGS

The results of our assessment are provided on a building-by-building basis in Appendices B through V. Each Appendix contains the following (where applicable):

- Indication of the scope of the assessment within the building (limited to specific areas or materials vs. assessment of accessible areas throughout)
- Separate sections with written summaries of findings pertaining to each hazardous building material, including the following:
  - Information regarding the building or the specific areas assessed
  - A listing of suspect materials observed

  - Tables that provide summaries of the sample types, locations, and analytical results
  - Interpretations of observations and/or sample analytical results
- Photographs of identified hazardous building materials, where available
- Information pertaining to condition evaluation of identified hazardous building materials
- Recommendations for identified hazardous building materials found to be in "non-compliant" condition (e.g., damaged ACMs, mould-impacted materials, etc.)
- Floor plan drawings for the buildings/structures, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical)
- Copies of the analytical certificates for all suspected ACM samples collected
- Copies of the analytical certificates for all suspected LCP samples collected

It should be noted that evaluation of condition of identified ACMs was conducted using terminology and classifications as outlined in the former PWGSC document entitled *Deputy Ministers Directive 057—Asbestos Management* (last revised June 16, 1999), and considered the friability of the material (terminology relating to how easily fibres can be released), condition (good, fair and poor) and accessibility of the material.

5.0 GENERAL RECOMMENDATIONS

Building-specific recommendations pertaining to the identified hazardous building materials that require action are provided in Appendices B through V. General recommendations pertaining to management of identified hazardous building materials in good condition and/or that may be impacted during the planned fire alarm replacement project are provided below.

5.1 ASBESTOS

For buildings with identified ACMs, Stantec recommends the following with regards to meeting the requirements of the Canada Labour Code and BC Reg. 296/97 as they pertain to managing asbestos in the workplace and/or managing asbestos during renovation/demolition projects:

- Asbestos-containing materials that may be impacted during renovations and/or demolition activities should be removed using appropriate procedures (e.g., those outlined in the WorkSafeBC 2012 publication *Safe Work Practices for Handling Asbestos*) by an experienced contractor, prior to the initiation of other renovation and/or demolition activities.
- Prior to renovation and/or demolition activities that would disturb them, undertake testing of presumed ACMs (materials that were previously un-tested, but are presumed to contain asbestos based on application and vintage) that may be impacted to determine their asbestos content. Confirmed asbestos materials should be handled accordingly.
- In accordance with the requirements of the Canada Labour Code and BC Reg. 296/97 an asbestos exposure control plan (also known as an "asbestos management plan", or "AMP") must be developed and implemented for buildings with identified ACMs.
- Identified ACMs in good condition can be managed in place, upon development and implementation of an AMP.

- Should a material suspected to contain asbestos fibres become uncovered during renovation and/or demolition activities, all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present. Confirmed asbestos materials should be handled in accordance with applicable guidelines and regulations.
- Suspected ACMs deemed visually similar to the ACMs identified in this report (on a building-by-building basis) should be considered asbestos-containing and handled as such, unless proven otherwise, through analytical testing.
- Asbestos-containing cement pipe may be present below ground—caution should be used if excavation is required.
- If masonry block walls are to be impacted by renovation and/or demolition work, and these walls have not been checked for the presence of vermiculite insulation, intrusive assessments for vermiculite should be undertaken prior to renovation/or demolition work. If vermiculite insulation is suspected to be present, this material should be treated as an ACM until testing can show otherwise.
- Ensure asbestos containing waste is handled, stored, and disposed of in accordance with the requirements of the Federal Transportation of Dangerous Goods Regulation and the British Columbia Hazardous Waste Regulation (BC Reg. 63/88).

5.2 LEAD

Lead-containing materials, including paints, can be managed in place, where in good condition.

If LCPs or other lead-containing equipment/materials within the subject buildings are to be disturbed and/or removed, ensure compliance with the following:

- Exposure protection requirements of the BC Reg. 296/97
- Disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the Canada Labour Code and BC Reg. 296/97 8-hour Occupational Exposure Limit (OEL) of 0.05 milligram per cubic metre (mg/m^3) during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust. This can be achieved by:

- Providing workers with protective clothing and PPE or devices as necessary to protect the worker against the hazards to which the worker may be exposed
- Providing workers with adequate and training in the care and use of clothing, equipment or device before wearing or using it
- Wetting the surface of the materials to prevent dust emissions

- Providing workers with washing facilities with clean water, soap and individual towels to properly wash prior to exiting the work area

To avoid the inhalation of lead, it is essential to have the following control methods in place:

- Engineering controls
- Work practices and hygiene practices
- Respirators and personal protective equipment
- Training

The work tasks required and the ways in which lead-containing materials (including paints) will be impacted will determine the appropriate respirators, measures and procedures that should be followed to protect workers from lead exposure.

5.3 POLYCHLORINATED BIPHENYLS

Fluorescent lamp ballasts that may contain PCBs can be managed in place, where these items are operating and in good condition. No further action is currently required until such time that renovation or demolition activities are to be conducted, or until 2025, when PCB-containing ballasts will require removal and disposal.

When decommissioned, verify the PCB content of fluorescent lamp ballasts as per the Environment Canada publication *Identification of Lamp Ballasts Containing PCBs*, 1991. PCB-containing items identified for removal and disposal should be handled, transported, stored and disposed of in accordance with the following:

- Disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation
- Federal PCB Regulations (SOR/2008-273)

Should a material suspected to contain PCBs become uncovered during renovation activities (i.e., dielectric fluids, hydraulic fluids) all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if PCBs are present. Confirmed PCBs should be handled in accordance with Federal Regulation SOR/2008-273 and BC Reg. 63/88.

5.4 MERCURY

Identified mercury-containing items can be managed in place, therefore no further action is recommended at this time. Mercury vapour within light fixtures and liquid mercury in thermostat switches pose no risk to workers or occupants provided the mercury containers remain intact and undisturbed.

Complete removal of mercury-containing equipment is required prior to renovation or demolition activities that may disturb the equipment. When mercury-containing items (e.g., fluorescent light bulbs/tubes, thermostats) are removed, ensure all mercury waste is handled, stored and disposed of in accordance with the requirements of the disposal requirements of the following:

- Disposal requirements of BC Reg. 63/88
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Precautions should be taken if workers may potentially be exposed to mercury or mercury vapours to ensure that workers exposure levels do not exceed the occupational exposure limit of 0.025 mg/m^3 as per the BC Reg. 296/97 This can be achieved by providing respiratory and skin protection applicable to the hazard and task to be completed.

5.5 MOULD

In general, mould-impacted building materials will require action (e.g. abatement/removal or cleaning). Recommendations pertaining to mould are provided in the building-by-building information included in Appendices B through V.

5.6 OZONE DEPLETING SUBSTANCES

As no suspect ODS-containing materials or equipment were observed within the subject buildings during the assessment, no recommendations have been provided.

5.7 SILICA

When silica-containing materials are to be removed during demolition activities, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (0.025 mg/m^3). This would include, but not be limited to, the following:

- Providing workers with respiratory protection
- Wetting the surface of the materials to prevent dust emissions
- Providing workers with facilities to properly wash prior to exiting the work area
- Providing dust control to mitigate the potential for demolition dust to escape from the work area into public and/or adjacent areas

6.0 CLOSURE

This report has been prepared by Stantec Consulting Ltd. for the sole benefit of Public Works and Government Services Canada and Correctional Services Canada. Any use that a third party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of

such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The conclusions presented represent the best judgment of the assessor based on current environmental, health and safety standards and the site conditions observed on the dates cited within this report. This report is based on, and limited by, circumstances and conditions stated herein, and on information available at the time of preparation of the report. Due to the limited nature of the investigation and the limited data available, Stantec Consulting Ltd. cannot warrant against undiscovered environmental, health and/or safety liabilities. It is possible that additional, concealed hazardous materials may become evident during renovation and/or demolition activities within the subject buildings.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

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

Respectfully submitted,

STANTEC CONSULTING LTD.

Amanda Bell, B.Sc., EPt
Environmental Technologist

Tiffany Waite, B.Sc.,
Project Manager

Sean Brigden, B.Sc., P.B.Dipl., CRSP
Technical Leader, Indoor Environments

AB/TW/SB/sf

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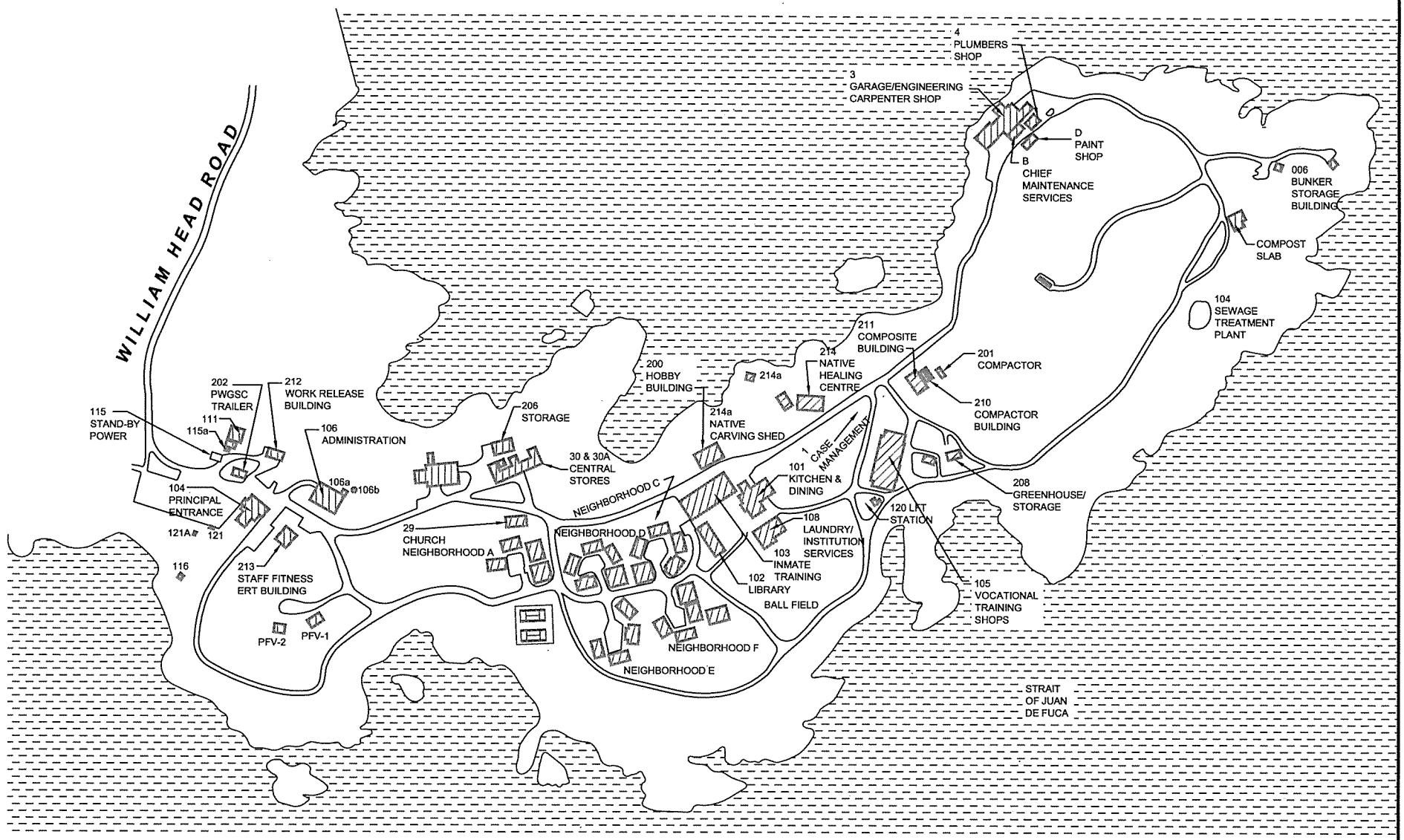
APPENDIX A
BUILDING LIST

Appendix A BUILDING LIST

Appendix	Building Name	Year of Construction
B	Central Stores and Flammable Storage Building (30 & 30a)	Pre-1990
C	Chapel (29)	Pre-1990
D	Garage, Engineering & Carpenter's Shop (03)	Pre-1990
E	Greenhouse (208)	Pre-1990
F	Hobby Shop (200)	1989
G	Hospital/SCU (109)	Pre-1990
H	Inmate Weight Lifting (215)	2002
I	Kitchen & Dining (101)	Pre-1990
J	Laundry/Institutional Services (108)	Pre-1990
K	Library (102)	Pre-1990
L	Living Units (LU1-LU4, NA-NF)	1992
M	Native Healing Centre (214)	2002
N	Neighborhood Units (NUA-NUF)	1992
O	Plumber's Shop (04)	Pre-1990
P	Principal Entrance (104)	Pre-1990
Q	Private Family Unit 1 (PFV01)	Pre-1990
R	Private Family Unit 2 (PFV02)	Pre-1990
S	Staff Fitness (213)	2000
T	Work Release (212)	1999
U	Pumphouse (110)	Pre-1990
V	Storage (206)	Pre-1990



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

SITE PLAN

WILLIAM HEAD INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICE CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	1 : 1000
Date:	16/02/24
Dwn. By:	CD VM SL2016020269
App'd By:	TW

Dwg. No.: 1

Stantec

APPENDIX B
FINDINGS AND RECOMMENDATIONS—CENTRAL STORES

Appendix B FINDINGS AND RECOMMENDATIONS—CENTRAL STORES

Central stores was reportedly constructed prior to 1990 and consists of a main building and a detached flammable storage building. The main building consists of one level plus a basement and an attic space. The typical structural components and finishes associated with this building consist of brick exterior, concrete floors, drywall and plaster walls, and plaster ceilings. The flammable storage building consists of stucco exterior walls, concrete floor, interior block walls, and a concrete ceiling.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Room 106 and attic space of the main building
- Interior and exterior walls and ceiling finishes within the flammable storage building

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

B.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint Compound
- Plaster
- Stucco
- Expanding joint compound and grout
- Vermiculite insulation
- Asphalt shingle

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table B-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table B-1 Suspected ACM Sample Collection and Analysis Summary Central Stores, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound Applied to Drywall Walls	Main building–Room 106, Attic	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls	Main building–Room 106, Attic	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls	Main building–Room 106, Attic	Not Detected
PL-01A–skim	Plaster, Applied to Walls & Ceiling–skim coat	Main building–Room 106	Not Detected
PL-01A–rough	Plaster, Applied to Walls & Ceiling–rough coat	Main building–Room 106	Not Detected
PL-01B	Plaster, Applied to Walls & Ceiling	Main building–Room 106	Not Detected
PL-01C	Plaster, Applied to Walls & Ceiling	Main building–Room 106	Not Detected
EJC-01A–white	Expanding Joint Compound, Residual–white layer	Flammable Storage	Not Detected
EJC-01A–grey	Expanding Joint Compound, Residual–grey layer	Flammable Storage	Not Detected
EJC-01B–white	Expanding Joint Compound, Residual–white layer	Flammable Storage	Not Detected
EJC-01B–grey	Expanding Joint Compound, Residual–grey layer	Flammable Storage	Not Detected
EJC-01C	Expanding Joint Compound, Residual	Flammable Storage	Not Detected
EJG-01A	Expansion Joint Grout	Flammable Storage	Not Detected
EJG-01B	Expansion Joint Grout	Flammable Storage	Not Detected
EJG-01C	Expansion Joint Grout	Flammable Storage	Not Detected
BM-01	Brick Mortar	Main Building–Room 106	Not Detected
S-01A	Stucco, Applied to Exterior Walls	Flammable Storage, Exterior	Not Detected
S-01B	Stucco, Applied to Exterior Walls	Flammable Storage, Exterior	Not Detected
S-01C	Stucco, Applied to Exterior Walls	Flammable Storage, Exterior	Not Detected
R-01A	Roof, Asphalt Shingle	Flammable Storage, Exterior	Not Detected
R-01B	Roof, Asphalt Shingle	Flammable Storage, Exterior	Not Detected
R-01C	Roof, Asphalt Shingle	Flammable Storage, Exterior	Not Detected
FS-01A	Red Fire Stop Mastic	Main Building–Room 106	Not Detected
FS-01B	Red Fire Stop Mastic	Main Building–Room 106	Not Detected
FS-01C	Red Fire Stop Mastic	Main Building–Room 106	Not Detected
V-01A	Vermiculite Insulation	Main building–Room 106, Attic	Not Detected

Table B-1 Suspected ACM Sample Collection and Analysis Summary Central Stores, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
V-01B	Vermiculite Insulation	Main building–Room 106, Attic	Not Detected
V-01C	Vermiculite Insulation	Main building–Room 106, Attic	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

B.2 LEAD

Lead is expected to be present in the following:

- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes and/or in electrical equipment
- Vent and pipe flashings

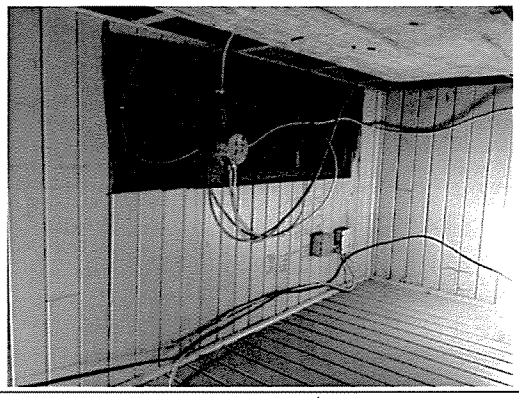
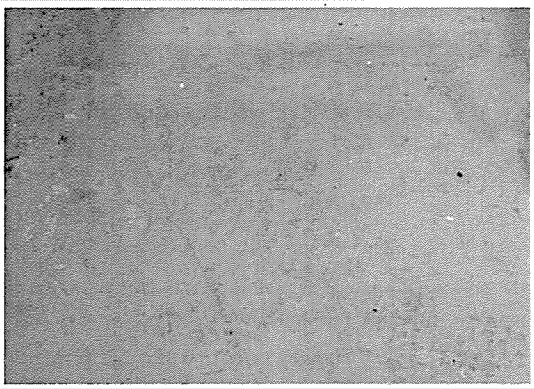
With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table B-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table B-2 Suspected LCP Sample Collection and Analysis Summary Central Stores, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-01	Green	Main building–106 Attic	390,000	Yes
L-02	Grey	Main building–106, Concrete Floor	1,500	Yes
L-03	Yellow	Flammable Storage, Door Trim	1,600	Yes

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table B-3, below were identified as LCPs.

Table B-3 Summary of Identified LCPs Central Stores, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Green coloured paint on wood walls and floor within the attic space in room 106. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Grey coloured paint on the concrete floor in room 106. This paint was observed to be generally in good condition with areas where paint is worn away (not bubbling, flaking, or peeling).	
Yellow coloured paint on the metal flammable storage door trim. This paint was observed to be in poor condition (bubbling, flaking, or peeling).	

B.3 POLYCHLORINATED BIPHENYLS

No suspected PCB-containing electrical equipment was observed.

B.4 MERCURY

No suspected mercury-containing equipment was observed. Mercury may be present in paints and adhesives.

B.5 MOULD

No mould and/or moisture-impacted building materials were observed.

B.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

B.7 SILICA

Silica is presumed to be present in stucco, brick, mortar, asphalt, drywall, plaster, cement, and concrete materials observed.

B.8 RECOMMENDATIONS

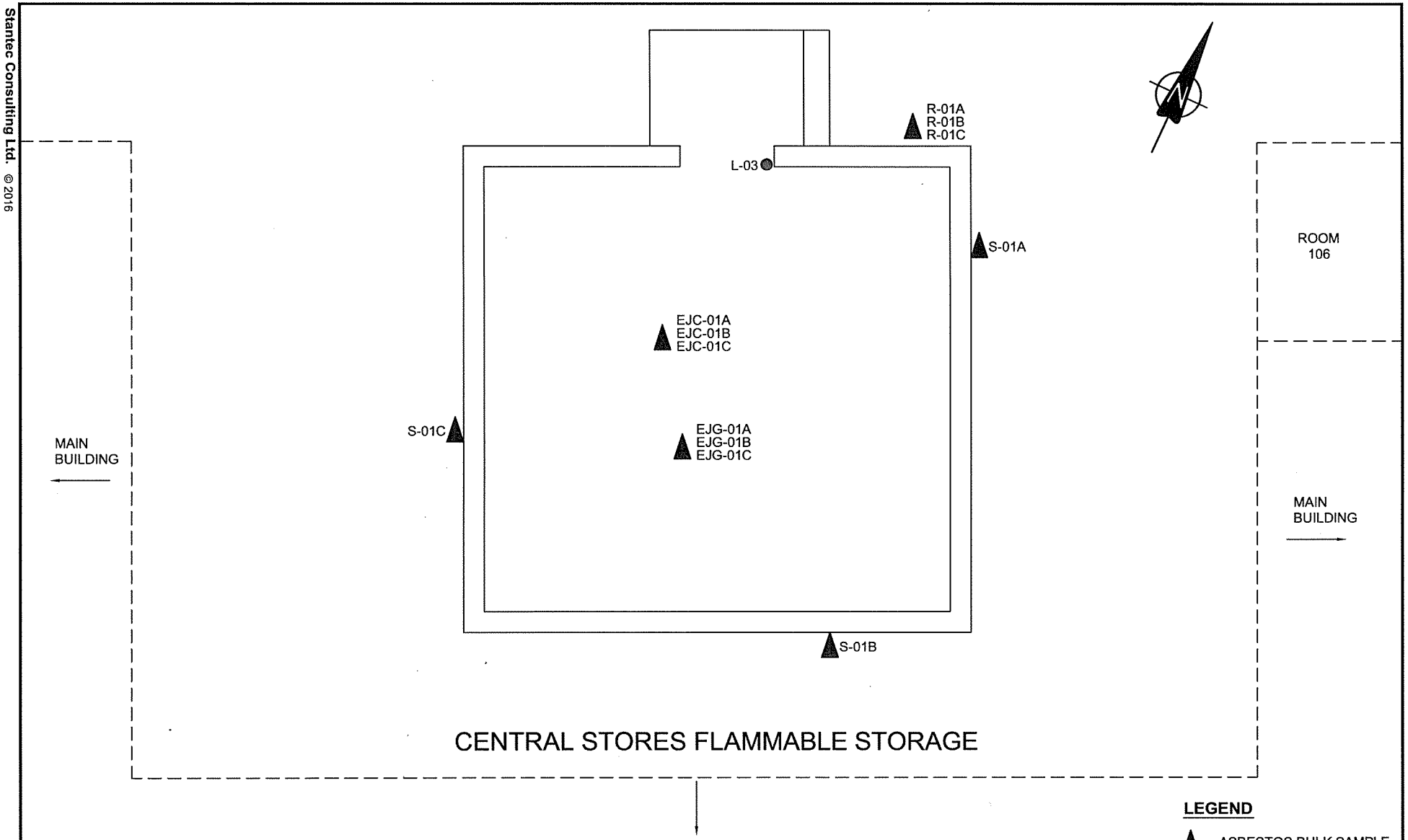
If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

Additional material-specific recommendations to be considered during the renovation project are provided below.

B.8.1 Lead

Lead-containing paint observed in poor condition should be cleaned-up and/or addressed during the project, and to mitigate potential for additional deterioration and dispersal of lead-containing paint chips/dust. Consideration should be given to re-painting surfaces to mitigate the potential for additional deterioration and hazards associated with the lead-containing paint chips/dust that may be created. If re-painting is completed, appropriate precautions to protect workers and work areas from exposure to lead will be required during painting preparation activities.

Provisions for worker protection and waste disposal related to the above are included in Section 5.2 of the main body of this report.



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

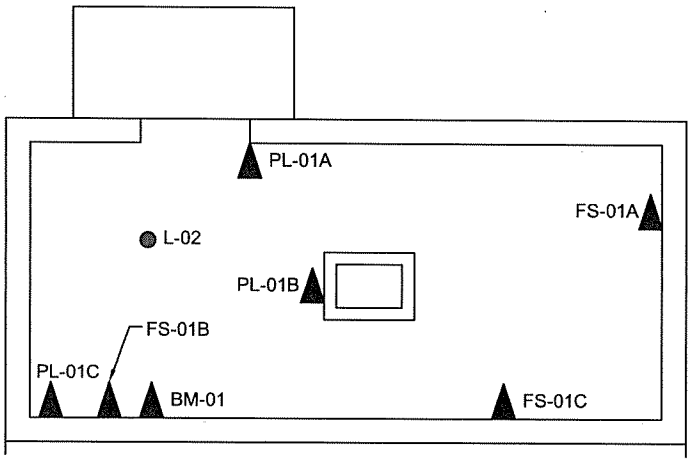
UNIT 30A, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

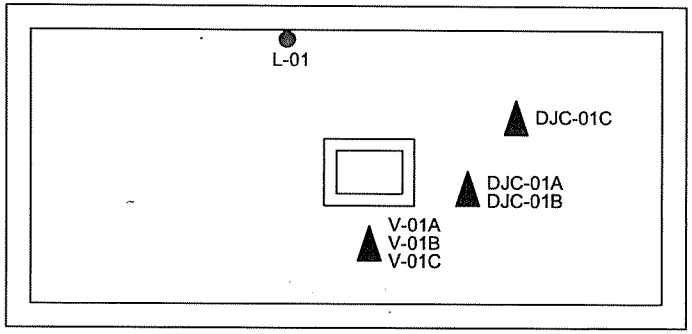
Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030334 PK/DM
App'd By:	TW

Dwg. No.: B1

Stantec



ATTIC



REST OF BUILDING

BUILDING #30
CENTRAL STORES 106

LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 30, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030335 PK/DM
App'd By:	TW

Dwg. No.: B2

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0020**

Sample Description: Central Stores - Room 106, Attic/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0021**

Sample Description: Central Stores - Room 106, Attic/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0022**

Sample Description: Central Stores - Room 106, Attic/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01A-Skim Coat ***Lab Sample ID:*** **691600131-0023**

Sample Description: Central Stores - Room 106/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01A-Rough Coat ***Lab Sample ID:*** **691600131-0023A**

Sample Description: Central Stores - Room 106/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01B ***Lab Sample ID:*** **691600131-0024**

Sample Description: Central Stores - Room 106/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01C ***Lab Sample ID:*** **691600131-0025**

Sample Description: Central Stores - Room 106/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: EJC-01A-White ***Lab Sample ID:*** **691600131-0026**

Sample Description: Central Stores - Flammable Storage/Expanding Joint Compound, Residual

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: EJC-01A-Grey ***Lab Sample ID:*** **691600131-0026A**

Sample Description: Central Stores - Flammable Storage/Expanding Joint Compound, Residual

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: EJC-01B-White ***Lab Sample ID:*** **691600131-0027**

Sample Description: Central Stores - Flammable Storage/Expanding Joint Compound, Residual

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: EJC-01B-Grey ***Lab Sample ID:*** **691600131-0027A**

Sample Description: Central Stores - Flammable Storage/Expanding Joint Compound, Residual

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: EJC-01C ***Lab Sample ID:*** **691600131-0028**

Sample Description: Central Stores - Flammable Storage/Expanding Joint Compound, Residual

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: EJG-01A ***Lab Sample ID:*** **691600131-0029**

Sample Description: Central Stores - Flammable Storage/Expansion Joint Grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: EJG-01B ***Lab Sample ID:*** **691600131-0030**

Sample Description: Central Stores - Flammable Storage/Expansion Joint Grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: EJG-01C ***Lab Sample ID:*** **691600131-0031**

Sample Description: Central Stores - Flammable Storage/Expansion Joint Grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: BM-01 (NOT ON COC) ***Lab Sample ID:*** **691600131-0031A**

Sample Description: Central Stores - Room 106/Brick Mortar Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: S-01A ***Lab Sample ID:*** **691600131-0032**

Sample Description: Central Stores - Flammable Storage, Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: S-01B ***Lab Sample ID:*** **691600131-0033**

Sample Description: Central Stores - Flammable Storage, Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: S-01C ***Lab Sample ID:*** **691600131-0034**

Sample Description: Central Stores - Flammable Storage, Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: R-01A ***Lab Sample ID:*** **691600131-0035**

Sample Description: Central Stores - Flammable Storage, Exterior/Roof, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: R-01B ***Lab Sample ID:*** **691600131-0036**

Sample Description: Central Stores - Flammable Storage, Exterior/Roof, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: R-01C ***Lab Sample ID:*** **691600131-0037**

Sample Description: Central Stores - Flammable Storage, Exterior/Roof, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: FS-01A (NOT ON COC) ***Lab Sample ID:*** **691600131-0037A**

Sample Description: Central Stores/Fire Stopper Mastic, Red - Fire stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01B (NOT ON COC) ***Lab Sample ID:*** **691600131-0037B**

Sample Description: Central Stores/Fire Stopper Mastic, Red - fire stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01C (NOT ON COC) ***Lab Sample ID:*** **691600131-0037C**

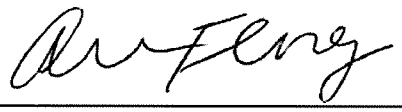
Sample Description: Central Stores/Fire Stopper Mastic, Red - fire stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (12) PLM Grav. Reduction (3)
Kathleen Cruz	PLM (4) PLM Grav. Reduction (6)

Reviewed and approved by:



Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201617:53:02

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 Or	551601650
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 CENTRAL STORES**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-01	*551601650-0001*		2/18/2016	390000 ppm
	Site: GREEN - 106 ATTIC			
L-02	*551601650-0002*		2/18/2016	1500 ppm
	Site: GREY - 106, CONCRETE FLOOR			
L-03	*551601650-0003*		2/18/2016	1600 ppm
	Site: YELLOW - FLAMMABLE STORAGE, DOOR TRIM			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 07:54:00

Wes-Har Asbestos Analysis & Consulting Ltd.

Bulk Asbestos in Vermiculite Report

For Stantec [Burnaby]
500 - 4730 Kingsway,
Burnaby, BC, V5H 0C6

Location : William Head Institution

Project : 123220504.

14936	200.100	Sample Location / Description	Result(s)	Analyzed	Analyst	ACM
1	30V-1ABC	Vermiculite Insulation, Central Stores Attic [Sample # 30-V-01ABC - Combined From Samples 1, 2 and 3]	Asbestos Fibres Not Detected DNQ Cellulose Fibres DNQ Vermiculite DNQ Non-fibrous	Feb 24 2016	HM	---
* Results Suspected: Not Enough Sample Size [Net Weight: 33.98 grams]						
4	03V-1ABC	Vermiculite Insulation, Garage, Engineering & Carpenter Attic [Sample # 03-V-01ABC - Combined from Samples 4, 5 and 6]	Asbestos Fibres Not Detected DNQ Cellulose Fibres DNQ Fibrous Glass DNQ Vermiculite DNQ Non-fibrous	Feb 24 2016	HM	---
* Results Suspected: Not Enough Sample Size. (Net Weight:31.84 grams)						
7	105-V-01	Vermiculite Insulation, Vocational Training Shops BLck Wall	DNQ Asbestiform Amphibole DNQ Vermiculite DNQ Non-fibrous	Feb 24 2016	HM	.T.

Comments

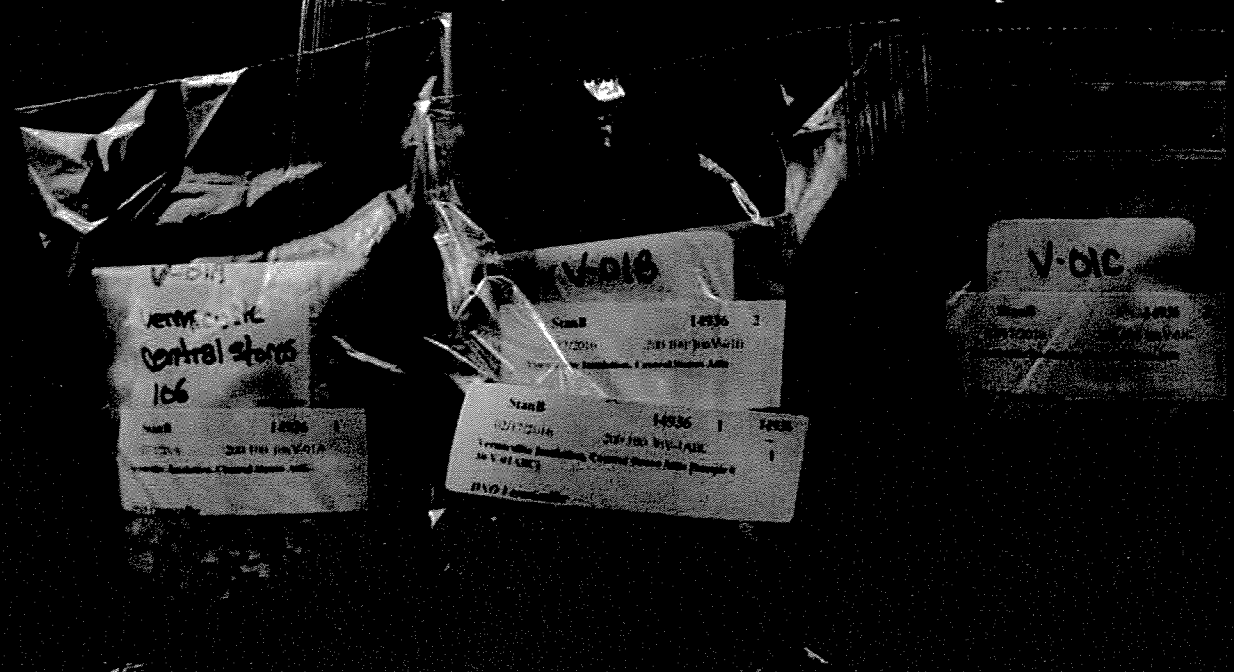
Fibrous / Mineral Components Analyzed In Accordance With The NIOSH ASBESTOS (bulk) by PLM Method 9002 [15 August 1994]
Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation EPA/600/R-04/004 January 2004
Detection Limit for Asbestiform Amphibole 'Rapid Screening' is less than 0.01 % (by weight) , Dependant on Original Sample Size
ACM Means - Asbestos Containing Material; T - Present
LP Means - Precent : Layer or Phase of Whole Sample.
DNQ Means - Detected Not Quantitated
< Means - Less Than
Samples Submitted Will Be Retained For 30 Days After Receipt And Will Be Disposed Of Thereafter Unless Otherwise Notified In Writing
Sample Submitted By Stantec [Burnaby]

February 24, 2016 [Facsimile]

H. McKnight
Analyst

H. McKnight
Reviewed By

William Head Istitution [123220504.200.100]
Vermiculite Insulation, Central Stores Attic [30-V-01ABC]



submitted sample

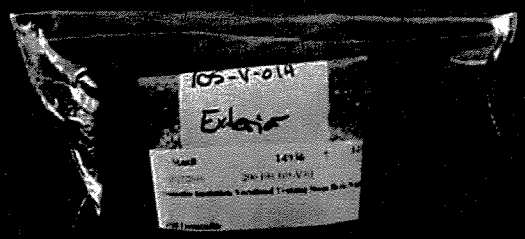
washed & sieved stereo binocular microscopy ~ 25x

William Head Istitution [123220504.200.100]
Vermiculite Insulation, Central Stores Attic [03-V-01ABC]

submitted sample

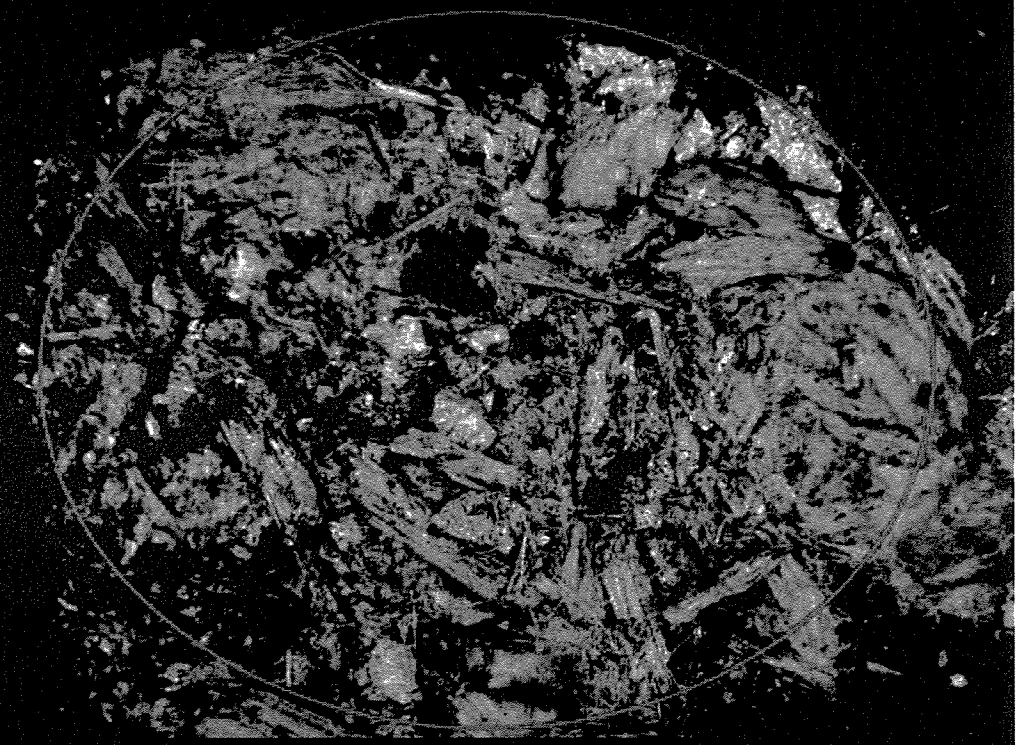
washed & sieved stereo binocular microscopy ~ 25x

123220504.200.100 105-V-01 William Head Institution
Vocational Training Shops Block Wall
Vermiculite Insulation
14936 . 03

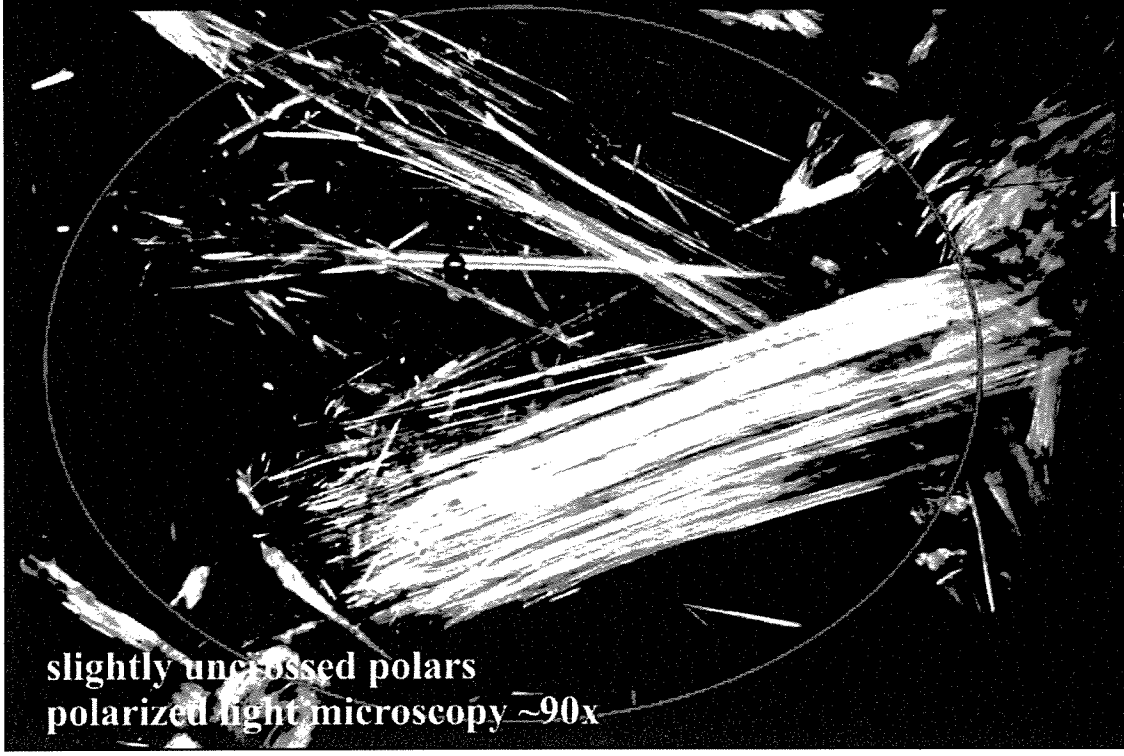


stereo binocular microscopy ~ 25x

submitted sample



washed & sieved



asbestos fibres
[asbestiform amphiboles]

slightly uncrossed polars
polarized light microscopy ~90x

APPENDIX C
FINDINGS AND RECOMMENDATIONS—CHAPEL

Appendix C FINDINGS AND RECOMMENDATIONS—CHAPEL

The chapel was reportedly constructed prior to 1990 and consists of two levels with a basement and a crawlspace. The typical structural components and finishes associated with this building consist of brick and wood exterior walls, cement, vinyl floor tiles, and carpet floors, drywall, brick, and plaster interior walls, and concrete and plaster ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Basement and crawlspace ducting, floor, wall, and ceiling finishes
- Room 107 floor, wall, and ceiling finishes
- North wall in room 104, plaster

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

C.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Plaster
- Vinyl floor tile and associated mastic
- Window caulking
- Duct tape
- Brick mortar
- Heat shield

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table C-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table C-1 Suspected ACM Sample Collection and Analysis Summary Chapel, William Head Institution, Victoria, BC

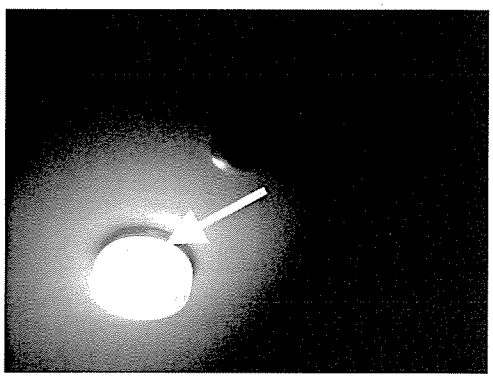
Sample Number	Material Description	Sample Location	Result (%/type asbestos)
PL-01A	Plaster, Applied to Walls	Entrance (107)	Not Detected
PL-01B	Plaster, Applied to Walls	Entrance (107)	Not Detected
PL-01C - skim	Plaster, Applied to Walls–skim coat	Entrance (107)	Not Detected
PL-01C - rough	Plaster, Applied to Walls–rough coat	Entrance (107)	Not Detected
PL-01D-skim	Plaster, Applied to Walls	Kitchen (104)	Not Detected
PL-01D- rough	Plaster, Applied to Walls–skim coat	Kitchen (104)	Not Detected
PL-01E	Plaster, Applied to Walls–rough coat	Kitchen (104)	Not Detected
VFT-01-Tile	**Vinyl Floor Tile, Tan with White & Brown Streaks**	**Entrance (107)**	**0.62% Chrysotile**
VFT-01-Mastic	Mastic	Entrance (107)	Not Detected
WC-01A	**Window Caulking, Black**	**Entrance (107)**	**3.1% Chrysotile**
WC-01B	**Window Caulking, Black**	**Entrance (107)**	**Positive Stop**
WC-01C	**Window Caulking, Black**	**Entrance (107)**	**Positive Stop**
DT-01A	**Duct Tape, White, Underneath Grey Duct Tape**	**Basement (001)**	**10% Chrysotile**
DT-01B	**Duct Tape, White, Underneath Grey Duct Tape**	**Basement (001)**	**Positive Stop**
DT-01C	**Duct Tape, White, Underneath Grey Duct Tape**	**Basement (001)**	**Positive Stop**
BM-01A	Brick Mortar, Grey	Basement (001)	Yes
BM-01B	Brick Mortar, Grey	Basement (001)	Yes
BM-01C	Brick Mortar, Grey	Basement (001)	Yes
HS-01	**Heat Shield**	**Entrance (107)**	**50% Chrysotile**

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table C-2, below were identified as ACMs.

Table C-2 Summary of Identified ACMs Chapel, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
12"x12" tan floor tile with white and brown streaks located within the entrance (107).		
Friability	Non-friable	
Condition	Good	
Content	0.62% Chrysotile	
Black window pane caulking applied to windows throughout the subject area.		
Friability	Non-friable	
Condition	Good	
Content	3.1% Chrysotile	
White duct tape concealed beneath grey duct tape throughout the subject areas. The duct tape is labelled asbestos containing in some locations.		
Friability	Friable	
Condition	Good	
Content	10% Chrysotile	

Table C-2 Summary of Identified ACMs
Chapel, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Heat shield inside round incandescent light fixture within the Chapel entrance (107). The fixture is labelled asbestos containing.		
Friability	Friable	
Condition	Good	
Content	50% Chrysotile	
Cement panel present behind heat registers on the ground floor.		No Photo Available.
Friability	Friable	
Condition	Good	
Content	90-100% Chrysotile This material was identified by previous sampling but is not present in ground floor areas included in this assessment. It may extend into the top of the crawlspace at perimeter walls.	

C.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, bell fittings for cast iron pipes, and/or in electrical equipment
- Vent and pipe flashings

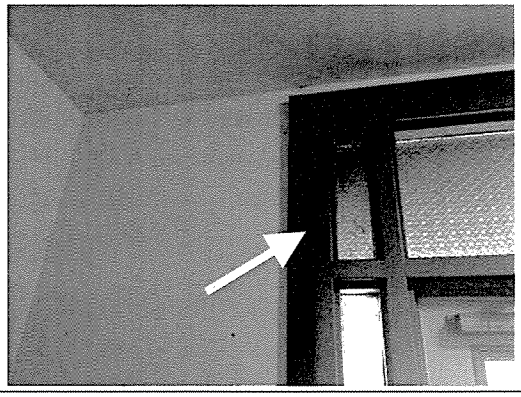
With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table C-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table C-3 Suspected LCP Sample Collection and Analysis Summary Chapel, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-04	Grey	Basement, Concrete Floor	<95	No
L-05	**Grey/orange**	**Basement Door**	**2,300**	**Yes**
L-06	**Brown**	**Entrance (107)**	**970**	**Yes**
L-07	Off-white	Entrance (107)	370	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table C-4, below were identified as LCPs.

Table C-4 Summary of Identified LCPs Chapel, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Grey coloured paint (over orange paint) on the metal door to the basement. This paint was observed to be generally in good condition (not bubbling, flaking, or peeling), with localized areas where paint was worn away.	
Brown coloured paint on trim within the entrance (107). This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

C.3 POLYCHLORINATED BIPHENYLS

No suspected PCB-containing electrical equipment was observed.

C.4 MERCURY

No suspected mercury-containing equipment was observed. Mercury may be present in paints and adhesives.

C.5 MOULD

No mould and/or moisture-impacted building materials were observed.

C.6 OZONE-DEPLETING SUBSTANCES

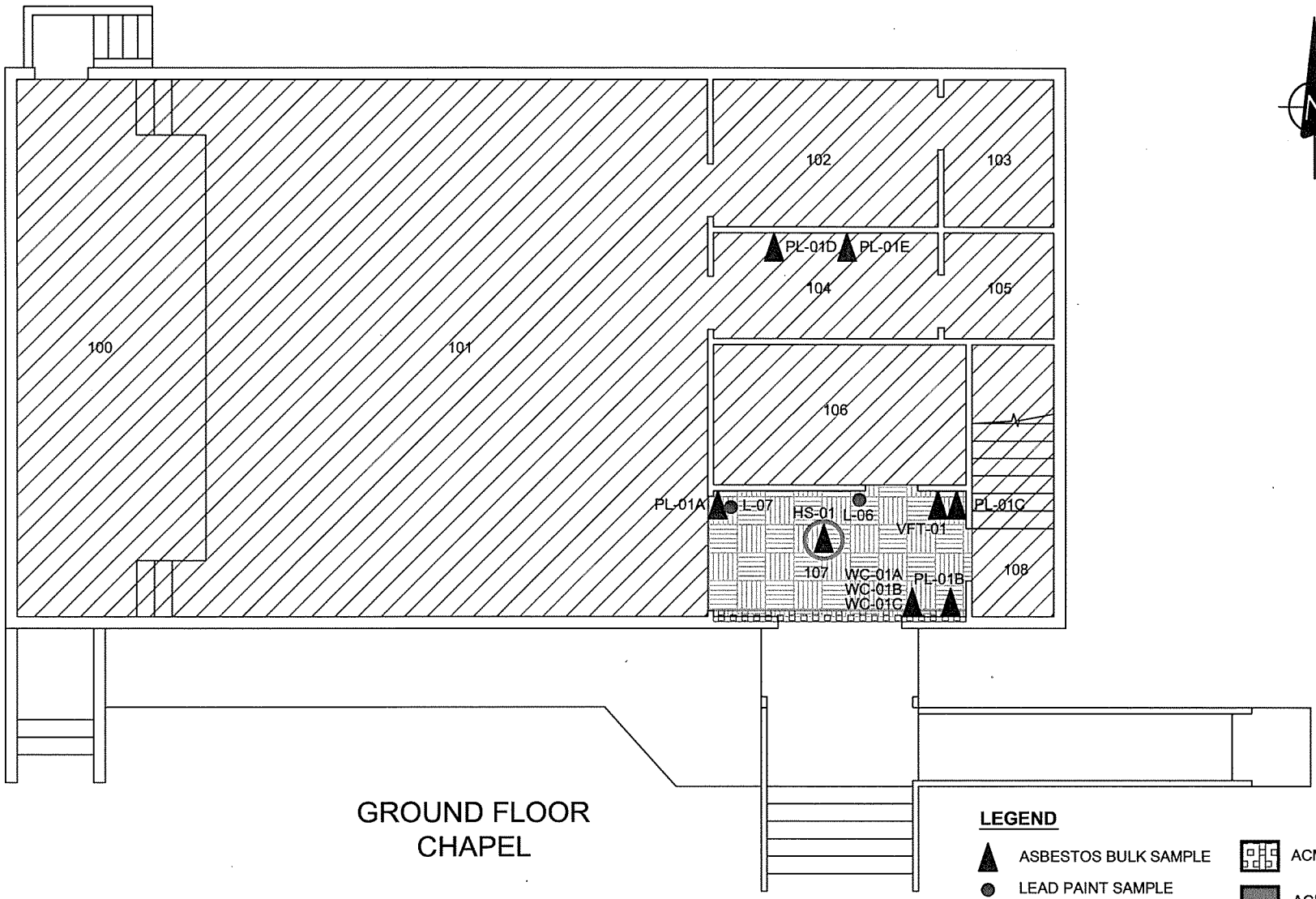
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

C.7 SILICA

Silica is presumed to be present in vinyl floor tiles, plaster, brick, mortar, cement, and concrete materials observed.

C.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



GROUND FLOOR
CHAPEL

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM VINYL FLOOR TILES
- ACM WINDOW CAULKING
- ACM HEAT SHIELD
- AREAS NOT INCLUDED IN ASSESSMENT

NOTES: 1. **WHITE ASBESTOS-CONTAINING DUCT TAPE BENEATH GREY DUCT TAPE IS PRESENT THROUGHOUT THE BUILDING.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

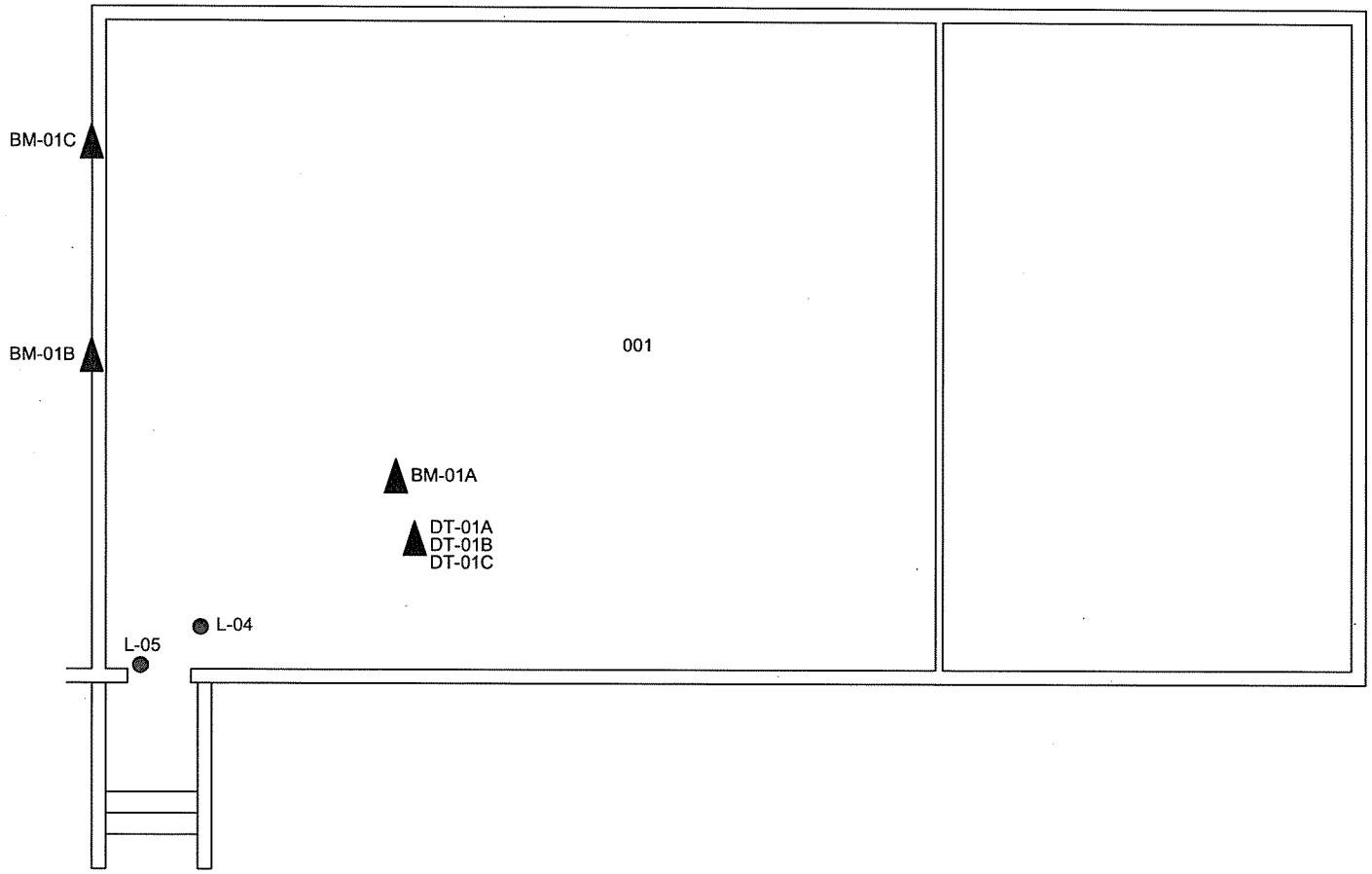
UNIT 29, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD PK/DM SL2016030337
App'd By:	TW

Dwg. No.: C1

Stantec



BASEMENT
CHAPEL

LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NOTES: 1. **WHITE ASBESTOS-CONTAINING DUCT TAPE BENEATH GREY DUCT TAPE IS PRESENT THROUGHOUT THE BUILDING.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 29, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030338 PK/DM
App'd By:	TW

Dwg. No.: C2

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PL-01A ***Lab Sample ID:*** **691600131-0001**
Sample Description: Chapel - Entrance (107)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray/White	0%	100%	None Detected	Layers inseparable.

Client Sample ID: PL-01B ***Lab Sample ID:*** **691600131-0002**
Sample Description: Chapel - Entrance (107)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray/White	0%	100%	None Detected	Layers inseparable.

Client Sample ID: PL-01C-Skim Coat ***Lab Sample ID:*** **691600131-0003**
Sample Description: Chapel - Entrance (107)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01C-Rough Coat ***Lab Sample ID:*** **691600131-0003A**
Sample Description: Chapel - Entrance (107)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01D-Skim Coat ***Lab Sample ID:*** **691600131-0004**
Sample Description: Chapel - Kitchen (104)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01D-Rough Coat ***Lab Sample ID:*** **691600131-0004A**
Sample Description: Chapel - Kitchen (104)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01E ***Lab Sample ID:*** **691600131-0005**
Sample Description: Chapel - Kitchen (104)/Plaster, Applied to Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray/White	0%	100%	None Detected	This is a composite result of skim and rough coat; very little sample to be separated.

EMSL Canada Inc.
4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VFT-01-Tile **Lab Sample ID:** 691600131-0006
Sample Description: Chapel - Entrance (107)/Vinyl Floor Tile, Tan w/White & Brown Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	99.4%	**0.62% Chrysotile**	

Client Sample ID: VFT-01-Mastic **Lab Sample ID:** 691600131-0006A
Sample Description: Chapel - Entrance (107)/Vinyl Floor Tile, Tan w/White & Brown Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Brown/Black	0%	100%	None Detected	

Client Sample ID: WC-01A **Lab Sample ID:** 691600131-0007
Sample Description: Chapel - Entrance (107)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown/Black	0.0%	96.9%	**3.1% Chrysotile**	

Client Sample ID: WC-01B **Lab Sample ID:** 691600131-0008
Sample Description: Chapel - Entrance (107)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-01C **Lab Sample ID:** 691600131-0009
Sample Description: Chapel - Entrance (107)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DT-01A **Lab Sample ID:** 691600131-0010
Sample Description: Chapel - Basement (001)/Duct Tape, White, Underneath Grey Duct Tape

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray/White	60%	30%	**10% Chrysotile**	

Client Sample ID: DT-01B **Lab Sample ID:** 691600131-0011
Sample Description: Chapel - Basement (001)/Duct Tape, White, Underneath Grey Duct Tape

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016				Stop Positive (Not Analyzed)	

Client Sample ID: DT-01C **Lab Sample ID:** 691600131-0012
Sample Description: Chapel - Basement (001)/Duct Tape, White, Underneath Grey Duct Tape

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016				Stop Positive (Not Analyzed)	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: BM-01A ***Lab Sample ID:*** **691600131-0013**

Sample Description: Chapel - Basement (001)/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01B ***Lab Sample ID:*** **691600131-0014**

Sample Description: Chapel - Basement (001)/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01C ***Lab Sample ID:*** **691600131-0015**

Sample Description: Chapel - Basement (001)/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: HS-01 ***Lab Sample ID:*** **691600131-0016**

Sample Description: Chapel - Entrance (107)/Heat Shield

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White/Silver	0%	50%	**50% Chrysotile**	

Analyst(s):

Alice Feng PLM (8)
Kathleen Cruz PLM (5)
PLM Grav. Reduction (2)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201612:30:09

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 Or	551601651
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone:	(604) 412-3004
Fax:	
Received:	02/17/16 10:11 AM
Collected:	

Project: **123220504.200.1 CHAPEL**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-04	*551601651-0001*		2/18/2016	<95 ppm
	Site: BASEMENT, CONCRETE FLOOR Desc: GREY Insufficient sample to reach reporting limit.			
L-05	*551601651-0002*		2/18/2016	2300 ppm
	Site: DOOR Desc: GREY/ORANGE			
L-06	*551601651-0003*		2/18/2016	970 ppm
	Site: ENTRANCE (107) Desc: BROWN			
L-07	*551601651-0004*		2/18/2016	370 ppm
	Site: ENTRANCE (107) Desc: OFF-WHITE			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 07:58:43

APPENDIX D
FINDINGS AND RECOMMENDATIONS— GARAGE, ENGINEERING AND CARPENTER'S SHOP

Appendix D FINDINGS AND RECOMMENDATIONS—GARAGE, ENGINEERING AND CARPENTER'S SHOP

The garage, engineering, and carpenter's shop was reportedly constructed prior to 1990 and consists of a one-level building. The typical structural components and finishes associated with this building consist of exterior brick walls, vinyl sheet flooring, vinyl floor tile, and concrete floors, brick, drywall, and plaster walls, and plaster and metal ceilings.

Building materials throughout the structure were assessed as part of this project.

The results of the assessment for each of the considered hazardous materials within the building are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

D.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Plaster
- Vinyl sheet flooring
- Vinyl floor tiles
- Building paper
- Fire-stop/wall protector
- Assorted mastics, caulkings, and sealants
- Duct tape
- Brick mortar
- Vermiculite
- Cement panel
- Asphalt shingle

Samples of the above-noted suspected ACMs were collected and submitted to EMSL and Wes-Har for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table D-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table D-1 Suspected ACM Sample Collection and Analysis Summary Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	**Drywall joint Compound, Applied to Drywall Walls**	**Room 101**	**2% Chrysotile**
DJC-01B	**Drywall joint Compound, Applied to Drywall Walls**	**Room 101**	**Positive Stop**
DJC-01C	**Drywall joint Compound, Applied to Drywall Walls**	**Room 101**	**Positive Stop**
PL-01A	Plaster, Applied to Walls and Ceilings	Room 111	Not Detected
PL-01B–Skim Coat	Plaster applied to Walls and Ceilings	Room 111	Not Detected
PL-01B–Rough Coat	Plaster, Applied to Walls and Ceilings	Room 111	Not Detected
PL-01C–Skim Coat	Plaster applied to Walls and Ceilings	Room 111	Not Detected
PL-01C–Rough Coat	Plaster, Applied to Walls and Ceilings	Room 111	Not Detected
PL-01D–Skim Coat	Plaster, Applied to Walls and Ceilings	Room 113	Not Detected
PL-01D–Rough Coat	Plaster, Applied to Walls and Ceilings	Room 113	Not Detected
PL-01E–Skim Coat	Plaster, Applied to Walls and Ceilings	Room 112	Not Detected
PL-01E–Roughт Coat	Plaster, Applied to Walls and Ceilings	Room 112	Not Detected
VSF-01	Vinyl Sheet Flooring, Beige with brown & White Smudges	Room 105	Not Detected
VFT-01–Tile	Vinyl Floor Tile, 12"x12", Pink with White Smears	Room 114	Not Detected
VFT-01–Mastic	Vinyl Floor Tile, 12"x12", Pink with White Smears	Room 114	Not Detected
VFT-02–Beige Tile	**Vinyl Floor Tile–Beige, 12"x12" (concealed second layer)**	**Room 115**	**10.8% Chrysotile**
VFT-02–Tile	**Vinyl Floor Tile–Blue with White Streaks, 12"x12" (exposed layer)**	**Room 115**	**9.9% Chrysotile**
VFT-02–Mastic	**Floor tile mastic on blue tile**	**Room 115**	**3% Chrysotile**
VFT-02–Beige tile's mastic	**Floor tile mastic on beige tile**	**Room 115**	**1% Chrysotile**
VFT-03	Vinyl Floor Tile, Grey with White & Dark Grey Smudges	Room 103	Not Detected

Table D-1 Suspected ACM Sample Collection and Analysis Summary Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
VFT-03–Mastic	Floor tile mastic	Room 103	Not Detected
BP-01A	Building Paper, Black	Attic	Not Detected
BP-01B	Building Paper, Black	Attic	Not Detected
BP-01C	Building Paper, Black	Attic	Not Detected
FDC-01A	Furnace Duct Caulking, Black	Room 116	Not Detected
FDC-01B	Furnace Duct Caulking, Black	Room 116	Not Detected
FDC-01C	Furnace Duct Caulking, Black	Room 116	Not Detected
FS-01A	Fire Stopper, Red, Mastic, Wall Penetration	Room 116	Not Detected
FS-01B	Fire Stopper, Red, Mastic, Wall Penetration	Room 116	Not Detected
FS-01C	Fire Stopper, Red, Mastic, Wall Penetration	Room 116	Not Detected
RM-01A	Remnant Mastic, Grey	Room 118	Not Detected
RM-01B	Remnant Mastic, Grey	Room 118	Not Detected
RM-01C	Remnant Mastic, Grey	Room 118	Not Detected
DT-01	**Duct Tape, Cream**	**Room 118**	**65% Chrysotile**
WPC-01A	**Window Caulking, Black, Pane**	**Room 100**	**Not Detected**
WPC-01B	**Window Caulking, Black, Pane**	**Room 102**	**1.3% Chrysotile**
WPC-01C	**Window Caulking, Black, Pane**	**Room 103**	**Positive Stop**
BM-01A	Brick Mortar, Grey	Room 118	Not Detected
BM-01B	Brick Mortar, Grey	Room 120	Not Detected
BM-01C	Brick Mortar, Grey	Room 107	Not Detected
BM-01D	Brick Mortar, Grey	Room 114	Not Detected
BM-01E	Brick Mortar, Grey	Room 100	Not Detected
VS-01A	Vent Sealant, Black	Exterior, East Side	Not Detected
VS-01B	Vent Sealant, Black	Exterior, East Side	Not Detected
VS-01C	Vent Sealant, Black	Exterior, East Side	Not Detected
WFC-01A	**Window Caulking, Grey/Cream, Frame**	**Exterior**	**1.8% Chrysotile**
WFC-01B	**Window Caulking, Grey/Cream, Frame**	**Exterior**	**Positive Stop**
WFC-01C	**Window Caulking, Grey/Cream, Frame**	**Exterior**	**Positive Stop**
RVM-01A	Roof Vent Mastic, Brown	Exterior, Roof	Not Detected
RVM-01B	Roof Vent Mastic, Brown	Exterior, Roof	Not Detected
RVM-01C	Roof Vent Mastic, Brown	Exterior, Roof	Not Detected
RVM-02A	Roof Vent Mastic, Black	Exterior, Roof	Not Detected

Table D-1 Suspected ACM Sample Collection and Analysis Summary Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
RVM-02B	Roof Vent Mastic, Black	Exterior, Roof	Not Detected
RVM-02C	Roof Vent Mastic, Black	Exterior, Roof	Not Detected
RS-01A	Roof Shingle	Exterior, Covered Storage Area Adjacent to Building 03	Not Detected
RS-01B	Roof Shingle	Exterior, Covered Storage Area Adjacent to Building 03	Not Detected
RS-01C	Roof Shingle	Exterior, Covered Storage Area Adjacent to Building 03	Not Detected
DM-01A	Duct Mastic, Applied to Dust Extraction Vent	Room 114	Not Detected
DM-01B	Duct Mastic, Applied to Dust Extraction Vent	Room 114	Not Detected
DM-01C	Duct Mastic, Applied to Dust Extraction Vent	Room 114	Not Detected
CP-01	**Cement Panel**	**Room 116**	**15% Chrysotile**
V-01A	Vermiculite Insulation	Attic	Not Detected
V-01B	Vermiculite Insulation	Attic	Not Detected
V-01C	Vermiculite Insulation	Attic	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table D-2, below were identified as ACMs.

Table D-2 Summary of Identified ACMs Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

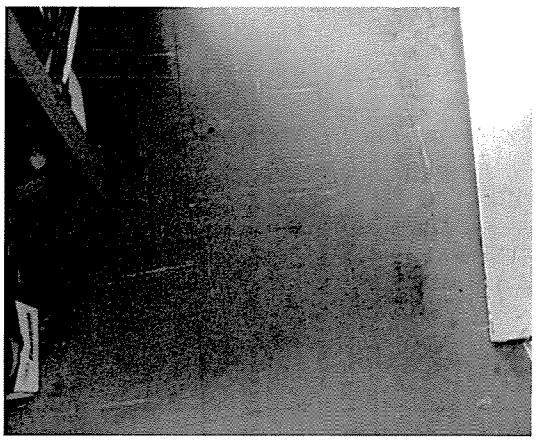
Identified ACM Description and Condition Information		Photo
Drywall joint compound applied to drywall walls within room 101 and 102.		No Photo Available
Friability	Non-friable	
Condition	Good	
Content	2% Chrysotile	
12"x12" blue vinyl floor tile with white streaks and underlying beige vinyl floor tile (and both associated mastics) in room 115 and 110.		
Friability	Non-friable	
Condition	Good	
Content	Blue Vinyl Floor Tile – 9.9% Chrysotile and associated mastic (3% Chrysotile) Beige Vinyl Floor Tile – 10.8% Chrysotile and associated mastic (1% Chrysotile)	

Table D-2 Summary of Identified ACMs Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

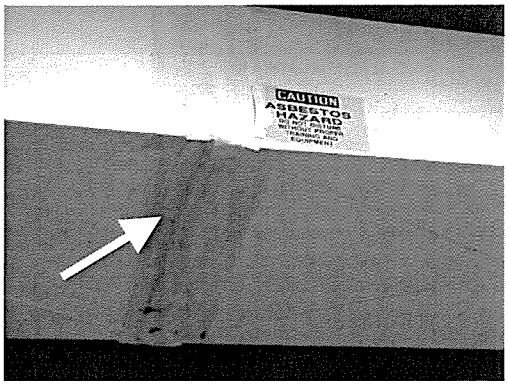
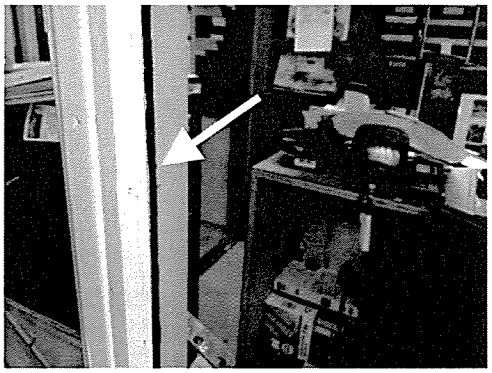
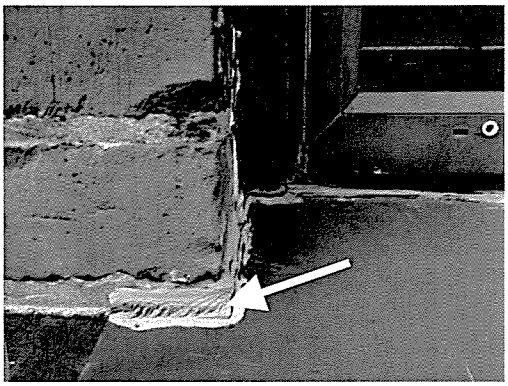
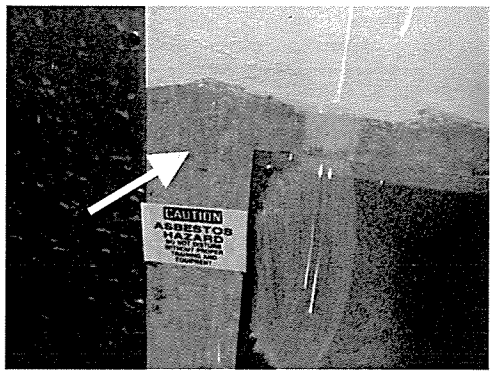
Identified ACM Description and Condition Information		Photo
Cream duct tape throughout. Duct tape is labelled asbestos containing in some locations.		
Friability	Friable	
Condition	Good	
Content	65% Chrysotile	
Black window pane caulking throughout.		
Friability	Non-friable	
Condition	Good	
Content	1.3% Chrysotile	
Grey/cream window frame caulking applied to the exterior.		
Friability	Non-friable	
Condition	Good	
Content	1.8% Chrysotile	

**Table D-2 Summary of Identified ACMs
Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC**

Identified ACM Description and Condition Information		Photo
Cement panel within room 116.		
Friability	Non-friable	
Condition	Good	
Content	15% Chrysotile	

D.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the building. A summary of the sample types, locations and analytical results is presented in Table D-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

**Table D-3 Suspected LCP Sample Collection and Analysis Summary
Garage, Engineering & Carpenter's Shop, William Head Institution, Victoria, BC**

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-50	**Grey**	**Room 118, Concrete Floor**	**3,200**	**Yes**
L-51	Light beige	Room 118	350	No
L-52	**Grey**	**Room 116, Concrete Floor**	**1,400**	**Yes**

Table D-3 Suspected LCP Sample Collection and Analysis Summary Garage, Engineering & Carpenter's Shop, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-53	Off-white	Room 107	65,000	Yes
L-54	Light blue	Room 114, Trim & Doors	21,000	Yes
L-55	Blue	Room 114, Concrete Floor	2,200	Yes
L-56	Yellow	Room 114, Concrete Floor	25,000	Yes
L-57	Red	Room 114, Lines on Concrete Floor	29,000	Yes
L-58	Bright yellow	Room 100, Concrete Floor	56,000	Yes
L-59A	Light blue	Room 101	1,200	Yes

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table D-4, below were identified as LCPs.

Table D-4 Summary of Identified LCPs Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

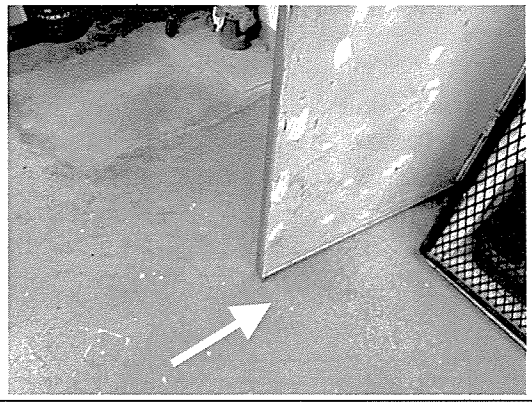
Identified LCP Description	Photo
Grey coloured paint on concrete floors. This paint was observed to be in generally good condition with localized areas where paint has worn from surface (not bubbling, flaking, or peeling).	

Table D-4 Summary of Identified LCPs Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

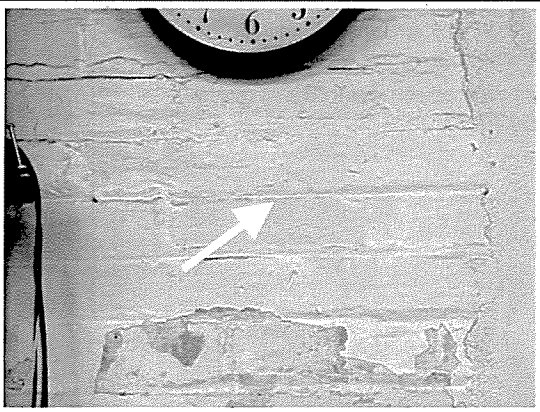
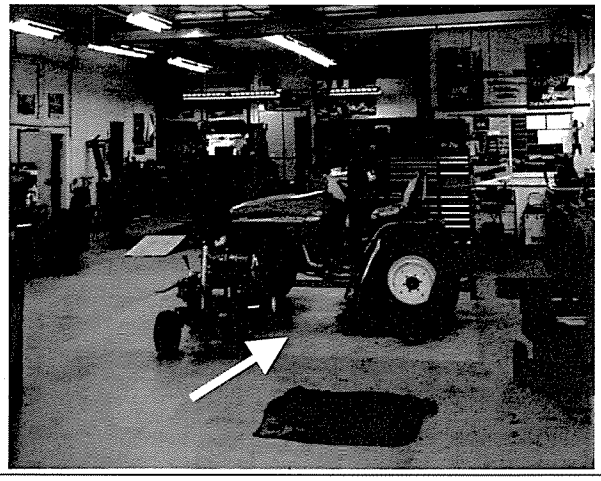
Identified LCP Description	Photo
Off-white coloured paint on brick walls. This paint was observed to be in poor condition (bubbling, flaking, or peeling).	
Light blue coloured paint on doors and trim within room 114. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Blue, red, and yellow coloured paint on the concrete floor within room 114. This paint was observed to be in generally good condition with localized areas where paint has worn from surface (not bubbling, flaking, or peeling).	

Table D-4 Summary of Identified LCPs
Garage, Engineering and Carpenter's Shop, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Bright yellow coloured paint on the concrete floor within room 100. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Light blue coloured paint on drywall walls and ceiling within room 101. This paint was observed to be in good condition (bubbling, flaking, or peeling).	No Photo Available

D.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 110 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

D.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 110 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

D.5 MOULD

No mould and/or moisture-impacted building materials were observed.

D.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

D.7 SILICA

Silica is presumed to be present in vinyl floor tiles, plaster, drywall, brick, mortar, asphalt, cement, and concrete materials observed.

D.8 RECOMMENDATIONS

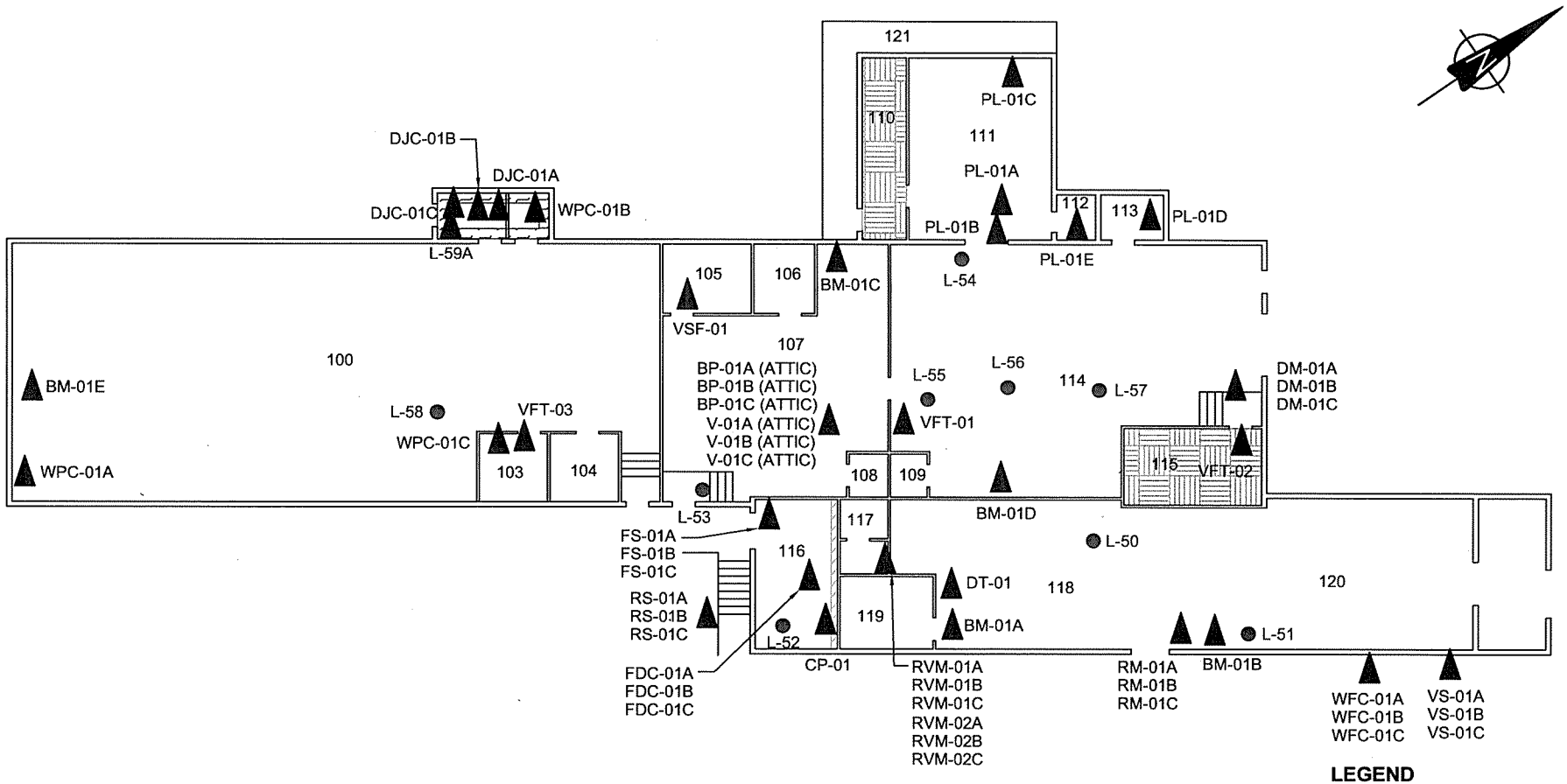
If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

Additional material-specific recommendations to be considered during the renovation project are provided below.

D.8.1 Lead

Lead-containing paint observed in poor condition within the building should be cleaned-up and/or addressed during the project, and to mitigate potential for additional deterioration and dispersal of lead-containing paint chips/dust. Consideration should be given to re-painting surfaces to mitigate the potential for additional deterioration and hazards associated with the lead-containing paint chips/dust that may be created. If re-painting is completed, appropriate precautions to protect workers and work areas from exposure to lead will be required during painting preparation activities.

Provisions for worker protection and waste disposal related to the above are included in Section 5.2 of the main body of this report.



GROUND FLOOR
GARAGE, ENGINEERING & CARPENTER

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM VINYL FLOOR TILES
- ACM CEMENT PANEL
- ACM DRYWALL JOINT COMPOUND

NOTES: **1. CREAM COLORED ASBESTOS-CONTAINING DUCT TAPE IS PRESENT THROUGHOUT THE BUILDING.**
2. BLACK ASBESTOS-CONTAINING WINDOW PANE CAULKING IS PRESENT THROUGHOUT THE BUILDING.
3. GREY/CREAM ASBESTOS-CONTAINING WINDOW FRAME CAULKING IS PRESENT ON THE EXTERIOR OF WINDOWS THROUGHOUT THE BUILDING.
4. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 3, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030336 VM/DM
App'd By:	TW

Dwg. No.: D1

Stantec

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0351**

Sample Description: Garage, Engineering & Carpenter - Room 101/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	98%	**2% Chrysotile**	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0352**

Sample Description: Garage, Engineering & Carpenter - Room 101/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016			Stop Positive (Not Analyzed)		

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0353**

Sample Description: Garage, Engineering & Carpenter - Room 101/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016			Stop Positive (Not Analyzed)		

Client Sample ID: PL-01A ***Lab Sample ID:*** **691600131-0354**

Sample Description: Garage, Engineering & Carpenter - Room 111/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	Inseparable layers

Client Sample ID: PL-01B-Skim Coat ***Lab Sample ID:*** **691600131-0355**

Sample Description: Garage, Engineering & Carpenter - Room 111/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01B-Rough Coat ***Lab Sample ID:*** **691600131-0355A**

Sample Description: Garage, Engineering & Carpenter - Room 111/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01C-Skim Coat ***Lab Sample ID:*** **691600131-0356**

Sample Description: Garage, Engineering & Carpenter - Room 111/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PL-01C-Rough Coat ***Lab Sample ID:*** **691600131-0356A**

Sample Description: Garage, Engineering & Carpenter - Room 111/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01D-Skim Coat ***Lab Sample ID:*** **691600131-0357**

Sample Description: Garage, Engineering & Carpenter - Room 113/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01D-Rough Coat ***Lab Sample ID:*** **691600131-0357A**

Sample Description: Garage, Engineering & Carpenter - Room 113/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	Gray	0%	100%	None Detected	

Client Sample ID: PL-01E-Skim Coat ***Lab Sample ID:*** **691600131-0358**

Sample Description: Garage, Engineering & Carpenter - Room 112/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01E-Rough Coat ***Lab Sample ID:*** **691600131-0358A**

Sample Description: Garage, Engineering & Carpenter - Room 112/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	Gray	0%	100%	None Detected	

Client Sample ID: VSF-01 ***Lab Sample ID:*** **691600131-0359**

Sample Description: Garage, Engineering & Carpenter - Room 105/Vinyl Sheet Flooring, Beige w/Brown & White Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Beige	0.0%	100%	None Detected	

Client Sample ID: VFT-01-Tile ***Lab Sample ID:*** **691600131-0360**

Sample Description: Garage, Engineering & Carpenter - Room 114/Vinyl Floor Tile 12"x12" Pink w/White Smears

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Beige	0.0%	100%	None Detected	

Client Sample ID: VFT-01-Mastic ***Lab Sample ID:*** **691600131-0360A**

Sample Description: Garage, Engineering & Carpenter - Room 114/Vinyl Floor Tile 12"x12" Pink w/White Smears

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VFT-02-Beige FT ***Lab Sample ID:*** **691600131-0361**
Sample Description: Garage, Engineering & Carpenter - Room 115/Blue w/White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Beige	0.0%	89.2%	**10.8% Chrysotile**	

Client Sample ID: VFT-02-Tile ***Lab Sample ID:*** **691600131-0361A**
Sample Description: Garage, Engineering & Carpenter - Room 115/Blue w/White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Blue	0.0%	90.1%	**9.9% Chrysotile**	

Client Sample ID: VFT-02-Mastic ***Lab Sample ID:*** **691600131-0361B**
Sample Description: Garage, Engineering & Carpenter - Room 115/Blue w/White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Black	0%	97%	**3% Chrysotile**	

Client Sample ID: VFT-02-Beige tile's mastic ***Lab Sample ID:*** **691600131-0361C**
Sample Description: Garage, Engineering & Carpenter - Room 115/Blue w/White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Black	0%	99%	**1% Chrysotile**	

Client Sample ID: VFT-03 ***Lab Sample ID:*** **691600131-0362**
Sample Description: Garage, Engineering & Carpenter - Room 103/Vinyl Floor Tile, Grey w/White & Dark Grey Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: VFT-03-Mastic ***Lab Sample ID:*** **691600131-0362A**
Sample Description: Garage, Engineering & Carpenter - Room 103/Vinyl Floor Tile, Grey w/White & Dark Grey Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Yellow	0.0%	100%	None Detected	

Client Sample ID: BP-01A ***Lab Sample ID:*** **691600131-0363**
Sample Description: Garage, Engineering & Carpenter - Attic/Building Paper, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: BP-01B ***Lab Sample ID:*** **691600131-0364**
Sample Description: Garage, Engineering & Carpenter - Attic/Building Paper, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Brown	0.0%	100%	None Detected	

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http://www.EMSL.com / vancouverlab@EMSL.com

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: BP-01C ***Lab Sample ID:*** **691600131-0365**

Sample Description: Garage, Engineering & Carpenter - Attic/Building Paper, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: FDC-01A ***Lab Sample ID:*** **691600131-0366**

Sample Description: Garage, Engineering & Carpenter - Room 116/Furnace Duct Cleaning Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: FDC-01B ***Lab Sample ID:*** **691600131-0367**

Sample Description: Garage, Engineering & Carpenter - Room 116/Furnace Duct Cleaning Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: FDC-01C ***Lab Sample ID:*** **691600131-0368**

Sample Description: Garage, Engineering & Carpenter - Room 116/Furnace Duct Cleaning Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	2.4%	97.6%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0369**

Sample Description: Garage, Engineering & Carpenter - Room 116/Fire Stopper, Red, Mastic, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0370**

Sample Description: Garage, Engineering & Carpenter - Room 116/Fire Stopper, Red, Mastic, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0371**

Sample Description: Garage, Engineering & Carpenter - Room 116/Fire Stopper, Red, Mastic, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	2.1%	97.9%	None Detected	

Client Sample ID: RM-01A ***Lab Sample ID:*** **691600131-0372**

Sample Description: Garage, Engineering & Carpenter - Room 118/Remnant Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	100%	None Detected	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: RM-01B **Lab Sample ID:** 691600131-0373
Sample Description: Garage, Engineering & Carpenter - Room 118/Remnant Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: RM-01C **Lab Sample ID:** 691600131-0374
Sample Description: Garage, Engineering & Carpenter - Room 118/Remnant Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DT-01 **Lab Sample ID:** 691600131-0375
Sample Description: Garage, Engineering & Carpenter - Room 118/Duct Tape, Cream, Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	35%	**65% Chrysotile**	Layers inseparable

Client Sample ID: WPC-01A **Lab Sample ID:** 691600131-0376
Sample Description: Garage, Engineering & Carpenter - Room 100/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: WPC-01B **Lab Sample ID:** 691600131-0377
Sample Description: Garage, Engineering & Carpenter - Room 102/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray/Black	0.0%	98.7%	**1.3% Chrysotile**	

Client Sample ID: WPC-01C **Lab Sample ID:** 691600131-0378
Sample Description: Garage, Engineering & Carpenter - Room 103/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: BM-01A **Lab Sample ID:** 691600131-0379
Sample Description: Garage, Engineering & Carpenter - Room 118/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01B **Lab Sample ID:** 691600131-0380
Sample Description: Garage, Engineering & Carpenter - Room 120/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	100%	None Detected	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: BM-01C ***Lab Sample ID:*** **691600131-0381**

Sample Description: Garage, Engineering & Carpenter - Room 107/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01D ***Lab Sample ID:*** **691600131-0382**

Sample Description: Garage, Engineering & Carpenter - Room 114/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01E ***Lab Sample ID:*** **691600131-0383**

Sample Description: Garage, Engineering & Carpenter - Room 100/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	Gray	0%	100%	None Detected	

Client Sample ID: VS-01A ***Lab Sample ID:*** **691600131-0384**

Sample Description: Garage, Engineering & Carpenter - Ext East Side/Vent Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: VS-01B ***Lab Sample ID:*** **691600131-0385**

Sample Description: Garage, Engineering & Carpenter - Ext East Side/Vent Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: VS-01C ***Lab Sample ID:*** **691600131-0386**

Sample Description: Garage, Engineering & Carpenter - Ext East Side/Vent Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White/Black	0.0%	100%	None Detected	

Client Sample ID: WFC-01A ***Lab Sample ID:*** **691600131-0387**

Sample Description: Garage, Engineering & Carpenter - Exterior/Window Caulking, Grey/Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	98.2%	**1.8% Chrysotile**	

Client Sample ID: WFC-01B ***Lab Sample ID:*** **691600131-0388**

Sample Description: Garage, Engineering & Carpenter - Exterior/Window Caulking, Grey/Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: WFC-01C ***Lab Sample ID:*** **691600131-0389**

Sample Description: Garage, Engineering & Carpenter - Exterior/Window Caulking, Grey/Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: RVM-01A ***Lab Sample ID:*** **691600131-0390**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: RVM-01B ***Lab Sample ID:*** **691600131-0391**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: RVM-01C ***Lab Sample ID:*** **691600131-0392**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: RVM-02A ***Lab Sample ID:*** **691600131-0393**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: RVM-02B ***Lab Sample ID:*** **691600131-0394**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: RVM-02C ***Lab Sample ID:*** **691600131-0395**

Sample Description: Garage, Engineering & Carpenter - Exterior Roof/Roof Vent Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: RS-01A ***Lab Sample ID:*** **691600131-0396**

Sample Description: Garage, Eng. & Carpenter - Ext Storage Adj Build 3/Roof Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: RS-01B ***Lab Sample ID:*** **691600131-0397**

Sample Description: Garage, Eng. & Carpenter - Ext Storage Adj Build 3/Roof Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Black	0.0%	100%	None Detected	

Client Sample ID: RS-01C ***Lab Sample ID:*** **691600131-0398**

Sample Description: Garage, Eng. & Carpenter - Ext Storage Adj Build 3/Roof Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: DM-01A ***Lab Sample ID:*** **691600131-0399**

Sample Description: Garage, Engineering & Carpenter - Room 114/Duct Mastic, Applied to Dust Extraction Vent

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-01B ***Lab Sample ID:*** **691600131-0400**

Sample Description: Garage, Engineering & Carpenter - Room 114/Duct Mastic, Applied to Dust Extraction Vent

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-01C ***Lab Sample ID:*** **691600131-0401**

Sample Description: Garage, Engineering & Carpenter - Room 114/Duct Mastic, Applied to Dust Extraction Vent

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: CP-01 ***Lab Sample ID:*** **691600131-0402**

Sample Description: Garage, Engineering & Carpenter - Room 116/Cement Panel

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	Gray	0%	85%	**15% Chrysotile**	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki	PLM (13) PLM Grav. Reduction (25)
Natalie D'Amico	PLM (7) PLM Grav. Reduction (10)
Romeo Samson	PLM Grav. Reduction (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201613:54:54

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 Or	551601702
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 GARAGE, ENGINEERING & CARPENTER**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-50	*551601702-0001*		2/19/2016	3200 ppm
	Site: GREY-ROOM 118, CONCRETE FLOOR			
L-51	*551601702-0002*		2/19/2016	350 ppm
	Site: LIGHT BEIGE- ROOM 118			
L-52	*551601702-0003*		2/19/2016	1400 ppm
	Site: GREY-ROOM 116, CONCRETE FLOOR			
L-53	*551601702-0004*		2/19/2016	65000 ppm
	Site: OFF-WHITE- ROOM 107			
L-54	*551601702-0005*		2/19/2016	21000 ppm
	Site: LIGHT BLUE- ROOM 114, TRIM & DOORS			
L-55	*551601702-0006*		2/19/2016	2200 ppm
	Site: BLUE- ROOM 114, CONCRETE FLOOR			
L-56	*551601702-0007*		2/19/2016	25000 ppm
	Site: YELLOW- ROOM 114, CONCRETE FLOOR			
L-57	*551601702-0008*		2/19/2016	29000 ppm
	Site: RED- ROOM 114, LINES ON CONCRETE FLOOR			
L-58	*551601702-0009*		2/19/2016	56000 ppm
	Site: BRIGHT YELLOW- ROOM 100, CONCRETE FLOOR			
L-59A	*551601702-0010*		2/19/2016	1200 ppm
	Site: LIGHT BLUE- ROOM 101			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:18:56

Wes-Har Asbestos Analysis & Consulting Ltd.

Bulk Asbestos in Vermiculite Report

For Stantec [Burnaby]
500 - 4730 Kingsway,
Burnaby, BC, V5H 0C6

Location : William Head Institution

Project : 123220504.

14936	200.100	Sample Location / Description	Result(s)	Analyzed	Analyst	ACM
1	30V-1ABC	Vermiculite Insulation, Central Stores Attic [Sample # 30-V-01ABC - Combined From Samples 1, 2 and 3]	Asbestos Fibres Not Detected DNQ Cellulose Fibres DNQ Vermiculite DNQ Non-fibrous	Feb 24 2016	HM	---
* Results Suspected: Not Enough Sample Size [Net Weight: 33.98 grams]						
4	03V-1ABC	Vermiculite Insulation, Garage, Engineering & Carpenter Attic [Sample # 03-V-01ABC - Combined from Samples 4, 5 and 6]	Asbestos Fibres Not Detected DNQ Cellulose Fibres DNQ Fibrous Glass DNQ Vermiculite DNQ Non-fibrous	Feb 24 2016	HM	---
* Results Suspected: Not Enough Sample Size. (Net Weight:31.84 grams)						
7	**105-V-01**	**Vermiculite Insulation, Vocational Training Shops BLck Wall**	**DNQ Asbestiform Amphibole** **DNQ Vermiculite** **DNQ Non-fibrous**	**Feb 24 2016**	**HM**	**.T.**

Comments

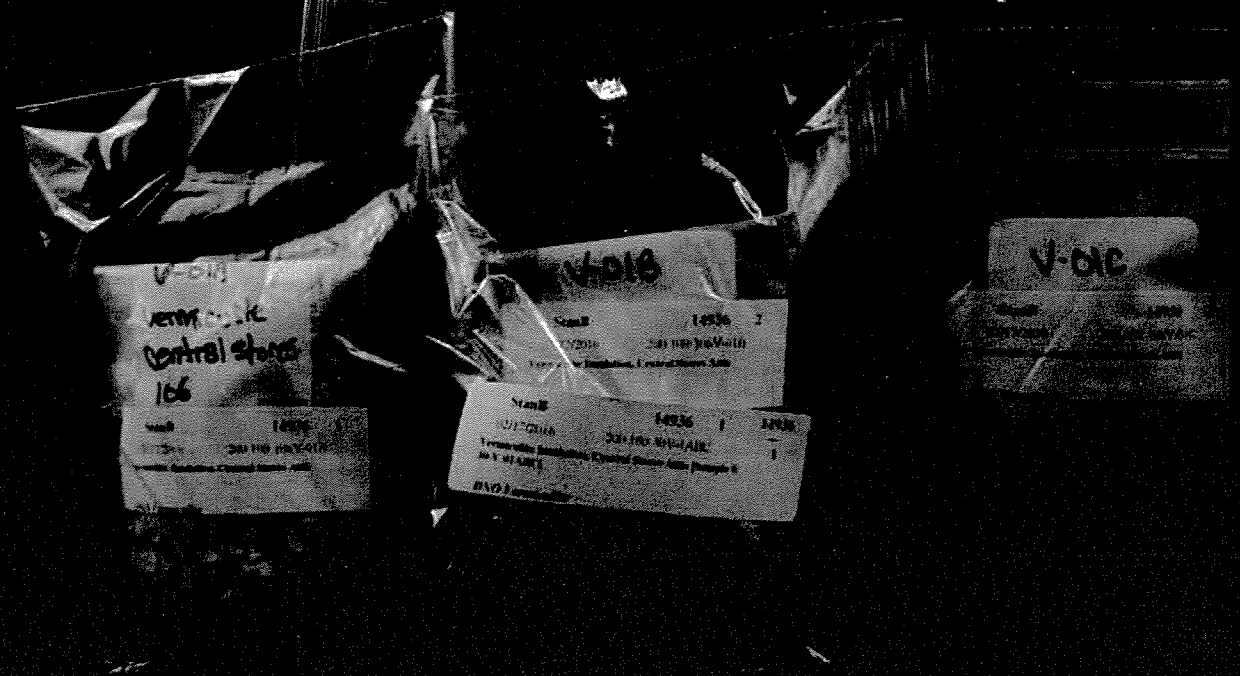
Fibrous / Mineral Components Analyzed In Accordance With The NIOSH ASBESTOS (bulk) by PLM Method 9002 [15 August 1994]
Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation EPA/600/R-04/004 January 2004
Detection Limit for Asbestiform Amphibole 'Rapid Screening' is less than 0.01 % (by weight) , Dependant on Original Sample Size
ACM Means - Asbestos Containing Material; T - Present
LP Means - Precent : Layer or Phase of Whole Sample.
DNQ Means - Detected Not Quantitated
< Means - Less Than
Samples Submitted Will Be Retained For 30 Days After Receipt And Will Be Disposed Of Thereafter Unless Otherwise Notified In Writing
Sample Submitted By Stantec [Burnaby]

February 24, 2016 [Facsimile]

H. McKnight
Analyst

H. McKnight
Reviewed By

William Head Istitution [123220504.200.100]
Vermiculite Insulation, Central Stores Attic [30-V-01ABC]



submitted sample

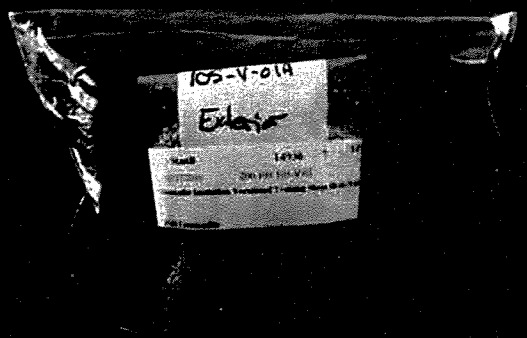
washed & sieved stereo binocular microscopy ~ 25x

William Head Istitution [123220504.200.100]
Vermiculite Insulation, Central Stores Attic [03-V-01ABC]

submitted sample

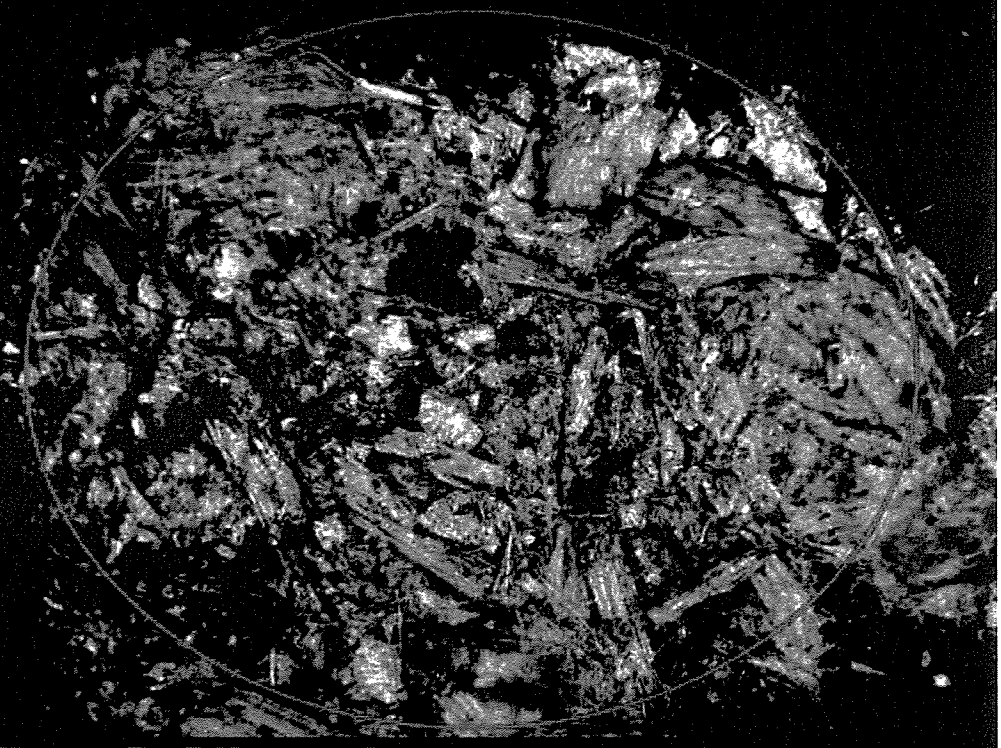
washed & sieved stereo binocular microscopy ~ 25x

123220504.200.100 105-V-01 William Head Institution
Vocational Training Shops Block Wall
Vermiculite Insulation
14936 . 03

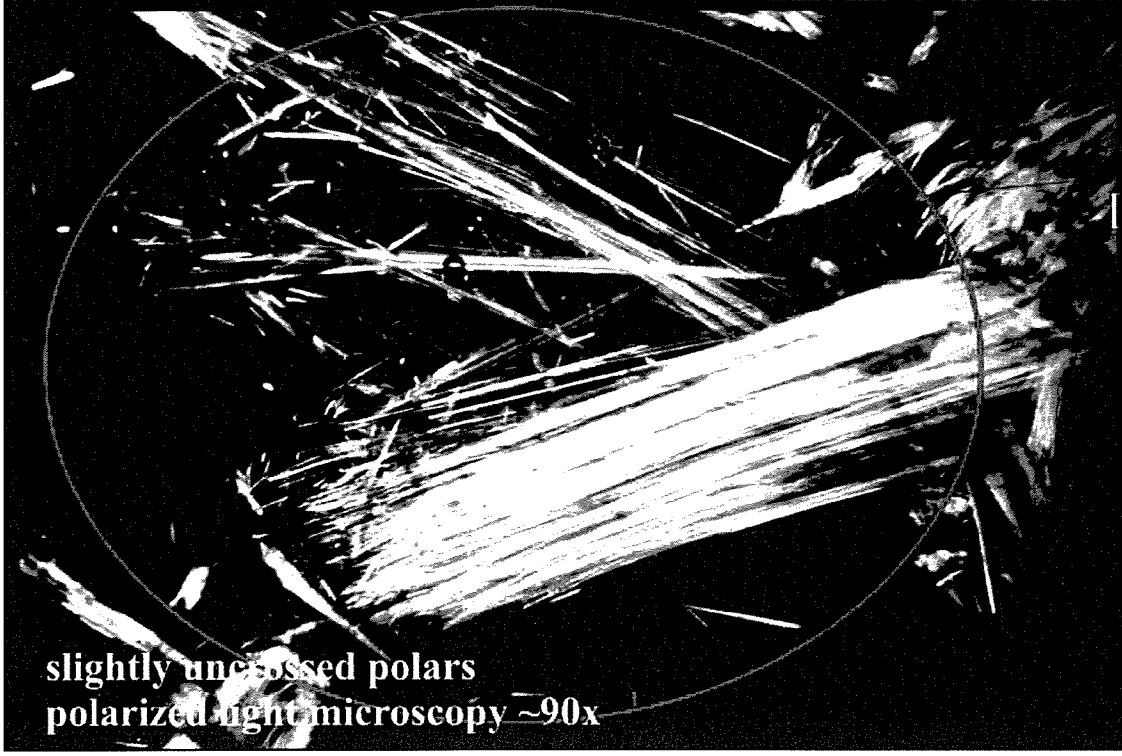


stereo binocular microscopy ~ 25x

submitted sample



washed & sieved



asbestos fibres
[asbestiform amphiboles]

slightly uncrossed polars
polarized light microscopy ~90x

APPENDIX E
FINDINGS AND RECOMMENDATIONS—GREENHOUSE

Appendix E FINDINGS AND RECOMMENDATIONS—GREENHOUSE

The greenhouse building was reportedly constructed prior to 1990 and consists of one level with a detached flammable storage building. The typical structural components and finishes associated with this building consist of glass, block wall, and metal exterior siding, concrete floors, metal and drywall walls, and metal and drywall ceilings.

Only the following areas (subject areas) and materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Wall and ceiling finishes throughout the greenhouse building

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

E.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Caulking

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table E-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table E-1 Suspected ACM Sample Collection and Analysis Summary Greenhouse, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Bathroom (107)	None Detected

Table E-1 Suspected ACM Sample Collection and Analysis Summary Greenhouse, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Bathroom (107)	None Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Bathroom (107)	None Detected
SC-01A	Seam Caulking, White, Applied to Wall Seams	Room 104	None Detected
SC-01B	Seam Caulking, White, Applied to Wall Seams	Room 104	None Detected
SC-01C	Seam Caulking, White, Applied to Wall Seams	Room 105	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

E.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, a paint chip sample was obtained from the predominant suspected LCP application within the subject areas. A summary of the sample type, location and analytical result is presented in Table E-2 below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table E-2 Suspected LCP Sample Collection and Analysis Summary Greenhouse, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-94	Light blue	Bathroom (107)	<280	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCP's were identified.

E.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 18 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

E.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 18 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

E.5 MOULD

No mould and/or moisture-impacted building materials were observed.

E.6 OZONE-DEPLETING SUBSTANCES

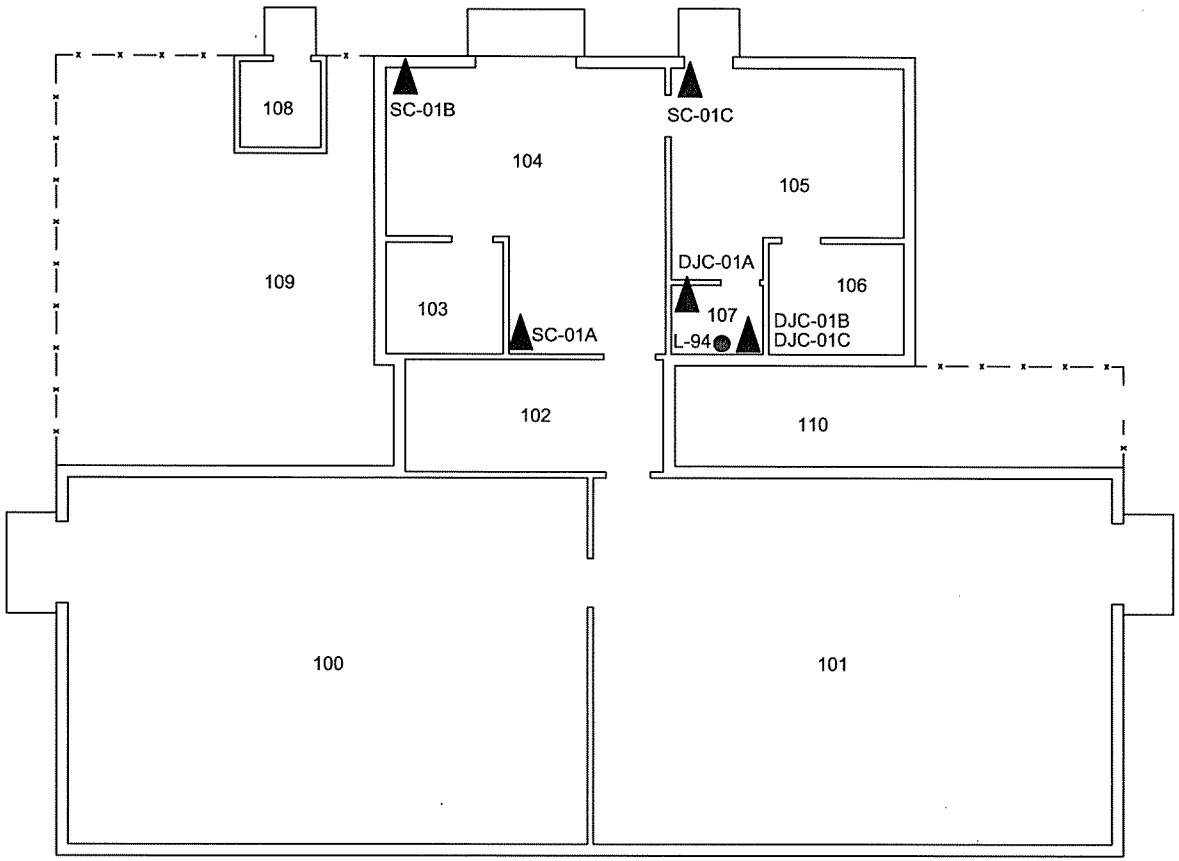
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

E.7 SILICA

Silica is presumed to be present in drywall, cement, and concrete within the subject areas.

E.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



GREENHOUSE

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 208, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030339 VM/DM
App'd By:	TW

Dwg. No.: E1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0410**

Sample Description: Greenhouse/Storage - Bathroom (107)/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0411**

Sample Description: Greenhouse/Storage - Bathroom (107)/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0412**

Sample Description: Greenhouse/Storage - Bathroom (107)/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: SC-01A ***Lab Sample ID:*** **691600131-0413**

Sample Description: Greenhouse/Storage - Room 104/Seam Caulking, White Applied to Wall Seams

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	

Client Sample ID: SC-01B ***Lab Sample ID:*** **691600131-0414**

Sample Description: Greenhouse/Storage - Room 104/Seam Caulking, White Applied to Wall Seams

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	

Client Sample ID: SC-01C ***Lab Sample ID:*** **691600131-0415**

Sample Description: Greenhouse/Storage - Room 105/Seam Caulking, White Applied to Wall Seams

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki	PLM (2)
Natalie D'Amico	PLM (1) PLM Grav. Reduction (2)
Romeo Samson	PLM Grav. Reduction (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201613:58:59

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 Or	551601752
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 GREEN HOUSE/ STORAGE**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-94	*551601752-0001*		2/22/2016	<280 ppm
	Site: LIGHT BLUE- BATHROOM (107)			
	Insufficient sample to reach reporting limit.			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:25:21

APPENDIX F
FINDINGS AND RECOMMENDATIONS—HOBBY SHOP

Appendix F FINDINGS AND RECOMMENDATIONS—HOBBY SHOP

The hobby shop was reportedly constructed in 1989 and consists of one level. The typical structural components and finishes associated with this building consist of concrete floors, drywall walls, and drywall ceilings.

Only the following areas (subject areas) were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Rooms 101, 102, 104, 110, 111, 113, and 114

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

F.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Duct mastic
- Caulkings

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

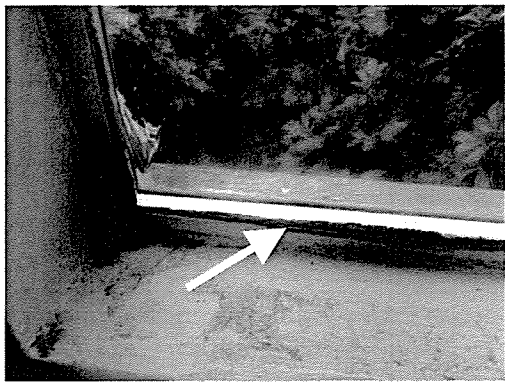
A summary of the sample types, locations and analytical results is presented in Table F-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table F-1 Suspected ACM Sample Collection and Analysis Summary Hobby Shop, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Room 101	None Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Room 102	None Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Room 102	None Detected
DJC-01D	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Room 104	None Detected
DJC-01E	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Room 113	None Detected
DM-01A	Duct Mastic, Grey, Applied to Dust Extraction	Room 104	None Detected
DM-01B	Duct Mastic, Grey, Applied to Dust Extraction	Room 104	None Detected
DM-01C	Duct Mastic, Grey, Applied to Dust Extraction	Room 104	None Detected
WC-01A	**Window Caulking, Black**	**Room 104**	**0.79% Chrysotile**
WC-01B	**Window Caulking, Black**	**Room 104**	**Positive Stop (Not Analyzed)**
WC-01C	**Window Caulking, Black**	**Room 104**	**Positive Stop (Not Analyzed)**
DFC-01A	**Door Frame Caulking, Cream**	**Room 102**	**7.8% Chrysotile**
DFC-01B	**Door Frame Caulking, Cream**	**Room 101**	**Positive Stop (Not Analyzed)**
DFC-01C	**Door Frame Caulking, Cream**	**Room 101**	**Positive Stop (Not Analyzed)**

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table F-2, below were identified as ACMs.

Table F-2 Summary of Identified ACMs
Hobby Shop, William Head Institution, Victoria BC

Identified ACM Description and Condition Information		Photo
Black window pane caulking (painted cream in some locations) throughout.		
Friability	Non-friable	
Condition	Good	
Content	0.79% Chrysotile	
Cream interior door frame caulking throughout.		
Friability	Non-friable	
Condition	Good	
Content	7.8% Chrysotile	

F.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table F-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table F-3 Suspected LCP Sample Collection and Analysis Summary Hobby Shop, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-95	Light grey	Room 102	510	No
L-96	**Dark grey**	**Room 101, Doors & Trim**	**110,000**	**Yes**
L-97	Red	Room 102, Concrete Floor	<90	No
L-98	Off-white	Room 104	<90	No
L-99	**Beige**	**Room 104, Block Walls**	**1,000**	**Yes**
L-100	**Dark teal**	**Room 104, Doors and Trim**	**21,000**	**Yes**
L-101	**Cream/red**	**Room 104, OWSJC**	**1,600**	**Yes**

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table F-4, below were identified as LCPs.

Table F-4 Summary of Identified LCPs Hobby Shop, William Head Institution, Victoria, BC

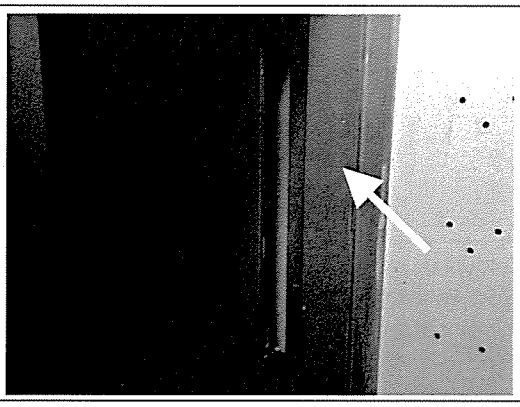
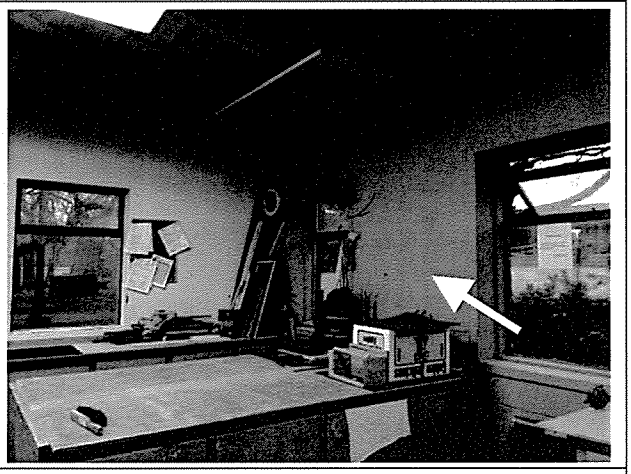
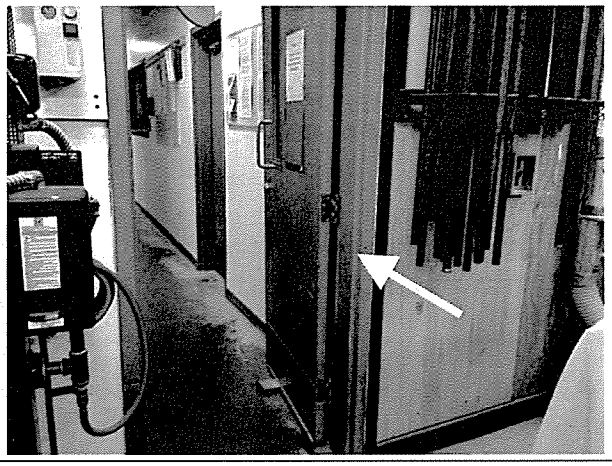
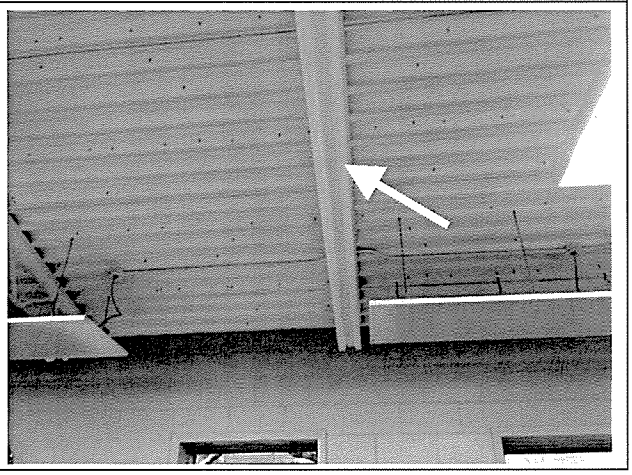
Identified LCP Description	Photo
Dark grey colored paint on doors and trim. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

Table F-4 Summary of Identified LCPs Hobby Shop, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Beige coloured paint on block walls. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Dark teal colored paint on doors and trim. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Cream coloured paint (red coloured paint beneath) on steel beams. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

F.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, the fluorescent light ballasts are not suspected to contain PCBs.

F.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 20 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

F.5 MOULD

No mould and/or moisture-impacted building materials were observed.

F.6 OZONE-DEPLETING SUBSTANCES

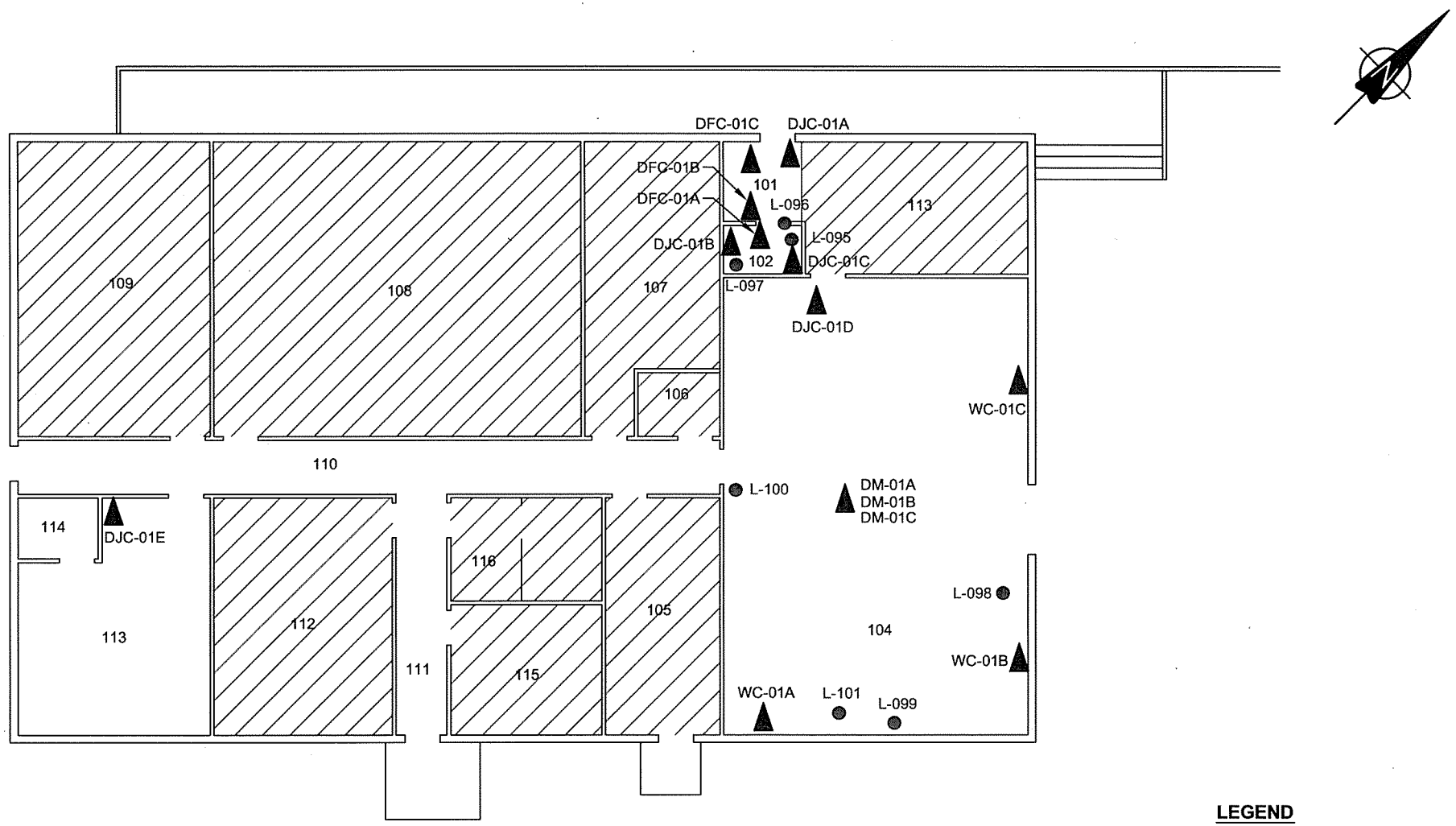
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

F.7 SILICA

Silica is presumed to be present in drywall, cement, and concrete materials observed.

F.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



HOBBY BUILDING

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- AREAS NOT INCLUDED IN ASSESSMENT

NOTES: 1. **BLACK ASBESTOS-CONTAINING WINDOW CAULKING IS PRESENT THROUGHOUT.**
2. **INTERIOR CREAM ASBESTOS-CONTAINING DOOR FRAME CAULKING IS PRESENT THROUGHOUT.**
3. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 200, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/29
Dwn. By:	CD SL2016030340 VM/DM
App'd By:	TW

Dwg. No.: F1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0521**

Sample Description: Hobby Building - Room 101/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/22/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0522**

Sample Description: Hobby Building- Room 102/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/22/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0523**

Sample Description: Hobby Building - Room 102/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/22/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D ***Lab Sample ID:*** **691600131-0524**

Sample Description: Hobby Building- Room 104/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E ***Lab Sample ID:*** **691600131-0525**

Sample Description: Hobby Building - Room 113/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: DM-01A ***Lab Sample ID:*** **691600131-0526**

Sample Description: Hobby Building - Room 104/Duct Mastic, Grey Applied to Dust Extraction

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-01B ***Lab Sample ID:*** **691600131-0527**

Sample Description: Hobby Building - Room 104/Duct Mastic, Grey Applied to Dust Extraction

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Gray	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DM-01C ***Lab Sample ID:*** **691600131-0528**

Sample Description: Hobby Building- Room 104/Duct Mastic, Grey Applied to Dust Extraction

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: WC-01A ***Lab Sample ID:*** **691600131-0529**

Sample Description: Hobby Building - Room 104/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	Brown/Black	0.0%	99.2%	**0.79% Chrysotile**	

Client Sample ID: WC-01B ***Lab Sample ID:*** **691600131-0530**

Sample Description: Hobby Building - Room 104/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-01C ***Lab Sample ID:*** **691600131-0531**

Sample Description: Hobby Building- Room 104/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DFC-01A ***Lab Sample ID:*** **691600131-0532**

Sample Description: Hobby Building - Room 102/Door Frame Caulking, Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016	White	0.0%	92.2%	**7.8% Chrysotile**	

Client Sample ID: DFC-01B ***Lab Sample ID:*** **691600131-0533**

Sample Description: Hobby Building - Room 101/Door Frame Caulking, Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DFC-01C ***Lab Sample ID:*** **691600131-0534**

Sample Description: Hobby Building - Room 101/Door Frame Caulking, Cream

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/22/2016				Positive Stop (Not Analyzed)	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

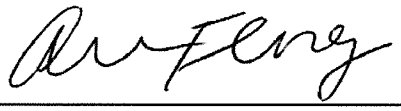
EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki	PLM (3)
	PLM Grav. Reduction (4)
Natalie D'Amico	PLM (2)
	PLM Grav. Reduction (1)

Reviewed and approved by:



Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:22:45

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 Or	551601753
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 HOBBY SHOP**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-95	*551601753-0001*		2/22/2016	510 ppm
	Site: LIGHT GREY- ROOM 102			
L-96	*551601753-0002*		2/24/2016	110000 ppm
	Site: DARK GREY- ROOM 101, DOORS & TRIM Insufficient sample to achieve quantitative result. (Result provided is an estimate)			
L-97	*551601753-0003*		2/22/2016	<90 ppm
	Site: RED- ROOM 102, CONCRETE FLOOR			
L-98	*551601753-0004*		2/22/2016	<90 ppm
	Site: OFF-WHITE- ROOM 104			
L-99	*551601753-0005*		2/22/2016	1000 ppm
	Site: BEIGE- ROOM 104			
L-100	*551601753-0006*		2/22/2016	21000 ppm
	Site: DARK TEAL- ROOM 104			
L-101	*551601753-0007*		2/22/2016	1600 ppm
	Site: CREAM/RED- ROOM 104, OWSJC			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 15:40:19

APPENDIX G
FINDINGS AND RECOMMENDATIONS—HOSPITAL/SCU

Appendix G FINDINGS AND RECOMMENDATIONS—HOSPITAL/SCU

The hospital/SCU building was reportedly constructed prior to 1990 and consists of one level plus an upper level mechanical room. The typical structural components and finishes associated with this building consist of concrete exterior walls, concrete floors, vinyl sheet flooring, vinyl floor tiles, skim coat on concrete and drywall walls, and ceiling tiles and concrete ceilings.

Only the following areas (subject areas) were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Mechanical room (300)
- All "1XX" numbered rooms (SCU)

It should be noted that the following building locations, although included in the proposed scope of work, were not accessed during the project due to security restrictions or the lack of keys required to provide access. As such, limited comments, if any, will be made regarding the presence, extent and/or condition of hazardous building materials in the following areas:

- Room 105 was not accessed because the staff did not have a key at the time of the assessment

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

G.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Plaster
- Ceiling tile
- Vinyl sheet flooring
- Vinyl floor tile
- Assorted mastics, caulkings, and sealants

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

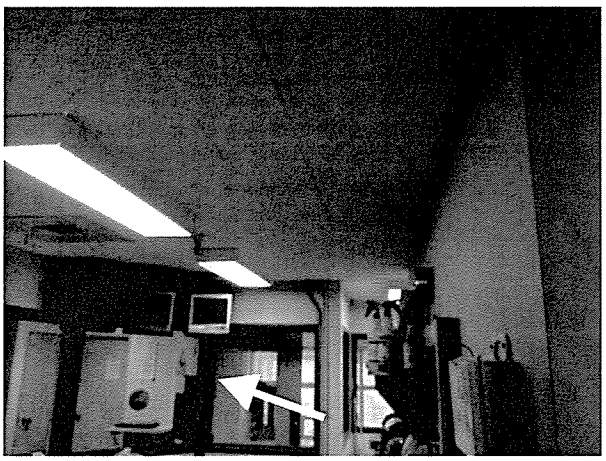
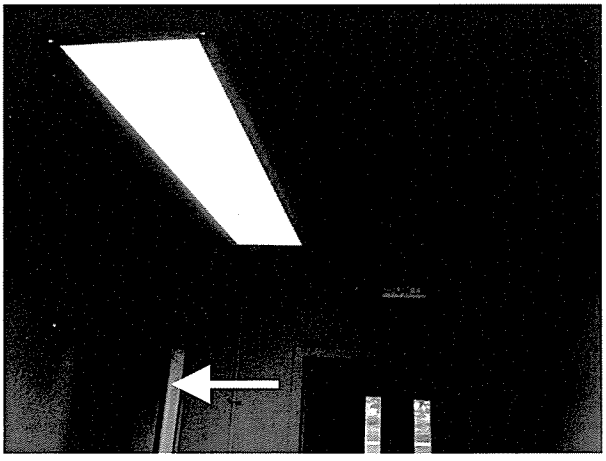
A summary of the sample types, locations and analytical results is presented in Table G-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table G-1 Suspected ACM Sample Collection and Analysis Summary Hospital/SCU, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls	Mechanical Room (300)	Not Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls	Mechanical Room (300)	Not Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls	Mechanical Room (300)	Not Detected
PL-01A	Plaster Skim Coat, Applied to Concrete Walls	Room 104	Not Detected
PL-01B	Plaster Skim Coat, Applied to Concrete Walls	Room 115	Not Detected
PL-01C	Plaster Skim Coat, Applied to Concrete Walls	Room 112	Not Detected
PL-01D	Plaster Skim Coat, Applied to Concrete Walls	Entrance (117)	Not Detected
PL-01E	Plaster Skim Coat, Applied to Concrete Walls	Room 119	Not Detected
CT-01	Ceiling Tile, 12"x12", Stapled, Pinhole Fissure Thick	Room 116	Not Detected
CT-02	Ceiling Tile, 12"x12", Stapled, Pinhole Fissure Thin	Room 115	Not Detected
VSF-01	Vinyl Sheet Flooring, Light & Dark Blue	Room 116	Not Detected
VFT-01	Vinyl Floor Tile, Green/Grey with Smears	Room 119	Not Detected
PS-01A	Pipe Sealant, White	Mechanical Room (300)	Not Detected
PS-01B	Pipe Sealant, White	Mechanical Room (300)	Not Detected
PS-01C	Pipe Sealant, White	Mechanical Room (300)	Not Detected
DM-01A	Duct Mastic, Grey	Mechanical Room (300)	Not Detected
DM-01B	Duct Mastic, Grey	Mechanical Room (300)	Not Detected
DM-01C	Duct Mastic, Grey	Mechanical Room (300)	Not Detected
DM-02A	Duct Mastic, Red/Brown	Hallway Closet (109)	Not Detected
DM-02B	Duct Mastic, Red/Brown	Hallway Closet (109)	Not Detected
DM-02C	Duct Mastic, Red/Brown	Hallway Closet (109)	Not Detected
WPC-01A	**Window Caulking, Black**	**Room 119**	**1.4% Chrysotile**
WPC-01B	**Window Caulking, Black**	**Room 115**	**Positive Stop**
WPC-01C	**Window Caulking, Black**	**Room 110**	**Positive Stop**

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table G-2, below were identified as ACMs.

Table G-2 Summary of Identified ACMs
Hospital/SCU, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Black window pane caulking on both partition and perimeter windows throughout.		 
Friability	Non-friable	
Condition	Good	
Content	1.4% Chrysotile	

G.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing

- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table G-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table G-3 Suspected LCP Sample Collection and Analysis Summary Hospital/SCU, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-59B	**Grey**	**Mechanical Room (300), Concrete Floor**	**2,300**	**Yes**
L-60	White	Mechanical Room (300), Walls	<290	No
L-61	White	Room 115, Walls	390	No
L-62	Light teal	Room 115, Trim	440	No
L-63	Light orange	Room 109, Walls	<240	No
L-64	**Orange**	**Room 106, Trim**	**75,000**	**Yes**
L-65	**Red**	**Room 103, Doors**	**17,000**	**Yes**
L-66	**Dusty rose**	**Room 108, Metal Doors**	**3,900**	**Yes**

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table G-4, below were identified as LCPs.

Table G-4 Summary of Identified LCPs Hospital/SCU, William Head Institution, Victoria, BC

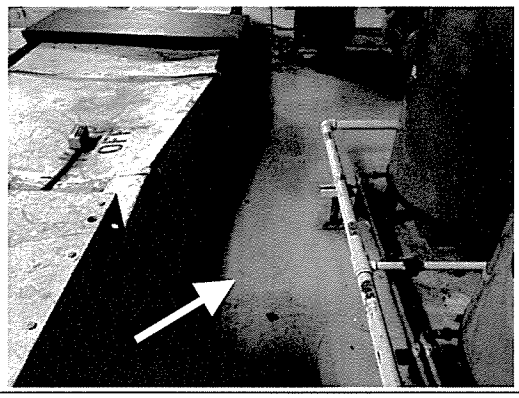
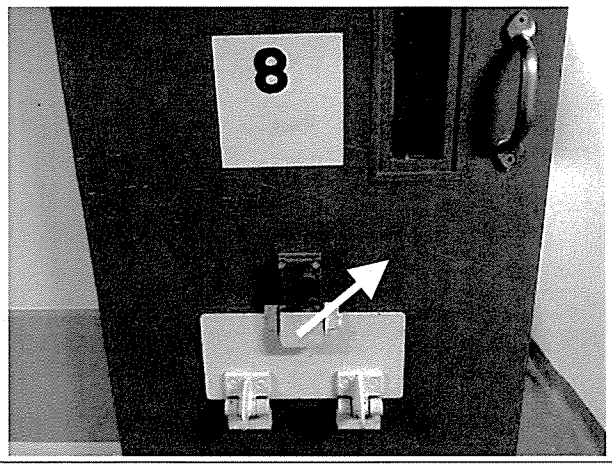
Identified LCP Description	Photo
Grey colored paint on the concrete floor of the mechanical room (300). This paint was observed to be in generally good condition with localized areas where paint is worn from the surface (not bubbling, flaking, or peeling).	
Orange colored paint on metal trim. This paint was observed to be in good condition (bubbling, flaking, or peeling).	
Red colored paint on doors. This paint was observed to be in good condition (bubbling, flaking, or peeling).	

Table G-4 Summary of Identified LCPs
Hospital/SCU, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Dusty rose colored paint on metal doors. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

G.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 28 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

G.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 28 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

G.5 MOULD

No mould and/or moisture-impacted building materials were observed.

G.6 OZONE-DEPLETING SUBSTANCES

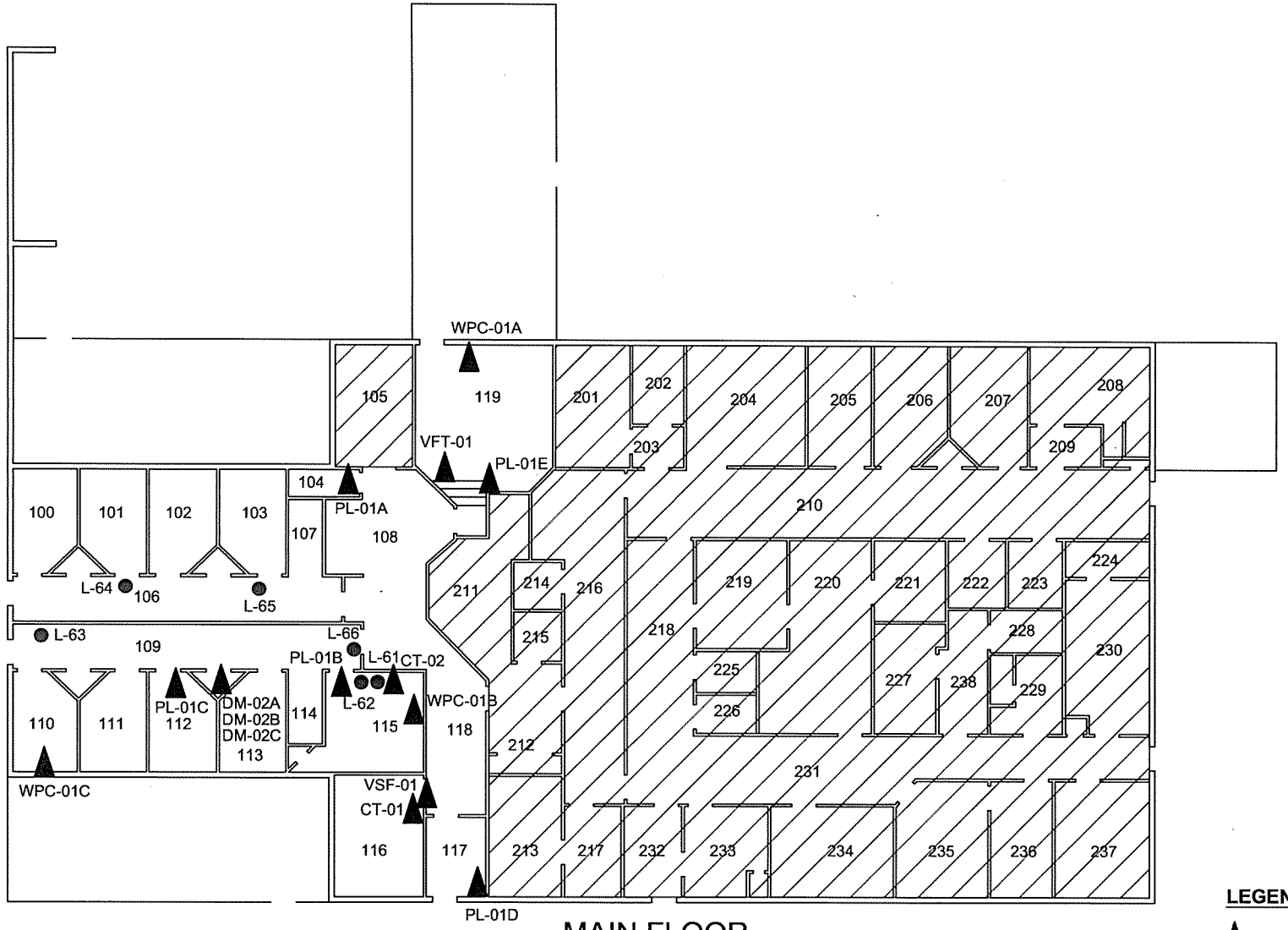
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

G.7 SILICA

Silica is presumed to be present in ceramic tiles, vinyl floor tiles, ceiling tiles, drywall, plaster, cement, and concrete materials observed.

G.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



MAIN FLOOR
HOSPITAL/SCU

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- AREAS NOT INCLUDED IN ASSESSMENT

NOTES: 1. **BLACK WINDOW PANE CAULKING ON BOTH PARTITION AND PERIMETER WINDOWS THROUGHOUT IS ASBESTOS-CONTAINING.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

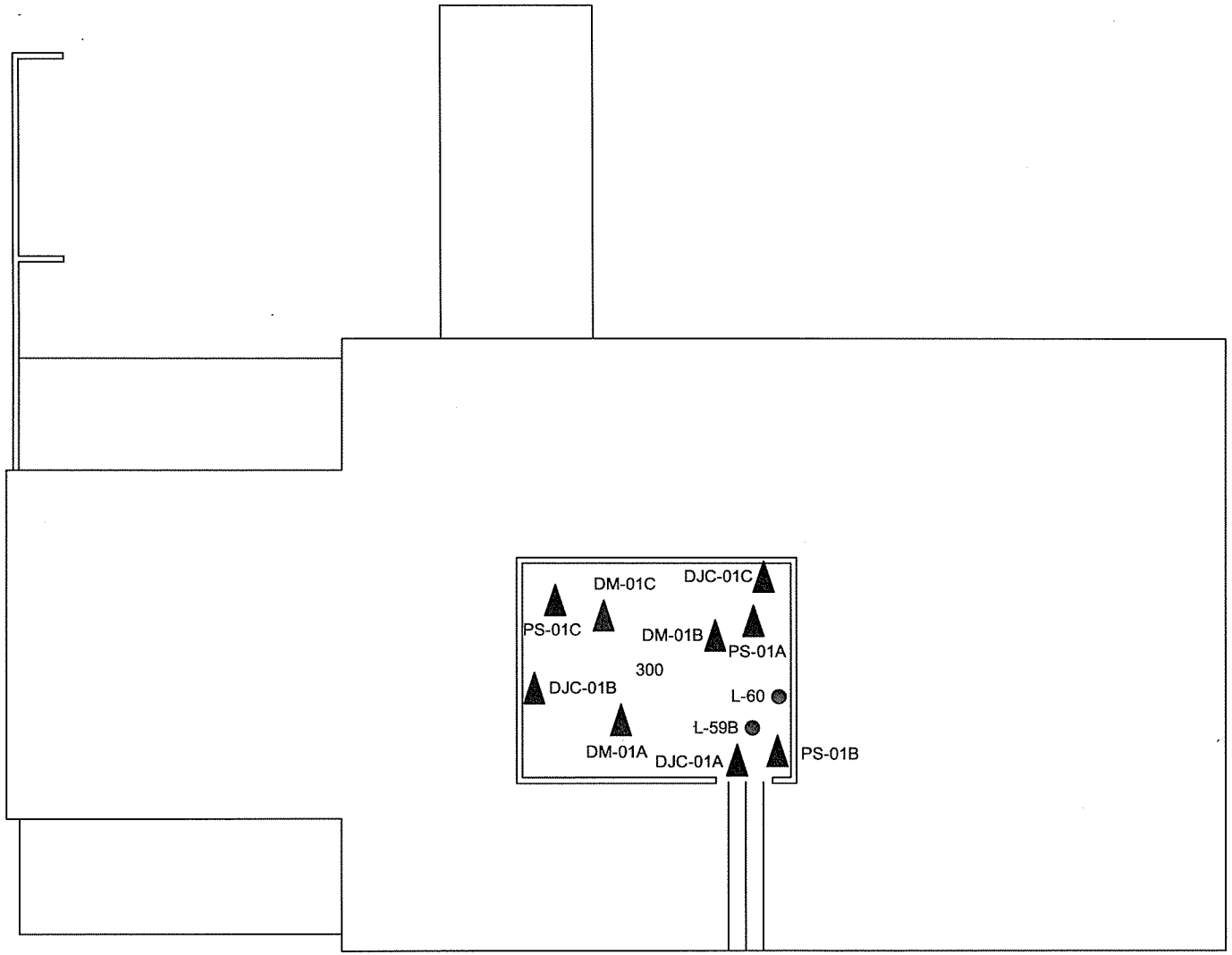
UNIT 109, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD SL2016030382 VM/DM
App'd By:	TW

Dwg. No.: G1

Stantec



PENTHOUSE

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 109, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030109 VM/DM
App'd By:	TW

Dwg. No.: G2

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A **Lab Sample ID:** 691600131-0293
Sample Description: Hospital/SCU - Mechanical Room (300)/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691600131-0294
Sample Description: Hospital/SCU - Mechanical Room (300)/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Tan/White	0%	100%	None Detected	

Client Sample ID: DJC-01C **Lab Sample ID:** 691600131-0295
Sample Description: Hospital/SCU - Mechanical Room (300)/Drywall Joint Compound Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01A **Lab Sample ID:** 691600131-0296
Sample Description: Hospital/SCU - Room 104/Plaster Skim Coat, Applied to Concrete Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray/White	0%	100%	None Detected	Layers inseparable.

Client Sample ID: PL-01B **Lab Sample ID:** 691600131-0297
Sample Description: Hospital/SCU - Room 115/Plaster Skim Coat, Applied to Concrete Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01C **Lab Sample ID:** 691600131-0298
Sample Description: Hospital/SCU - Room 112/Plaster Skim Coat, Applied to Concrete Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01D **Lab Sample ID:** 691600131-0299
Sample Description: Hospital/SCU - Entrance (117)/Plaster Skim Coat, Applied to Concrete Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PL-01E **Lab Sample ID:** 691600131-0300

Sample Description: Hospital/SCU - Room 119/Plaster Skim Coat, Applied to Concrete Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: CT-01 **Lab Sample ID:** 691600131-0301

Sample Description: Hospital/SCU - Room 116/Ceiling Tile 12"x12" Stapled, Pinhole Fissure Thick

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown	85%	15%	None Detected	

Client Sample ID: CT-02 **Lab Sample ID:** 691600131-0302

Sample Description: Hospital/SCU - Room 115/Ceiling Tile 12"x12" Stapled, Pinhole Fissure Thin

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown	85%	15%	None Detected	

Client Sample ID: VSF-01 **Lab Sample ID:** 691600131-0303

Sample Description: Hospital/SCU - Room 116/Vinyl Sheet Flooring Light & Dark Blue

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Green	0.0%	100%	None Detected	

Client Sample ID: VFT-01 **Lab Sample ID:** 691600131-0304

Sample Description: Hospital/SCU - Room 119/Vinyl Floor Tile, Green/Grey w/Smears

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: PS-01A **Lab Sample ID:** 691600131-0305

Sample Description: Hospital/SCU - Mechanical Room (300)/Pipe Sealant, White

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown/Red	3%	97%	None Detected	

Client Sample ID: PS-01B **Lab Sample ID:** 691600131-0306

Sample Description: Hospital/SCU - Mechanical Room (300)/Pipe Sealant, White

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown	0%	100%	None Detected	

Client Sample ID: PS-01C **Lab Sample ID:** 691600131-0307

Sample Description: Hospital/SCU - Mechanical Room (300)/Pipe Sealant, White

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	3%	97%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DM-01A **Lab Sample ID:** 691600131-0308
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-01B **Lab Sample ID:** 691600131-0309
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-01C **Lab Sample ID:** 691600131-0310
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-02A **Lab Sample ID:** 691600131-0311
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Red/Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	1.6%	98.4%	None Detected	

Client Sample ID: DM-02B **Lab Sample ID:** 691600131-0312
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Red/Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: DM-02C **Lab Sample ID:** 691600131-0313
Sample Description: Hospital/SCU - Mechanical Room (300)/Duct Mastic, Red/Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	2.2%	97.8%	None Detected	

Client Sample ID: WPC-01A **Lab Sample ID:** 691600131-0314
Sample Description: Hospital/SCU - Room 119/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	98.6%	**1.4% Chrysotile**	

Client Sample ID: WPC-01B **Lab Sample ID:** 691600131-0315
Sample Description: Hospital/SCU - Room 115/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016				Positive Stop (Not Analyzed)	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: WPC-01C ***Lab Sample ID:*** **691600131-0316**

Sample Description: Hospital/SCU - Room 110/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016				Positive Stop (Not Analyzed)	

Analyst(s):

Alice Feng	PLM (9) PLM Grav. Reduction (7)
Kathleen Cruz	PLM (4) PLM Grav. Reduction (2)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201621:35:31

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 Or	551601705
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 HOSPITAL/ SCU**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-59B	*551601705-0001*		2/24/2016	2300 ppm
	Site: GREY- MECHANICAL ROOM (300), CONCRETE FLOOR Insufficient sample to achieve quantitative result. (Result provided is an estimate)			
L-60	*551601705-0002*		2/22/2016	<290 ppm
	Site: WHITE- MECHANICAL ROOM (300), WALLS Insufficient sample to reach reporting limit.			
L-61	*551601705-0003*		2/22/2016	390 ppm
	Site: WHITE- ROOM 115, WALL			
L-62	*551601705-0004*		2/22/2016	440 ppm
	Site: LIGHT TEAL- ROOM 115, TRIM			
L-63	*551601705-0005*		2/22/2016	<240 ppm
	Site: LIGHT ORANGE- ROOM 109, WALLS Insufficient sample to reach reporting limit.			
L-64	*551601705-0006*		2/22/2016	75000 ppm
	Site: ORANGE- ROOM 106, TRIM			
L-65	*551601705-0007*		2/22/2016	17000 ppm
	Site: RED- ROOM 103, DOORS			
L-66	*551601705-0008*		2/22/2016	3900 ppm
	Site: DUSTY ROSE- ROOM 108, METAL DOORS			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 15:35:21

APPENDIX H
FINDINGS AND RECOMMENDATIONS—INMATE WEIGHT LIFTING

Appendix H FINDINGS AND RECOMMENDATIONS—INMATE WEIGHT LIFTING

The inmate weight lifting building was reportedly constructed in 2002 and consists of one level. The typical structural components and finishes associated with this building consist of stucco exterior walls, rubber and concrete floors, drywall walls, and drywall ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Wall and ceiling finishes throughout the building

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

H.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Fire-stop/wall protector

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table H-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table H-1 Suspected ACM Sample Collection and Analysis Summary Inmate Weight Lifting, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Room 107	None Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Room 100	None Detected

Table H-1 Suspected ACM Sample Collection and Analysis Summary Inmate Weight Lifting, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Room 100	None Detected
DJC-01D	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Back Entrance (101)	None Detected
DJC-01E	Drywall Joint Compound, Applied to Drywall Walls And Ceiling	Mechanical Room (104)	None Detected
FS-01A	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (104)	None Detected
FS-01B	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (104)	None Detected
FS-01C	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (104)	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

H.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used in bell fittings for cast iron pipes and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table H-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table H-2 Suspected LCP Sample Collection and Analysis Summary Inmate Weight Lifting, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-67	Off-white	Room 107, Drywall Walls	<350	No
L-68	Blue	Back Entrance (101), Drywall Walls	<160	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

H.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, the fluorescent light ballasts are not suspected to contain PCBs.

H.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 30 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

H.5 MOULD

No mould and/or moisture impacted building materials were observed.

H.6 OZONE-DEPLETING SUBSTANCES

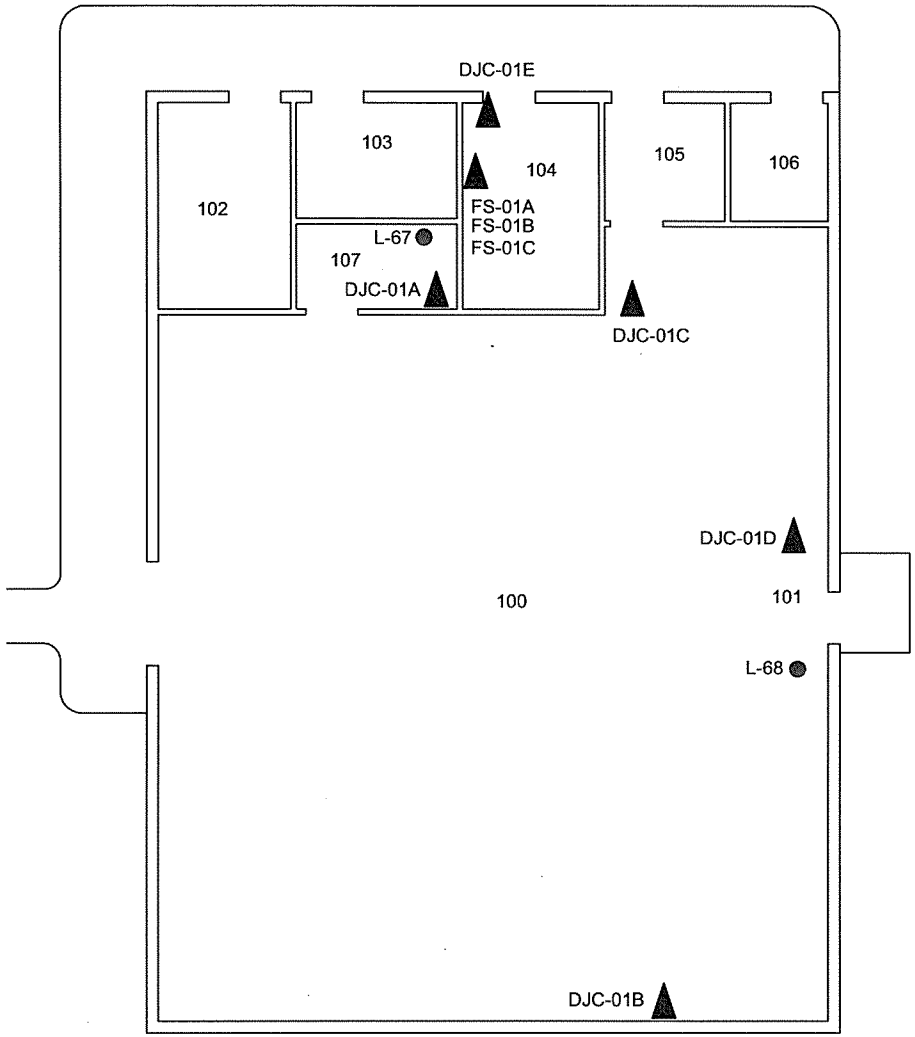
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerant was observed.

H.7 SILICA

Silica is presumed to be present in stucco, drywall, cement, and concrete materials observed.

H.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



INMATE WEIGHT LIFTING BUILDING

LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 215, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030126 VM/DM
App'd By:	TW

Dwg. No.: H1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0416**

Sample Description: Inmate Weight Lifing - Room 107/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0417**

Sample Description: Inmate Weight Lifing - Room 100/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0418**

Sample Description: Inmate Weight Lifing - Room 100/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D ***Lab Sample ID:*** **691600131-0419**

Sample Description: Inmate Weight Lifing - Back Entrance (101)/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E ***Lab Sample ID:*** **691600131-0420**

Sample Description: Inmate Weight Lifing - Mechanical Room (104)/Drywall Joint Compound, Applied to Drywalls Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0421**

Sample Description: Inmate Weight Lifing - Mechanical Room (104)/Fire Stopper, Red, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0422**

Sample Description: Inmate Weight Lifing - Mechanical Room (104)/Fire Stopper, Red, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0423**

Sample Description: Inmate Weight Lifing - Mechanical Room (104)/Fire Stopper, Red, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Analyst(s):

John Biesiadecki	PLM (3)
Natalie D'Amico	PLM (2) PLM Grav. Reduction (2)
Romeo Samson	PLM Grav. Reduction (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:00:36

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 Or . 551601708
CustomerID: 55JACQ30L
CustomerPO: 123220504.200.1
ProjectID:

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 INMATE WEIGHT LIFTING**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-67	*551601708-0001*		2/22/2016	<350 ppm
	Site: OFF-WHITE- ROOM 107			
L-68	*551601708-0002*		2/22/2016	<160 ppm
	Site: BLUE- BACK ENTRANCE (101)			

Insufficient sample to reach reporting limit for sample #551601708 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:30:19

APPENDIX I
FINDINGS AND RECOMMENDATIONS—KITCHEN AND DINING

Appendix I FINDINGS AND RECOMMENDATIONS—KITCHEN AND DINING

The kitchen and dining building was reportedly constructed prior to 1990 and consists of two levels plus an attic space and a steam tunnel which runs between this building and the Inmate Training building. The typical structural components and finishes associated with this building consist of concrete and brick exterior walls, concrete, vinyl sheet flooring, and carpet floors, concrete, drywall, block wall, and plaster interior walls, suspended ceiling tiles, plaster, and drywall ceilings.

Building materials throughout the structure were assessed as part of this project.

It should be noted that the following building locations, although included in the proposed scope of work, were not accessed during the project due to security restrictions or the lack of keys required to provide access. As such, limited comments, if any, will be made regarding the presence, extent and/or condition of hazardous building materials in the following areas:

- Rooms 122, 123, and 124 were not accessed because the doors were locked and staff did not have a key during the assessment

It should be noted that the kitchen and dining building is serviced by a steam tunnel that runs underground from the inmate training building. Mechanical pipes and conduit were assessed at each end of the tunnel but the tunnel itself was not assessed during this project as access could not be provided. Hazardous building materials may be present in the steam tunnel.

The results of the assessment for each of the considered hazardous materials within the building are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

I.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Vent sealant
- Tar
- Asphalt shingles
- Fire-stop/wall protector
- Assorted mastics, caulkings and sealants
- Drywall joint compound

- Plaster
- Ceiling tile
- Texture coat
- Tile grout
- Vinyl sheet flooring
- Parging cement
- Pipe insulation and lagging

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table I-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table I-1 Suspected ACM Sample Collection and Analysis Summary Kitchen & Dining, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DM-01A	Duct Mastic, Brown	Attic	Not Detected
DM-01B	Duct Mastic, Brown	Attic	Not Detected
DM-01C	Duct Mastic, Brown	Attic	Not Detected
DM-02A	**Duct Mastic, Olive Green**	**Attic**	**1.4% Chrysotile**
DM-02B	**Duct Mastic, Olive Green**	**Attic**	**Positive Stop**
DM-02C	**Duct Mastic, Olive Green**	**Attic**	**Positive Stop**
VS-01A	**Vent Sealant, Black**	**Exterior, Roof**	**3.1% Chrysotile**
VS-01B	**Vent Sealant, Black**	**Exterior, Roof**	**Positive Stop**
VS-01C	**Vent Sealant, Black**	**Exterior, Roof**	**Positive Stop**
T-01A	Tar, Black, Applied to Chimney	Exterior, Roof	Not Detected
T-01B	Tar, Black, Applied to Chimney	Exterior, Roof	Not Detected
T-01C	Tar, Black, Applied to Chimney	Exterior, Roof	Not Detected
R-03A	Roof, Black, Asphalt Shingle	Exterior, Roof	Not Detected
R-03B	Roof, Black, Asphalt Shingle	Exterior, Roof	Not Detected
R-03C	Roof, Black, Asphalt Shingle	Exterior, Roof	Not Detected
R-04A	Roof, Red, Asphalt Shingle	Exterior, Roof	Not Detected
R-04B	Roof, Red, Asphalt Shingle	Exterior, Roof	Not Detected
R-04C	Roof, Red, Asphalt Shingle	Exterior, Roof	Not Detected
RSC-01A	Roof Seam Caulking, Grey	Exterior, Roof	Not Detected
RSC-01B	Roof Seam Caulking, Grey	Exterior, Roof	Not Detected

Table I-1 Suspected ACM Sample Collection and Analysis Summary Kitchen & Dining, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
RSC-01C	Roof Seam Caulking, Grey	Exterior, Roof	Not Detected
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls	Room 109	Not Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls	Room 107	Not Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls	Room 108	Not Detected
DJC-01D	Drywall Joint Compound, Applied to Drywall Walls & Ceiling	Room 118	Not Detected
DJC-01E	Drywall Joint Compound, Applied to Drywall Walls & Ceiling	Room 118	Not Detected
PLW-01A-Skim Coat	Plaster, Applied to Walls & Ceilings, Skim Coat	Room 108	Not Detected
PLW-01A-Rough Coat	Plaster, Applied to Walls & Ceilings, Rough Coat	Room 108	Not Detected
PLW-01B-Skim Coat	Plaster, Applied to Walls & Ceilings, Skim Coat	Room 114	Not Detected
PLW-01B-Rough Coat	Plaster, Applied to Walls & Ceilings, Rough Coat	Room 114	Not Detected
PLW-01C-Skim Coat	Plaster, Applied to Walls & Ceilings, Skim Coat	Room 108	Not Detected
PLW-01C-Rough Coat	Plaster, Applied to Walls & Ceilings, Rough Coat	Room 108	Not Detected
CT-01A	Suspended Ceiling Tile, 1'x1', Pinhole Fissure	Room 114	Not Detected
CT-01B	Suspended Ceiling Tile, 1'x1', Pinhole Fissure	Room 114	Not Detected
CT-01C	Suspended Ceiling Tile, 1'x1', Pinhole Fissure	Room 114	Not Detected
CT-02A	Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure	Room 119	Not Detected
CT-02B	Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure	Room 119	Not Detected
CT-02C	Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure	Room 119	Not Detected
CTC-01A-White	**Texture Coat, Applied to Plaster Ceiling, White**	**Room 108**	**2.0% Chrysotile**
CTC-01A-Tan	Texture Coat, Applied to Plaster Ceiling, Tan	Room 108	Not Detected
CTC-01B	**Texture Coat, Applied to Plaster Ceiling**	**Room 108**	**Positive Stop**
CTC-01C	**Texture Coat, Applied to Plaster Ceiling**	**Room 108**	**Positive Stop**
CTG-01A	Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile	Room 118	Not Detected

Table I-1 Suspected ACM Sample Collection and Analysis Summary Kitchen & Dining, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
CTG-01B	Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile	Room 118	Not Detected
CTG-01C	Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile	Room 118	Not Detected
VSF-01	Vinyl Sheet Flooring, Light Pink & Grey Dots with Sparkles	Room 014 Entrance	Not Detected
VSF-02-Vinyl Sheet Flooring	Vinyl Sheet Flooring, Grey with Dark Grey Dots	Basement Bathroom (020)	Not Detected
VSF-02-Mastic	Mastic Applied to VSF-02 Vinyl Sheet Flooring	Basement Bathroom (020)	Not Detected
VSF-03	Vinyl Sheet Flooring, Grey Pebble Pattern, 1st Layer	Room 015	Not Detected
VSF-03-Mastic	Mastic Applied to VSF-03 Vinyl Sheet Flooring	Room 015	Not Detected
VSF-04	**Vinyl Sheet Flooring, 2nd Layer (Beneath VSF-03)**	**Room 015**	**4.1% Chrysotile**
VSF-04 - Mastic	Mastic Applied to VSF-04 Vinyl Sheet Flooring	Room 015	Not Detected
VSF-05	Vinyl Sheet Flooring, Beige/Brown/White Multi-Sized Cube Pattern	Room 119	Not Detected
VSF-05-Mastic	Mastic Applied to VSF-05 Vinyl Sheet Flooring	Room 119	Not Detected
VSF-06	Vinyl Sheet Flooring, Light Beige, Small Cube Pattern	Room 120	Not Detected
VSF-06-Mastic	Mastic Applied to VSF-06 Vinyl Sheet Flooring	Room 120	Not Detected
FS-01A	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (006)	Not Detected
FS-01B	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (006)	Not Detected
FS-01C	Fire Stopper, Red, Mastic, Wall Penetration	Mechanical Room (006)	Not Detected
FS-02A	Fire Stopper, Tan, Mastic, Wall Penetration	Room 100	Not Detected
FS-02B	Fire Stopper, Tan, Mastic, Wall Penetration	Room 100	Not Detected
FS-02C	Fire Stopper, Tan, Mastic, Wall Penetration	Room 100	Not Detected
WC-01A	**Partition Window Pane Caulking, Black**	**Room 108**	**8.4% Chrysotile**
WC-01B	**Partition Window Pane Caulking, Black**	**Room 108**	**Positive Stop**
WC-01C	**Partition Window Pane Caulking, Black**	**Room 108**	**Positive Stop**
WC-02A	Perimeter Window Frame Caulking, Black	Exterior	Not Detected
WC-02B	Perimeter Window Frame Caulking, Black	Exterior	Not Detected
WC-02C	Perimeter Window Frame Caulking, Black	Exterior	Not Detected

Table I-1 Suspected ACM Sample Collection and Analysis Summary Kitchen & Dining, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
PI-01A	Pipe Insulation, Remnant	Room 003	Not Detected
PI-01B	Pipe Insulation, Remnant	Room 003	Not Detected
PI-01C	Pipe Insulation, Remnant	Room 003	Not Detected
PC-01A	Parging Cement	Room 019	Not Detected
PC-01B	Parging Cement	Room 019	Not Detected
PC-01C	Parging Cement	Room 019	Not Detected
PL-01A	Pipe Lagging	Room 019	Not Detected
PL-01B	Pipe Lagging	Room 019	Not Detected
PL-01C-Skim Coat	Pipe Lagging, Skim Coat	Room 019	Not Detected
PL-01C-Rough Coat	Pipe Lagging, Rough Coat	Room 019	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table I-2, below were identified as ACMs.

Table I-2 Summary of Identified ACMs Kitchen & Dining, William Head Institution, Victoria, BC

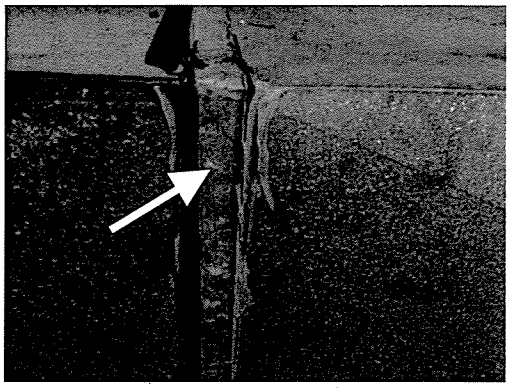
Identified ACM Description and Condition Information		Photo
Olive green mastic on duct seams throughout.		
Friability	Non-friable	
Condition	Good	
Content	1.4% Chrysotile	

Table I-2 Summary of Identified ACMs Kitchen & Dining, William Head Institution, Victoria, BC

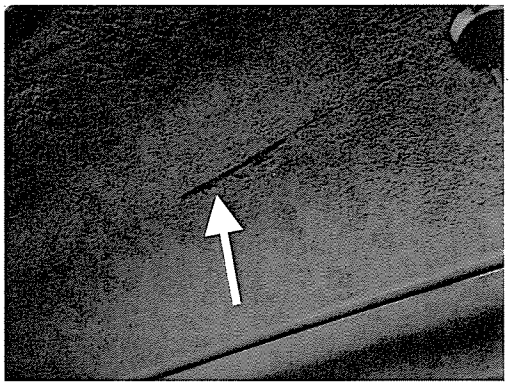
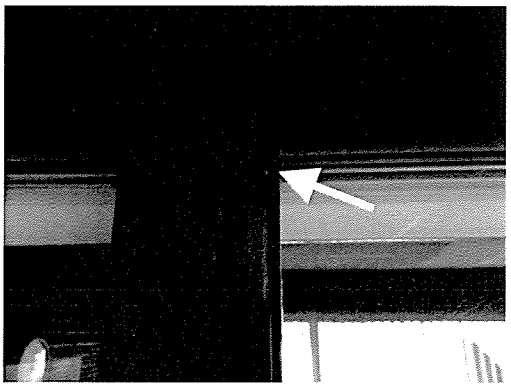
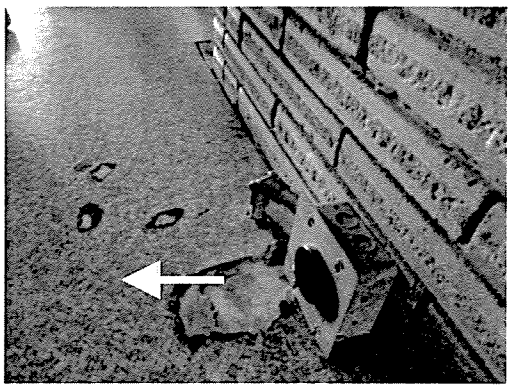
Identified ACM Description and Condition Information		Photo
Black vent sealant present on seams of two roof vents.		
Friability	Non-friable	
Condition	Good	
Content	3.1% Chrysotile	
Texture coat applied to the plaster ceiling within rooms 014, 015, 016, 020, 103, 104, and 108.		
Friability	Friable	
Condition	Poor (cracked or crumbling in various locations throughout).	
Content	2.0% Chrysotile	
The second layer of vinyl sheet flooring within room 015, beneath the grey pebble patterned vinyl sheet flooring.		No Photo Available.
Friability	Non-friable	
Condition	Good	
Content	4.1% Chrysotile	

Table I-2 Summary of Identified ACMs Kitchen & Dining, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Black window pane caulking on partition windows throughout.		
Friability	Non-friable	
Condition	Good	
Content	8.4% Chrysotile	
Brown duct mastic throughout.		
Friability	Non-friable	
Condition	Good	
Content	1-10% Chrysotile Note that this material was sampled during this assessment and results indicated no asbestos detected. Previous sampling results indicate 1-10% Chrysotile, therefore this material should still be considered asbestos-containing.	
Beige/brown/white multi-sized cube pattern vinyl sheet flooring present in room 119 and 115.		
Friability	Non-friable	
Condition	Good – In general Poor – Behind the bar in room 119	
Content	1-10% Chrysotile Note that this material was sampled during this assessment and results indicated no asbestos detected. Previous sampling results indicate 1-10% Chrysotile, therefore this material should still be considered asbestos-containing.	

I.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the building. A summary of the sample types, locations and analytical results is presented in Table I-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table I-3 Suspected LCP Sample Collection and Analysis Summary Kitchen and Dining, William Head Institution, Victoria, BC

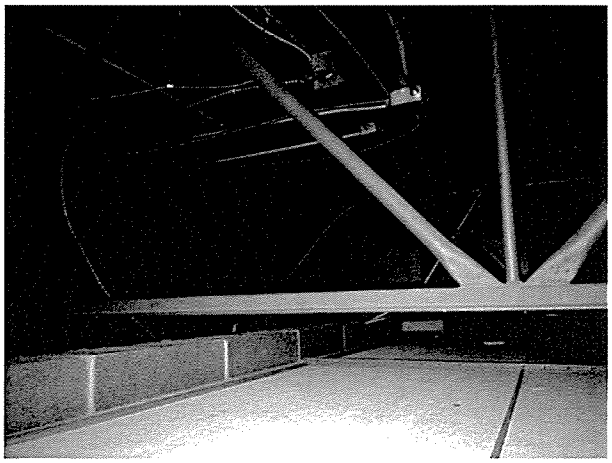
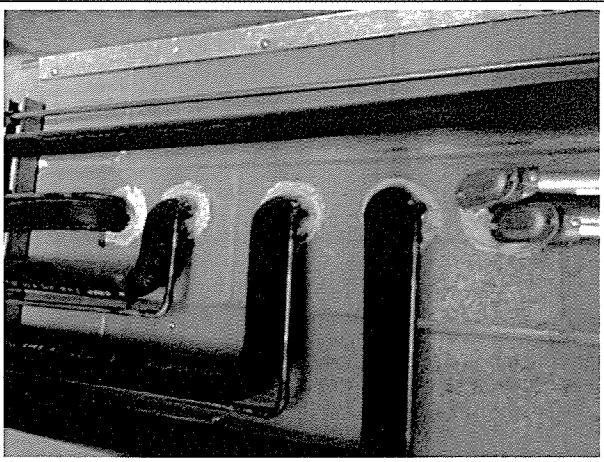
Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-14	**White**	**Attic Exterior**	**1,800**	**Yes**
L-15	White	Room 014	490	No
L-16	Grey	Room 014, Trim	<230	No
L-17	**Teal**	**Room 015, Trim**	**670**	**Yes**
L-18	Grey	Room 011, Concrete Floor	<290	No
L-19	Red	Hallway (003), Concrete Floor	<600	No
L-20	**Light Grey**	**Room 114, Walls**	**1,200**	**Yes**
L-21	**Red**	**Room 119, Steel Beam**	**1,500**	**Yes**
L-22	**Orange**	**Room 100**	**65,000**	**Yes**
L-23	Grey	Exterior	480	No
L-24	**Burgundy**	**Exterior, Vent covers**	**8,600**	**Yes**

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table I-4, below were identified as LCPs.

Table I-4 Summary of Identified LCPs Kitchen & Dining, William Head Institution, Victoria, BC

Identified LCP Description	Photo
White colored paint on the exterior of the attic. This paint was observed to be in poor condition (bubbling, flaking, or peeling).	
Teal colored paint on the interior doors and trim. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Light grey colored paint on walls in room 114. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

Table I-4 Summary of Identified LCPs Kitchen & Dining, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Red colored paint on steel beams within the ceiling spaces. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Orange colored paint on the block walls within room 100. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Burgundy coloured paint on exterior vent covers. This paint was observed to be in poor condition (bubbling, flaking, or peeling).	

I.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 150 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

I.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 150 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

I.5 MOULD

No mould and/or moisture-impacted building materials were observed.

I.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

I.7 SILICA

Silica is presumed to be present in ceramic tiles, ceiling tiles, drywall, plaster, brick, mortar, asphalt, cement, and concrete materials observed.

I.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

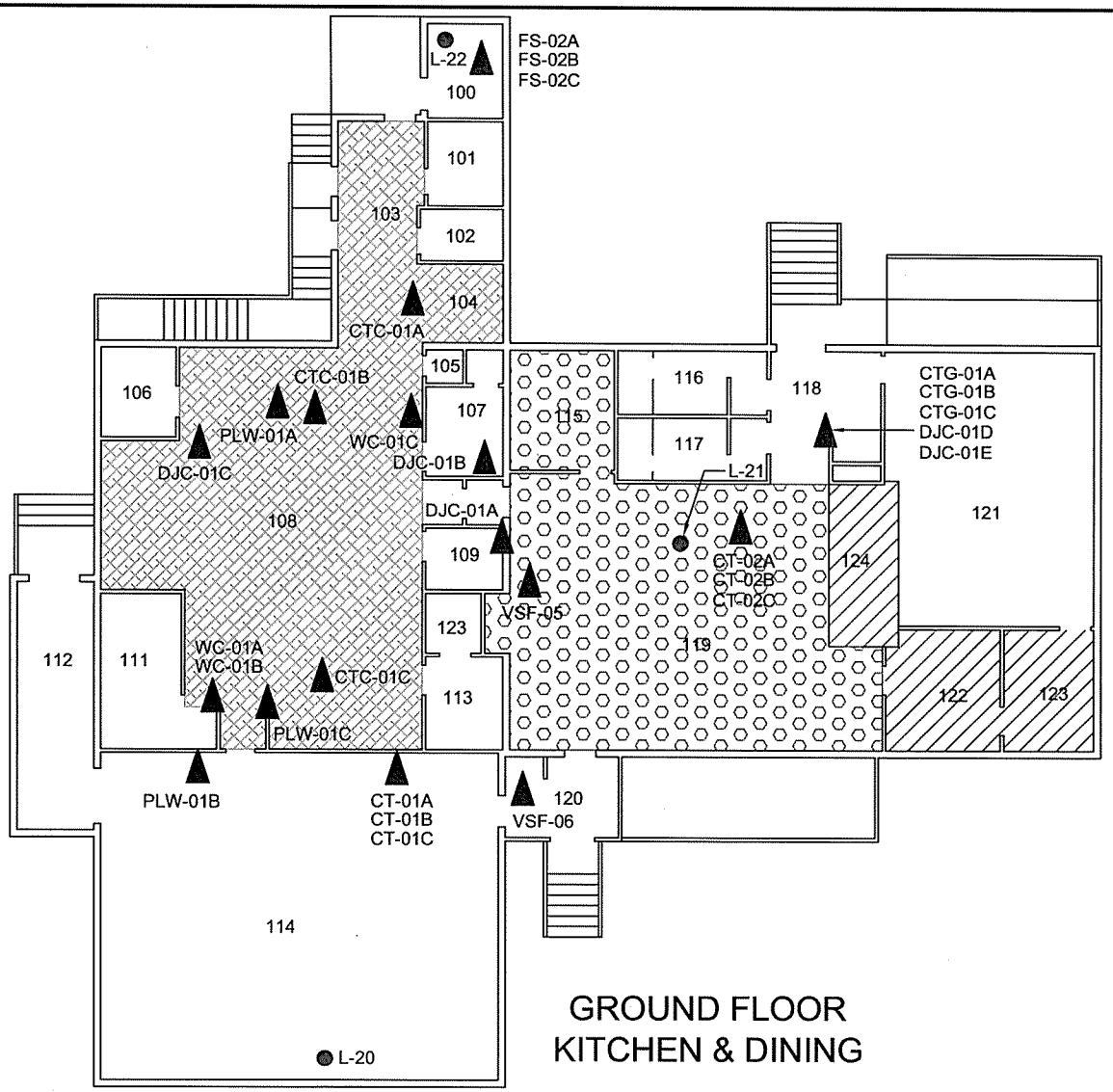
Additional material-specific recommendations to be considered during the renovation project are provided below. Provisions for worker protection and waste disposal related to the below are included in Section 5 of the main body of this report.

I.8.1 Asbestos

Identified asbestos-containing ceiling textured coat and vinyl sheet flooring observed to be in poor condition, as listed in Table I-4.1.2, should be abated (removed) or repaired in accordance with the requirements of the Canada Labour Code and BC Reg. 296/97. It is expected that this will require the involvement of an experienced asbestos abatement contractor.

I.8.2 Lead

Lead-containing paint observed in poor condition should be cleaned-up and/or addressed during the renovation project, and to mitigate potential for additional deterioration and dispersal of lead-containing paint chips/dust. Consideration should be given to re-painting surfaces to mitigate the potential for additional deterioration and hazards associated with the lead-containing paint chips/dust that may be created. If re-painting is completed, appropriate precautions to protect workers and work areas from exposure to lead will be required during painting preparation activities.



GROUND FLOOR
KITCHEN & DINING

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM CEILING TEXTURE COAT
- ACM VINYL SHEET FLOORING
- ACCESS NOT PROVIDED

NOTES: **1. OLIVE GREEN AND BROWN MASTIC MATERIALS ON DUCTING THROUGHOUT ARE BOTH ASBESTOS-CONTAINING.**
2. BLACK ASBESTOS-CONTAINING WINDOW PANE CAULKING IS PRESENT ON PARTITION WINDOWS THROUGHOUT.
3. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

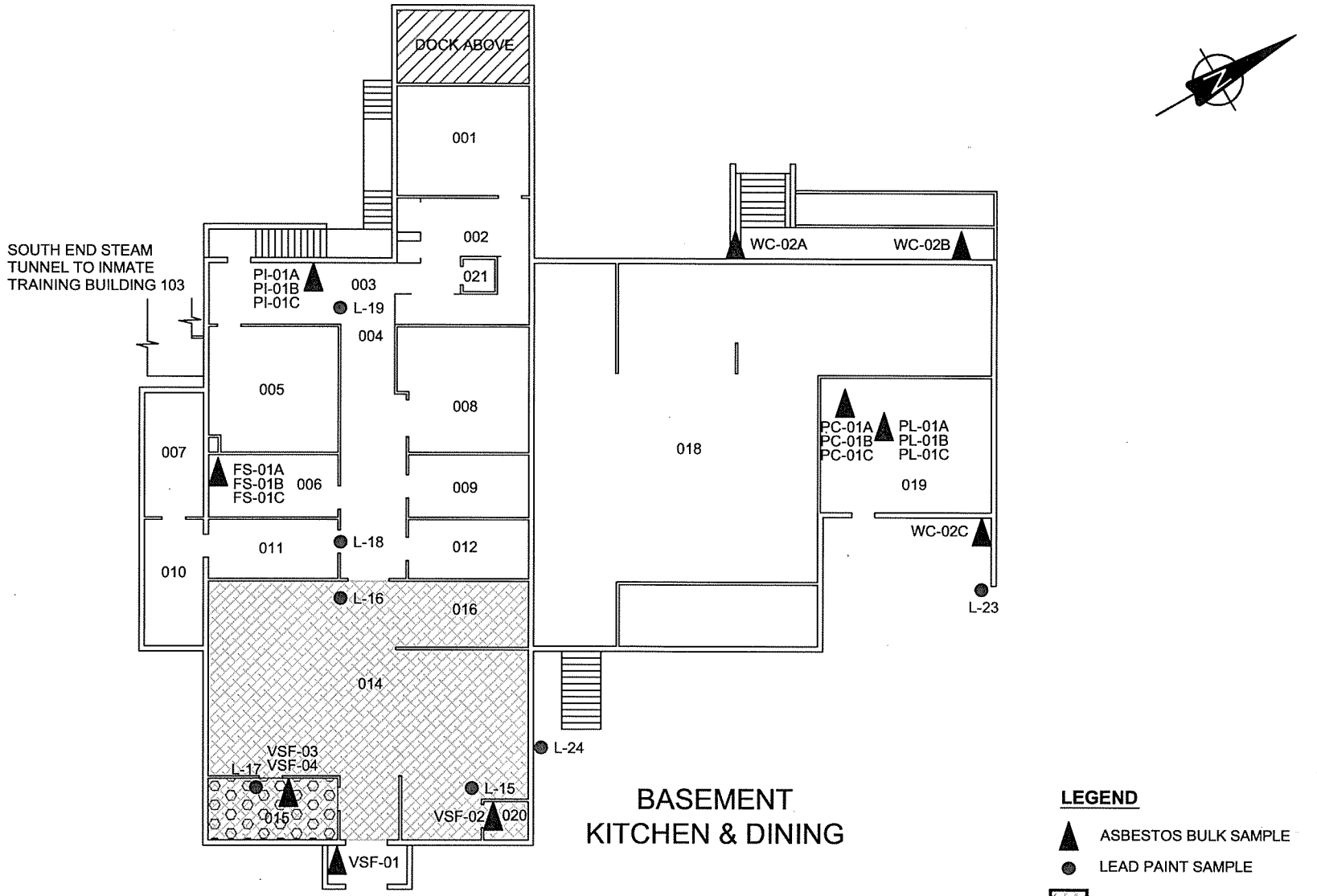
UNIT 101, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD SL2016030383 VM/DM
App'd By:	TW

Dwg. No.: 11

Stantec



NOTES: 1. **OLIVE GREEN AND BROWN MASTIC MATERIALS ON DUCTING THROUGHOUT ARE BOTH ASBESTOS-CONTAINING.**
2. **BLACK ASBESTOS-CONTAINING WINDOW PANE CAULKING IS PRESENT ON PARTITION WINDOWS THROUGHOUT.**
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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 101, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD SL2016030384 PK/DM
App'd By:	TW

Dwg. No.: 12

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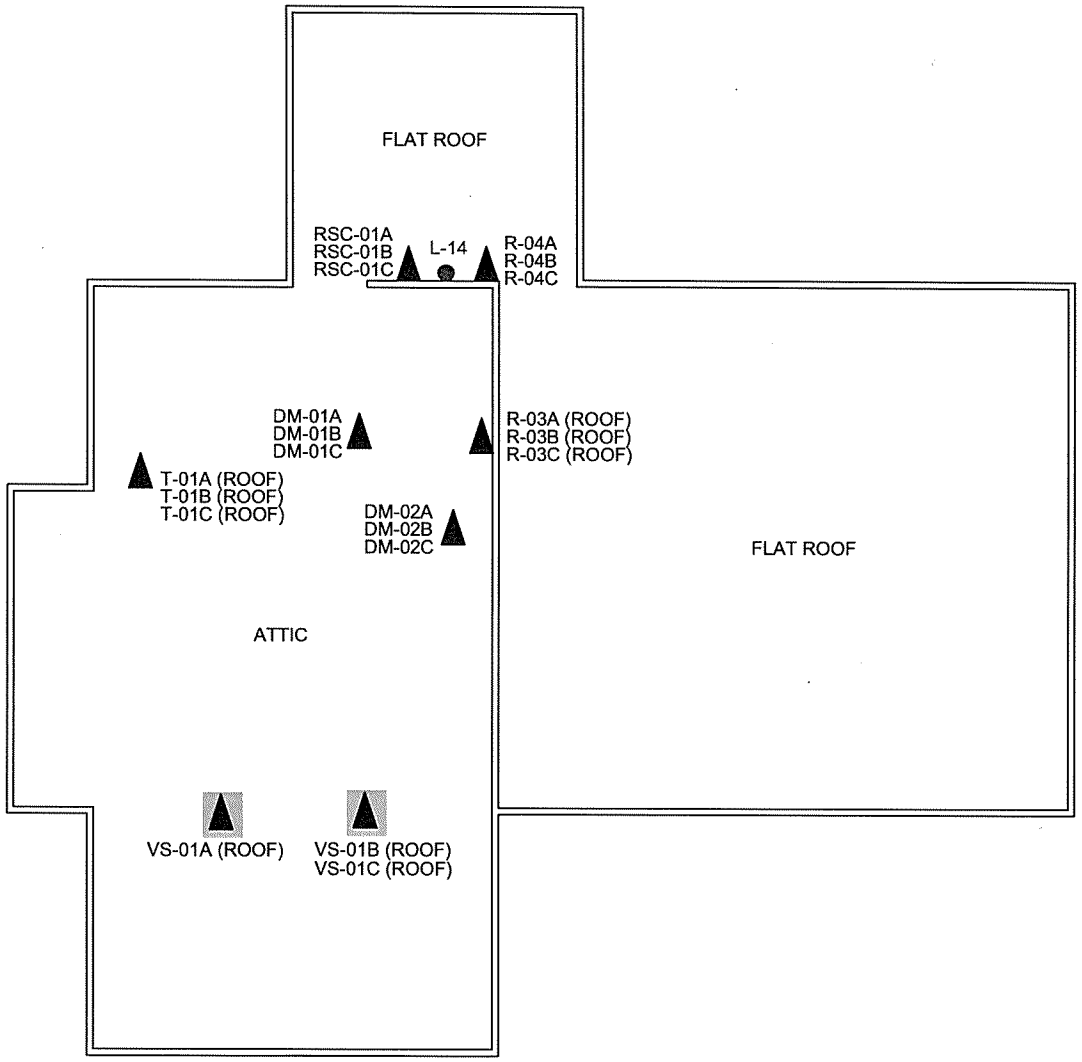

ROOF AND ATTIC

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM BLACK VENT SEALANT

NOTES: 1. **OLIVE GREEN AND BROWN MASTIC MATERIALS ON DUCTING THROUGHOUT ARE BOTH ASBESTOS-CONTAINING.**
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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 101, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD DM SL2016030370
App'd By:	TW

Dwg. No.: 13

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Phone/Fax: 604-757-3158 / (604) 757-4731
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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DM-01A ***Lab Sample ID:*** **691600131-0038**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown	12.0%	88.0%	None Detected	

Client Sample ID: DM-01B ***Lab Sample ID:*** **691600131-0039**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown	3.5%	96.5%	None Detected	

Client Sample ID: DM-01C ***Lab Sample ID:*** **691600131-0040**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Brown

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Brown	1.2%	98.8%	None Detected	

Client Sample ID: DM-02A ***Lab Sample ID:*** **691600131-0041**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Olive Green

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	98.6%	**1.4% Chrysotile**	

Client Sample ID: DM-02B ***Lab Sample ID:*** **691600131-0042**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Olive Green

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DM-02C ***Lab Sample ID:*** **691600131-0043**

Sample Description: Kitchen & Dining - Attic/Duct Mastic, Olive Green

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: VS-01A ***Lab Sample ID:*** **691600131-0044**

Sample Description: Kitchen & Dining - Exterior, Roof/Vent Sealant, Black - sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	96.9%	**3.1% Chrysotile**	

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Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VS-01B ***Lab Sample ID:*** **691600131-0045**

Sample Description: Kitchen & Dining - Exterior, Roof/Vent Sealant, Black - sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: VS-01C ***Lab Sample ID:*** **691600131-0046**

Sample Description: Kitchen & Dining - Exterior, Roof/Vent Sealant, Black - sealant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: T-01A ***Lab Sample ID:*** **691600131-0047**

Sample Description: Kitchen & Dining - Exterior, Roof/Tar, Black, Applied to Chimney - chimney

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: T-01B ***Lab Sample ID:*** **691600131-0048**

Sample Description: Kitchen & Dining - Exterior, Roof/Tar, Black, Applied to Chimney

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: T-01C ***Lab Sample ID:*** **691600131-0049**

Sample Description: Kitchen & Dining - Exterior, Roof/Tar, Black, Applied to Chimney

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: R-03A ***Lab Sample ID:*** **691600131-0050**

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Black, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White/Black	4.2%	95.8%	None Detected	

Client Sample ID: R-03B ***Lab Sample ID:*** **691600131-0051**

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Black, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	4.3%	95.7%	None Detected	

Client Sample ID: R-03C ***Lab Sample ID:*** **691600131-0052**

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Black, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	1.3%	98.7%	None Detected	

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Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: R-04A **Lab Sample ID:** 691600131-0053

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Red, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	1.6%	98.4%	None Detected	

Client Sample ID: R-04B **Lab Sample ID:** 691600131-0054

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Red, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	1.9%	98.1%	None Detected	

Client Sample ID: R-04C **Lab Sample ID:** 691600131-0055

Sample Description: Kitchen & Dining - Exterior, Roof/Roof, Red, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	1.1%	98.9%	None Detected	

Client Sample ID: RSC-01A **Lab Sample ID:** 691600131-0056

Sample Description: Kitchen & Dining - Exterior, Roof/Roof Seam Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: RSC-01B **Lab Sample ID:** 691600131-0057

Sample Description: Kitchen & Dining - Exterior, Roof/Roof Seam Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: RSC-01C **Lab Sample ID:** 691600131-0058

Sample Description: Kitchen & Dining - Exterior, Roof/Roof Seam Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: DJC-01A **Lab Sample ID:** 691600131-0059

Sample Description: Kitchen & Dining - Room 109/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691600131-0060

Sample Description: Kitchen & Dining - Room 107/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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Customer PO:
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Client Sample ID: DJC-01C **Lab Sample ID:** 691600131-0061
Sample Description: Kitchen & Dining - Room 108/Drywall Joint Compound, Applied to Drywall Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D **Lab Sample ID:** 691600131-0062
Sample Description: Kitchen & Dining - Room 118/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E **Lab Sample ID:** 691600131-0063
Sample Description: Kitchen & Dining - Room 118/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PLW-01A-Skim Coat **Lab Sample ID:** 691600131-0064
Sample Description: Kitchen & Dining - Room 108/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PLW-01A-Rough Coat **Lab Sample ID:** 691600131-0064A
Sample Description: Kitchen & Dining - Room 108/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PLW-01B-Skim Coat **Lab Sample ID:** 691600131-0065
Sample Description: Kitchen & Dining - Room 114/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PLW-01B-Rough Coat **Lab Sample ID:** 691600131-0065A
Sample Description: Kitchen & Dining - Room 114/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: PLW-01C-Skim Coat **Lab Sample ID:** 691600131-0066
Sample Description: Kitchen & Dining - Room 108/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

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Client Sample ID: PLW-01C-Rough Coat ***Lab Sample ID:*** **691600131-0066A**

Sample Description: Kitchen & Dining - Room 108/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: CT-01A ***Lab Sample ID:*** **691600131-0067**

Sample Description: Kitchen & Dining - Room 114/Suspended Ceiling Tile, 1'x1', Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	80%	20%	None Detected	

Client Sample ID: CT-01B ***Lab Sample ID:*** **691600131-0068**

Sample Description: Kitchen & Dining - Room 114/Suspended Ceiling Tile, 1'x1', Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	80%	20%	None Detected	

Client Sample ID: CT-01C ***Lab Sample ID:*** **691600131-0069**

Sample Description: Kitchen & Dining - Room 114/Suspended Ceiling Tile, 1'x1', Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	80%	20%	None Detected	

Client Sample ID: CT-02A ***Lab Sample ID:*** **691600131-0070**

Sample Description: Kitchen & Dining - Room 119/Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	90%	10%	None Detected	

Client Sample ID: CT-02B ***Lab Sample ID:*** **691600131-0071**

Sample Description: Kitchen & Dining - Room 119/Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	90%	10%	None Detected	

Client Sample ID: CT-02C ***Lab Sample ID:*** **691600131-0072**

Sample Description: Kitchen & Dining - Room 119/Suspended Ceiling Tile, 2'x4', Directional Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	90%	10%	None Detected	

Client Sample ID: CTC-01A-White ***Lab Sample ID:*** **691600131-0073**

Sample Description: Kitchen & Dining - Room 108/Texture Coat, Applied to Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	98%	**2% Chrysotile**	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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Client Sample ID: CTC-01A-Tan **Lab Sample ID:** 691600131-0073A

Sample Description: Kitchen & Dining - Room 108/Texture Coat, Applied to Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	0%	100%	None Detected	

Client Sample ID: CTC-01B **Lab Sample ID:** 691600131-0074

Sample Description: Kitchen & Dining - Room 108/Texture Coat, Applied to Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016				Stop Positive (Not Analyzed)	

Client Sample ID: CTC-01C **Lab Sample ID:** 691600131-0075

Sample Description: Kitchen & Dining - Room 108/Texture Coat, Applied to Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016				Stop Positive (Not Analyzed)	

Client Sample ID: CTG-01A **Lab Sample ID:** 691600131-0076

Sample Description: Kitchen & Dining - Room 118/Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: CTG-01B **Lab Sample ID:** 691600131-0077

Sample Description: Kitchen & Dining - Room 118/Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: CTG-01C **Lab Sample ID:** 691600131-0078

Sample Description: Kitchen & Dining - Room 118/Ceramic Tile Grout, Applied to 2"x2" Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: VSF-01 **Lab Sample ID:** 691600131-0079

Sample Description: Kitchen & Dining - Room 014 Entrance/Vinyl Sheet Flooring, Light Pink & Grey Dots w/Sparkles - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Tan	1.8%	98.2%	None Detected	Mastic not present

Client Sample ID: VSF-02-Vinyl Sheet Flooring **Lab Sample ID:** 691600131-0080

Sample Description: Kitchen & Dining - Basement Bathroom (020)/Vinyl Sheet Flooring, Grey w/Dark Grey Dots - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Tan	2.7%	97.3%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
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Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VSF-02-Mastic ***Lab Sample ID:*** **691600131-0080A**

Sample Description: Kitchen & Dining - Basement Bathroom (020)/Vinyl Sheet Flooring, Grey w/Dark Grey Dots

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Clear	0.0%	100%	None Detected	

Client Sample ID: VSF-03 ***Lab Sample ID:*** **691600131-0081**

Sample Description: Kitchen & Dining - Room 015/Vinyl Sheet Flooring, Grey Pebble Pattern, 1st Layer - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Tan	0.0%	100%	None Detected	No mastic present

Client Sample ID: VSF-03-Mastic ***Lab Sample ID:*** **691600131-0081A**

Sample Description: Kitchen & Dining - Room 015/Vinyl Sheet Flooring, Grey Pebble Pattern, 1st Layer

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: VSF-04 ***Lab Sample ID:*** **691600131-0082**

Sample Description: Kitchen & Dining - Room 015/Vinyl Sheet Flooring, 2nd Layer (Beneath VSF-03) - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	95.9%	**4.1% Chrysotile**	

Client Sample ID: VSF-04-Mastic ***Lab Sample ID:*** **691600131-0082A**

Sample Description: Kitchen & Dining - Room 015/Vinyl Sheet Flooring, 2nd Layer (Beneath VSF-03)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: VSF-05 ***Lab Sample ID:*** **691600131-0083**

Sample Description: Kitchen & Dining - Room 119/Vinyl Sheet Flooring, Beige/Brown/White Multi-Sized Cube Pattern - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Tan	0.0%	100%	None Detected	

Client Sample ID: VSF-05-Mastic ***Lab Sample ID:*** **691600131-0083A**

Sample Description: Kitchen & Dining - Room 119/Vinyl Sheet Flooring, Beige/Brown/White Multi-Sized Cube Pattern

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: VSF-06 ***Lab Sample ID:*** **691600131-0084**

Sample Description: Kitchen & Dining - Room 120/Vinyl Sheet Flooring, Light Beige, Small Cube Pattern - Vinyl Sheet flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Beige	0.0%	100%	None Detected	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VSF-06-Mastic ***Lab Sample ID:*** **691600131-0084A**

Sample Description: Kitchen & Dining - Room 120/Vinyl Sheet Flooring, Light Beige, Small Cube Pattern

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0085**

Sample Description: Kitchen & Dining - Mechanical Room (008)/Fire Stopper, Red, Mastic Wall Penetration - Fire Stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0086**

Sample Description: Kitchen & Dining - Mechanical Room (008)/Fire Stopper, Red, Mastic Wall Penetration - fire stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0087**

Sample Description: Kitchen & Dining - Mechanical Room (008)/Fire Stopper, Red, Mastic Wall Penetration - fire stopper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Red	0.43%	99.6%	None Detected	

Client Sample ID: FS-02A ***Lab Sample ID:*** **691600131-0088**

Sample Description: Kitchen & Dining - Room 100/Fire Stopper, Tan, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Peach	0.0%	100%	None Detected	

Client Sample ID: FS-02B ***Lab Sample ID:*** **691600131-0089**

Sample Description: Kitchen & Dining - Room 100/Fire Stopper, Tan, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Peach	0.0%	100%	None Detected	

Client Sample ID: FS-02C ***Lab Sample ID:*** **691600131-0090**

Sample Description: Kitchen & Dining - Room 100/Fire Stopper, Tan, Mastic Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Peach	0.0%	100%	None Detected	

Client Sample ID: WC-01A ***Lab Sample ID:*** **691600131-0091**

Sample Description: Kitchen & Dining - Room 108/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	91.6%	**8.4% Chrysotile**	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: WC-01B **Lab Sample ID:** 691600131-0092

Sample Description: Kitchen & Dining - Room 108/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-01C **Lab Sample ID:** 691600131-0093

Sample Description: Kitchen & Dining - Room 108/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-02A **Lab Sample ID:** 691600131-0094

Sample Description: Kitchen & Dining - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: WC-02B **Lab Sample ID:** 691600131-0095

Sample Description: Kitchen & Dining - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: WC-02C **Lab Sample ID:** 691600131-0096

Sample Description: Kitchen & Dining - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: PI-01A **Lab Sample ID:** 691600131-0097

Sample Description: Kitchen & Dining - Room 003/Pipe Insulation, Remnant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Brown/White	75%	25%	None Detected	

Client Sample ID: PI-01B **Lab Sample ID:** 691600131-0098

Sample Description: Kitchen & Dining - Room 003/Pipe Insulation, Remnant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Brown/White	75%	25%	None Detected	

Client Sample ID: PI-01C **Lab Sample ID:** 691600131-0099

Sample Description: Kitchen & Dining - Room 003/Pipe Insulation, Remnant

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	75%	25%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PC-01A ***Lab Sample ID:*** **691600131-0100**
Sample Description: Kitchen & Dining - Room 019/Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	7%	93%	None Detected	

Client Sample ID: PC-01B ***Lab Sample ID:*** **691600131-0101**
Sample Description: Kitchen & Dining - Room 019/Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	7%	93%	None Detected	

Client Sample ID: PC-01C ***Lab Sample ID:*** **691600131-0102**
Sample Description: Kitchen & Dining - Room 019/Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Tan	12%	88%	None Detected	

Client Sample ID: PL-01A ***Lab Sample ID:*** **691600131-0103**
Sample Description: Kitchen & Dining - Room 019/Pipe Lagging

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01B ***Lab Sample ID:*** **691600131-0104**
Sample Description: Kitchen & Dining - Room 019/Pipe Lagging

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01C-Skim Coat ***Lab Sample ID:*** **691600131-0105**
Sample Description: Kitchen & Dining - Room 019/Pipe Lagging

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PL-01C-Rough Coat ***Lab Sample ID:*** **691600131-0105A**
Sample Description: Kitchen & Dining - Room 019/Pipe Lagging

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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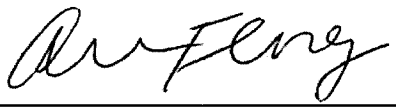
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

Alice Feng	PLM (25) PLM Grav. Reduction (7)
Kathleen Cruz	PLM (11) PLM Grav. Reduction (27)

Reviewed and approved by:



Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201617:57:00

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 Or	551601656
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 KITCHEN & DINING**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-14	*551601656-0001*		2/19/2016	1800 ppm
	Site: WHITE- EXTERIOR, ROOF			
L-15	*551601656-0002*		2/19/2016	490 ppm
	Site: WHITE- ROOM 014			
L-16	*551601656-0003*		2/19/2016	<230 ppm
	Site: GREY- ROOM 014, TRIM			
L-17	*551601656-0004*		2/19/2016	670 ppm
	Site: TEAL- ROOM 015, TRIM			
L-18	*551601656-0005*		2/19/2016	<290 ppm
	Site: GREY- ROOM 011, CONCRETE FLOOR			
L-19	*551601656-0006*		2/19/2016	<600 ppm
	Site: RED- HALLWAY (003), CONCRETE FLOOR			
L-20	*551601656-0007*		2/19/2016	1200 ppm
	Site: LIGHT GREY- ROOM 114			
L-21	*551601656-0008*		2/19/2016	1500 ppm
	Site: RED- ROOM 119, STEEL BEAM			
L-22	*551601656-0009*		2/19/2016	65000 ppm
	Site: ORANGE- ROOM 100			
L-23	*551601656-0010*		2/19/2016	480 ppm
	Site: GREY- EXTERIOR			
L-24	*551601656-0011*		2/19/2016	8600 ppm
	Site: BURGUNDY- EXTERIOR, VENT COVERS			

Insufficient sample to reach reporting limit for sample #551601656 -0003/ -0005/ -0006.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:19:10

APPENDIX J
FINDINGS AND RECOMMENDATIONS—LAUNDRY/INSTITUTIONAL SERVICES

Appendix J FINDINGS AND RECOMMENDATIONS—LAUNDRY/INSTITUTION SERVICES

The laundry/institution services building was reportedly constructed prior to 1990 and consists of one level. The typical structural components and finishes associated with this building consist of concrete floors, concrete and cement board walls, and concrete.

Only the following areas (subject areas) were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Rooms 112, 113, and 117

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

J.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Fire-stop/wall protector
- Window Caulking
- Cement board

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table J-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table J-1 Suspected ACM Sample Collection and Analysis Summary Laundry/Institution Services, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
FS-01A	Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration	Room 113	None Detected
FS-01B	Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration	Room 113	None Detected
FS-01C	Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration	Room 113	None Detected
WC-01A	**Window Caulking, Black**	**Room 117**	**3.9% Chrysotile**
WC-01B	**Window Caulking, Black**	**Room 117**	**Positive Stop (Not Analyzed)**
WC-01C	**Window Caulking, Black**	**Room 117**	**Positive Stop (Not Analyzed)**
CB-01	**Cement Board**	**Room 113, Above Office Windows**	**15% Chrysotile**

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table J-2, below were identified as ACMs.

Table J-2 Summary of Identified ACMs Laundry/Institution Services, William Head Institution, Victoria, BC

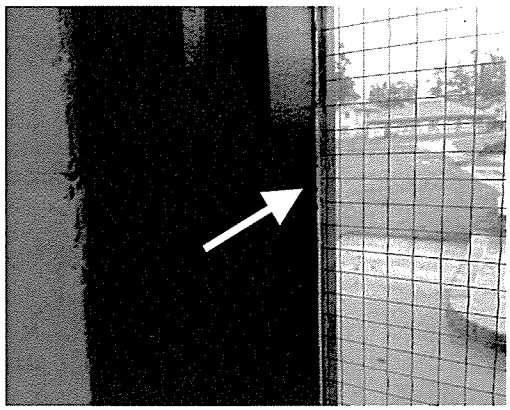
Identified ACM Description and Condition Information		Photo
Black window pane caulking throughout.		
Friability	Non-friable	
Condition	Good	
Content	3.9% Chrysotile	

Table J-2 Summary of Identified ACMs
Laundry/Institution Services, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Cement board found in Room 112 and 113 above office windows (also observed in Room 101, which is adjacent to 112 and 113). Note—this material was labelled as an ACM		
Friability	Non-friable	
Condition	Good	
Content	15% Chrysotile	

J.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

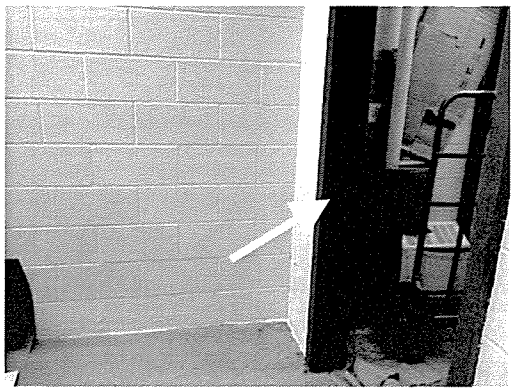
With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table J-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table J-3 Suspected LCP Sample Collection and Analysis Summary
Laundry/Institution Services, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-91	**Brown**	**Room 117, Trim**	**1,000**	**Yes**
L-92	Cream	Room 113, Walls	<350	No
L-93	White	Room 117	<110	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the material presented in Table J-4, below was identified as an LCP.

Table J-4 Summary of Identified LCPs
Laundry/Institution Services, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Brown coloured paint on trim throughout. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

J.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 20 light fixtures observed within the subject areas. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

J.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 20 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

J.5 MOULD

No mould and/or moisture-impacted building materials were observed.

J.6 OZONE-DEPLETING SUBSTANCES

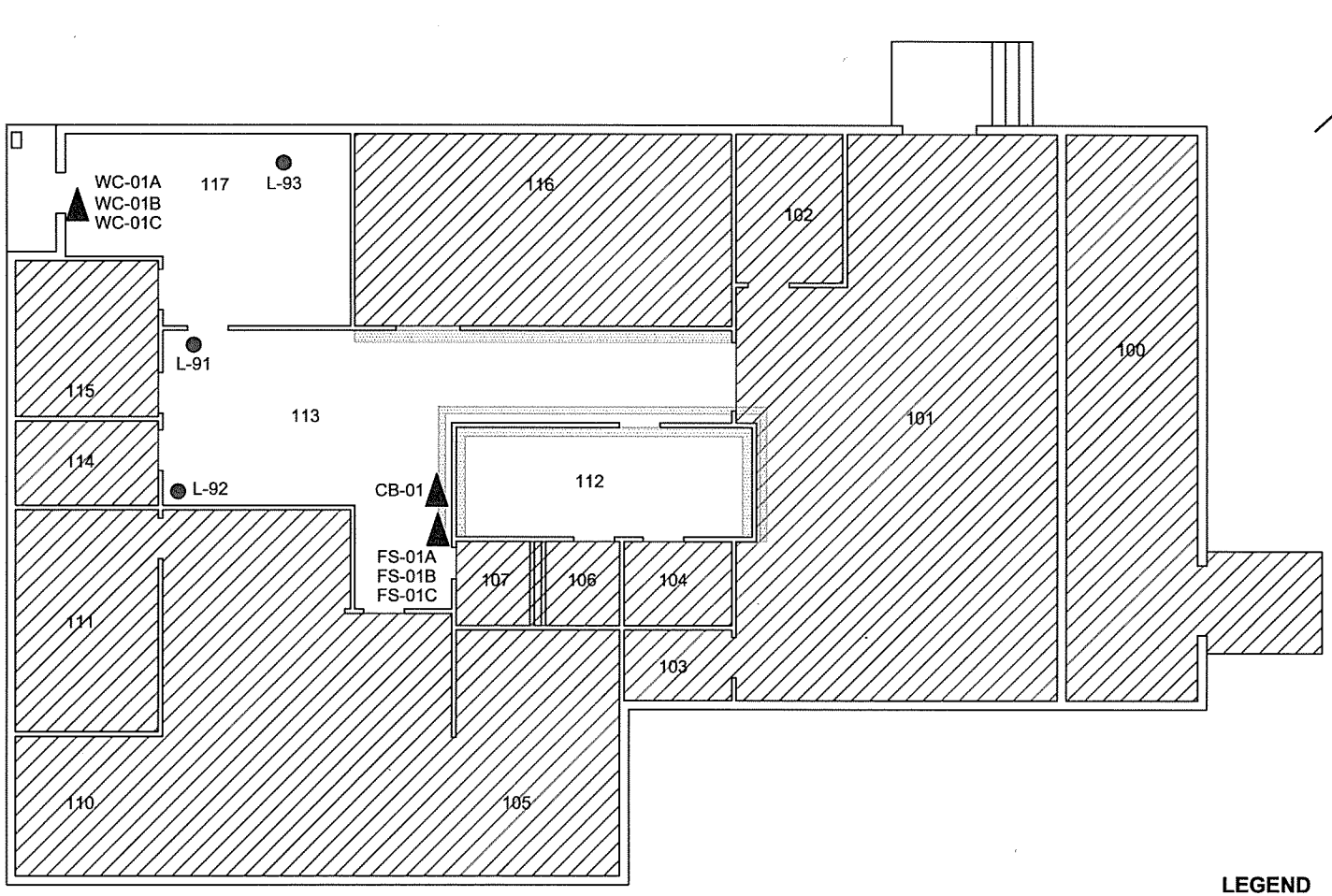
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

J.7 SILICA

Silica is presumed to be present in cement and concrete materials observed.

J.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



LAUNDRY / INSTITUTION SERVICES

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM CEMENT BOARD
- AREAS NOT INCLUDED IN ASSESSMENT

NOTES: 1. **BLACK ASBESTOS-CONTAINING WINDOW PANE CAULKING IS PRESENT THROUGHOUT.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 109, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD VM/DM SL2016030371
App'd By:	TW

Dwg. No.: J1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0403**

Sample Description: Laundry/Institutional Services - Room 113/Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0404**

Sample Description: Laundry/Institutional Services - Room 113/Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0405**

Sample Description: Laundry/Institutional Services - Room 113/Fire Stopper, Grey/Brown, Putty, Applied to Electrical Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

Client Sample ID: WC-01A ***Lab Sample ID:*** **691600131-0406**

Sample Description: Laundry/Institutional Services - Room 117/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	96.1%	**3.9% Chrysotile**	

Client Sample ID: WC-01B ***Lab Sample ID:*** **691600131-0407**

Sample Description: Laundry/Institutional Services - Room 117/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-01C ***Lab Sample ID:*** **691600131-0408**

Sample Description: Laundry/Institutional Services - Room 117/Window Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: CB-01 ***Lab Sample ID:*** **691600131-0409**

Sample Description: Laundry/Inst Services - Room 113 Above Office Wind/Cement Board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	85%	**15% Chrysotile**	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki	PLM (1)
Natalie D'Amico	PLM Grav. Reduction (3)
Romeo Samson	PLM Grav. Reduction (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/23/201613:57:41

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 Or	551601720
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LAUNDRY/INSTITUTION SERVICES**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-91	*551601720-0001*		2/22/2016	1000 ppm
	Site: BROWN- ROOM 117, TRIM			
L-92	*551601720-0002*		2/22/2016	<350 ppm
	Site: CREAM- ROOM 113, WALLS			
L-93	*551601720-0003*		2/22/2016	<110 ppm
	Site: WHITE- ROOM 117			

Insufficient sample to reach reporting limit for sample #551601720 -0002/ -0003.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:11:56

APPENDIX K
FINDINGS AND RECOMMENDATIONS—LIBRARY

Appendix K FINDINGS AND RECOMMENDATIONS—LIBRARY

The library was reportedly constructed prior to 1990 and consists of two levels and a steam tunnel which runs between this building and the Inmate Training building. The typical structural components and finishes associated with this building consist of exterior block walls, vinyl floor tiles, concrete, block wall, and drywall interior walls, and concrete ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- All rooms within the first floor

It should be noted that the library is serviced by a steam tunnel that runs underground from the inmate training building. Mechanical pipes and conduit were assessed at each end of the tunnel but the tunnel itself was not assessed during this project as access could not be provided. Hazardous building materials may be present in the steam tunnel.

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

K.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Skim coat
- Vinyl floor tiles
- Pipe lagging
- Pipe wrap
- Various pipe sealants
- Fire stopper

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

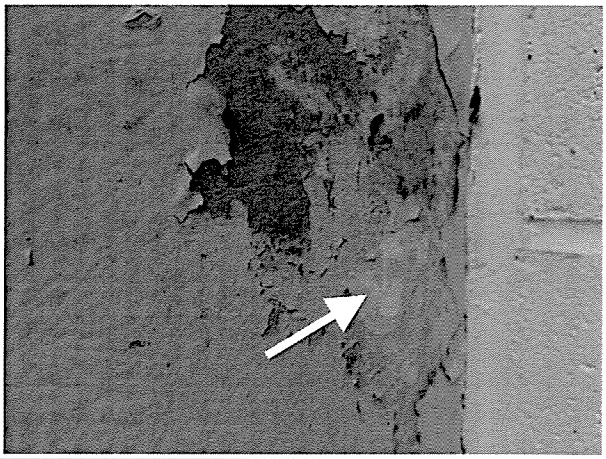
A summary of the sample types, locations and analytical results is presented in Table K-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table K-1 Suspected ACM Sample Collection and Analysis Summary Library, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Partition Walls	Room 102	None Detected
DJC-01B	Drywall Joint Compound, Applied to Partition Walls	Room 103	None Detected
DJC-01C	Drywall Joint Compound, Applied to Partition Walls	Room 103	None Detected
SC-01A	**Skim Coat, Applied to Concrete Columns**	**Room 105**	**2% Chrysotile**
SC-01B	**Skim Coat, Applied to Concrete Columns**	**Room 105**	**Stop Positive (Not Analyzed)**
SC-01C	**Skim Coat, Applied to Concrete Columns**	**Room 105**	**Stop Positive (Not Analyzed)**
VFT-01-Floor Tile	Vinyl Floor Tile, Light & Dark Blue Smudges	Room 103	None Detected
VFT-02	Vinyl Floor Tile, Yellow with Light Smears	Bathroom (104)	None Detected
PL-01	Pipe Lagging, Applied to Hot Water Supply Line	Mechanical Room (106)	None Detected
PW-01	Pipe Wrap, Applied to Steam Lines	Entrance (103)	None Detected
PS-01A	Pipe Sealant, Off-White, Applied to Steam Lines	Office (100)	None Detected
PS-01B	Pipe Sealant, Off-White, Applied to Steam Lines	Office (100)	None Detected
PS-01C	Pipe Sealant, Off-White, Applied to Steam Lines	Office (100)	None Detected
PS-02A	Pipe Sealant, White, Applied to Water Lines	Mechanical Room (106)	None Detected
PS-02B	Pipe Sealant, White, Applied to Water Lines	Mechanical Room (106)	None Detected
PS-02C	Pipe Sealant, White, Applied to Water Lines	Mechanical Room (106)	None Detected
PS-03A	Pipe Sealant, Pink, Applied to Water Lines	Mechanical Room (106)	None Detected
PS-03B	Pipe Sealant, Pink, Applied to Water Lines	Mechanical Room (106)	None Detected
PS-03C	Pipe Sealant, Pink, Applied to Water Lines	Mechanical Room (106)	None Detected
FS-01A	Fire Stopper, Dark Grey, Mastic, Ceiling Penetration	Mechanical Room (106)	None Detected
FS-01B	Fire Stopper, Dark Grey, Mastic, Ceiling Penetration	Mechanical Room (106)	None Detected
FS-01C	Fire Stopper, Dark Grey, Mastic, Ceiling Penetration	Mechanical Room (106)	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table K-2, below were identified as ACMs.

Table K-2 Summary of Identified ACMs
Library, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Skim coat applied to concrete columns in Room 105.		
Friability	Non-friable	
Condition	Good (overlying paint beginning to peel/flake in locations)	
Content	2.0% Chrysotile	

K.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table K-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table K-3 Suspected LCP Sample Collection and Analysis Summary
Library, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-69	White	Room 106, Block Walls	<530	No
L-70	**Grey**	**Room 106, Concrete Floor**	**<890**	**Potential**

Table K-3 Suspected LCP Sample Collection and Analysis Summary Library, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-86	Grey	Office (100), Trim	450	No
L-87	Dark green	Room 103	<530	No
L-88	Light blue	Room 102, Trim	<550	No
L-89	**Black**	**Room 102, Ceiling**	**780**	**Yes**
L-90	**Cream/Yellow**	**Room 105**	**2,200**	**Yes**

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table K-4, below were identified as actual or potential LCPs.

Table K-4 Summary of Identified LCPs Library, William Head Institution, Victoria, BC

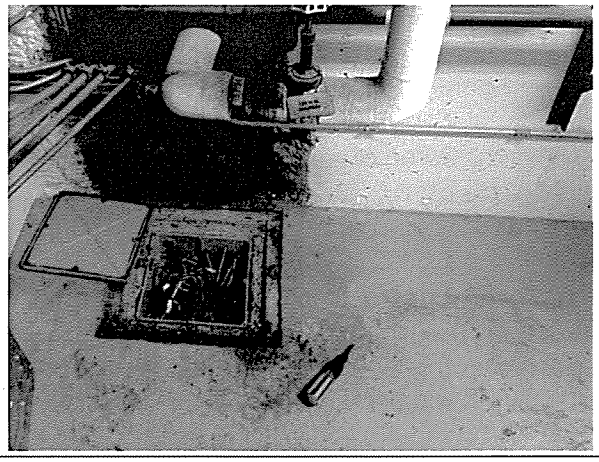
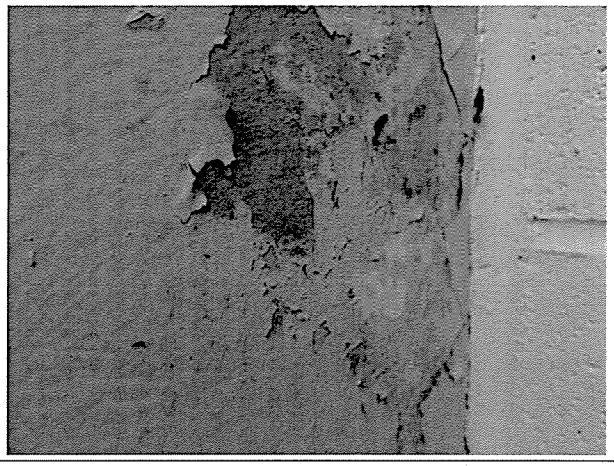
Identified LCP Description	Photo
Grey colored paint on the concrete floor of the mechanical room (potential LCP – additional sampling may indicate otherwise). This paint was observed to be in poor condition (bubbling, flaking, or peeling).	

Table K-4 Summary of Identified LCPs
Library, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Black colored paint on the ceiling. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	
Cream/yellow colored paint on the walls. This paint was observed to be in poor condition (bubbling, flaking, or peeling).	

K.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 100 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

K.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 100 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

K.5 MOULD

No mould and/or moisture-impacted building materials were observed.

K.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

K.7 SILICA

Silica is presumed to be present in vinyl floor tiles, drywall, cement, and concrete materials observed.

K.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

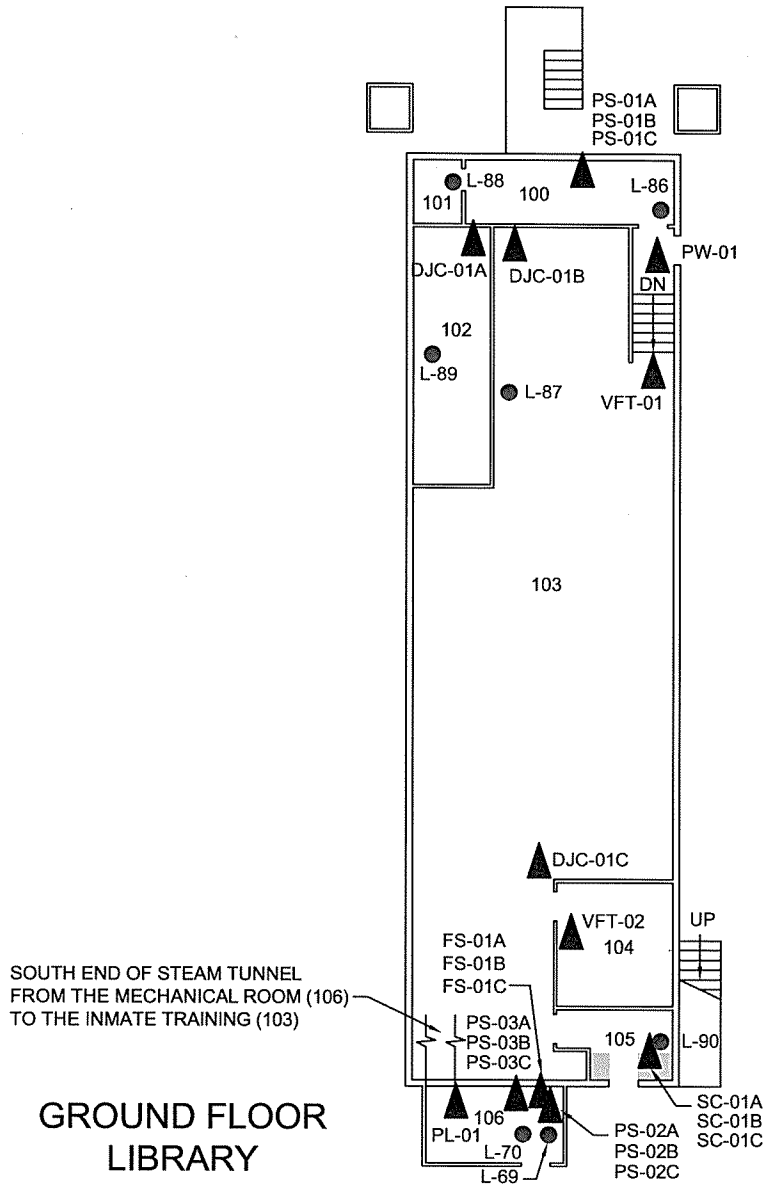
Additional material-specific recommendations to be considered during the renovation project are provided below.

K.8.1 Lead

Lead-containing paint observed in poor condition within the building should be cleaned-up and/or addressed during the project, and to mitigate potential for additional deterioration and dispersal of lead-containing paint chips/dust. Consideration should be given to re-painting surfaces to mitigate the potential for additional deterioration and hazards associated with the lead-containing paint chips/dust that may be created. If re-painting is completed, appropriate precautions to protect workers and work areas from exposure to lead and/or asbestos, where this paint is on asbestos-containing skim coat materials, will be required during painting preparation activities.

Provisions for worker protection and waste disposal related to the above are included in Section 5.2 of the main body of this report.

In addition to the above, if work will impact potential LCPs as outlined herein, additional sampling should be conducted to confirm lead content such that an appropriate risk assessment can be completed for the work that will be conducted.



GROUND FLOOR
LIBRARY

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACM SKIM COAT APPLIED TO CONCRETE COLUMNS

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 102, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/23
Dwn. By:	CD SL2016030292 VM/DM
App'd By:	TW

Dwg. No.: K1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0424**

Sample Description: Library - Room 102/Drywall Joint Compound Applied to Partition Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0425**

Sample Description: Library - Room 103/Drywall Joint Compound Applied to Partition Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0426**

Sample Description: Library - Room 103/Drywall Joint Compound Applied to Partition Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: SC-01A ***Lab Sample ID:*** **691600131-0427**

Sample Description: Library - Room 105/Skim Coat Applied to Concrete Columns

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	98%	2% Chrysotile	

Client Sample ID: SC-01B ***Lab Sample ID:*** **691600131-0428**

Sample Description: Library - Room 105/Skim Coat Applied to Concrete Columns

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016				Stop Positive (Not Analyzed)	

Client Sample ID: SC-01C ***Lab Sample ID:*** **691600131-0429**

Sample Description: Library - Room 105/Skim Coat Applied to Concrete Columns

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016				Stop Positive (Not Analyzed)	

Client Sample ID: VFT-01-Floor Tile ***Lab Sample ID:*** **691600131-0430**

Sample Description: Library - Room 103/Vinyl Floor Tile, Light & Dark Blue Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Blue	0.0%	100%	None Detected	No mastic present

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VFT-02 ***Lab Sample ID:*** **691600131-0431**

Sample Description: Library - Bathroom (104)/Vinyl Floor Tile, Yellow w/Light Smears

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	No mastic present

Client Sample ID: PL-01 ***Lab Sample ID:*** **691600131-0432**

Sample Description: Library - Mechanical Room (106)/Pipe Lagging, Applied to Hot Water Supply Line

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	70%	30%	None Detected	

Client Sample ID: PW-01 ***Lab Sample ID:*** **691600131-0433**

Sample Description: Library - Entrance (103)/Pipe Wrap, Applied to Steam Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	70%	30%	None Detected	

Client Sample ID: PS-01A ***Lab Sample ID:*** **691600131-0434**

Sample Description: Library - Office (100)/Pipe Selaant, Off-White Applied to Steam Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01B ***Lab Sample ID:*** **691600131-0435**

Sample Description: Library - Office (100)/Pipe Selaant, Off-White Applied to Steam Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01C ***Lab Sample ID:*** **691600131-0436**

Sample Description: Library - Office (100)/Pipe Selaant, Off-White Applied to Steam Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-02A ***Lab Sample ID:*** **691600131-0437**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, White Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-02B ***Lab Sample ID:*** **691600131-0438**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, White Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PS-02C ***Lab Sample ID:*** **691600131-0439**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, White Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	White	0.0%	100%	None Detected	

Client Sample ID: PS-03A ***Lab Sample ID:*** **691600131-0440**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, Pink Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Pink	0.0%	100%	None Detected	

Client Sample ID: PS-03B ***Lab Sample ID:*** **691600131-0441**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, Pink Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-03C ***Lab Sample ID:*** **691600131-0442**

Sample Description: Library - Mechanical Room (106)/Pipe Selaant, Pink Applied to Water Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Pink	0%	100%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0443**

Sample Description: Library - Mechanical Room (106)/Fire Stopper, Dark Grey, Mastic,Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0444**

Sample Description: Library - Mechanical Room (106)/Fire Stopper, Dark Grey, Mastic,Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0445**

Sample Description: Library - Mechanical Room (106)/Fire Stopper, Dark Grey, Mastic,Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Green	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki	PLM (5)
Natalie D'Amico	PLM (5) PLM Grav. Reduction (6)
Romeo Samson	PLM (2) PLM Grav. Reduction (2)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:02:30

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 Or	551601711
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIBRARY**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-69	*551601711-0001*		2/22/2016	<530 ppm
	Site: WHITE- ROOM 106, BLOCK WALLS			
L-70	*551601711-0002*		2/22/2016	<890 ppm
	Site: GREY- ROOM 106, CONCRETE FLOOR			
L-86	*551601711-0003*		2/22/2016	450 ppm
	Site: GREY- OFFICE (100), TRIM			
L-87	*551601711-0004*		2/22/2016	<530 ppm
	Site: DARK GREEN- ROOM 103			
L-88	*551601711-0005*		2/22/2016	<550 ppm
	Site: LIGHT BLUE- ROOM 102, TRIM			
L-89	*551601711-0006*		2/22/2016	780 ppm
	Site: BLACK- ROOM 102, CEILING			
L-90	*551601711-0007*		2/22/2016	2200 ppm
	Site: CREAM/YELLOW- ROOM 105			

Insufficient sample to reach reporting limit for sample #551601711 -0001/ -0002/ -0004/ -0005.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:31:41

APPENDIX L
FINDINGS AND RECOMMENDATIONS—LIVING UNITS

Appendix L FINDINGS AND RECOMMENDATIONS—LIVING UNITS

The living unit buildings in each neighbourhood, which are two-level buildings with attic spaces, were reportedly constructed in 1992 by the same contractor, under the same contract, using the same building materials (20 buildings in total). The typical structural components and finishes associated with these buildings consist of stucco exterior walls, concrete, vinyl sheet flooring, and wood floors, drywall walls, and texture coat, and drywall ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Representative samples of second floor ceiling finishes; texture coat and drywall
- Representative samples of mechanical rooms

Based on the reported information pertaining to the construction date and consistency of the neighbourhood units, ceiling finishes and mechanical rooms within 7 of 20 living unit buildings were assessed. Sampling was conducted only in the assessed buildings, which were presumed to be representative of all buildings. Various samples of each suspect material were collected from separate buildings (where applicable).

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings for the seven living unit buildings that were assessed, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

L.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Assorted fire-stop/wall protectors
- Assorted mastics, caulkings and sealants
- Texture coat

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table L-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table L-1 Suspected ACM Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
Living Unit A1			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
PS-01A	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**1.0% Chrysotile**
PS-01B	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
PS-01C	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-03A	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03B	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03C	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
TC-01A	Texture Coat, Applied to Drywall Ceilings	Unit 1, Second Floor (103a)	Not Detected
TC-01B	Texture Coat, Applied to Drywall Ceilings	Unit 1, Second Floor Hallway (101)	Not Detected
TC-01C	Texture Coat, Applied to Drywall Ceilings	Unit 2, Second Floor Hallway (101)	Not Detected
Living Unit A2			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected

Table L-1 Suspected ACM Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
PS-01A	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**1.0% Chrysotile**
PS-01B	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
PS-01C	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
PL-01	Pipe Lagging, Applied to Fiberglass Pipes	Mechanical Room	Not Detected
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-03A	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03B	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03C	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
TC-01A	Texture Coat, Applied to Drywall Ceilings	Unit 4, Second Floor (103)	Not Detected
TC-01B	Texture Coat, Applied to Drywall Ceilings	Unit 4, Second Floor Hallway (101)	Not Detected
TC-01C	Texture Coat, Applied to Drywall Ceilings	Unit 3, Second Floor Hallway (101)	Not Detected
Living Unit A3			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
PS-01A	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**1.0% Chrysotile**

Table L-1 Suspected ACM Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
PS-01B	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
PS-01C	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-03A	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03B	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03C	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-04A	Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration	Mechanical Room	Not Detected
FS-04B	Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration	Mechanical Room	Not Detected
FS-04C	Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration	Mechanical Room	Not Detected
FS-05A	Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration	Mechanical Room	Not Detected
FS-05B	Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration	Mechanical Room	Not Detected
FS-05C	Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration	Mechanical Room	Not Detected
FS-06A	Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration	Mechanical Room	Not Detected
FS-06B	Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration	Mechanical Room	Not Detected
FS-06C	Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration	Mechanical Room	Not Detected
TC-01A	Texture Coat, Applied to Drywall Ceilings	Unit 5, Second Floor (103a)	Not Detected

Table L-1 Suspected ACM Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

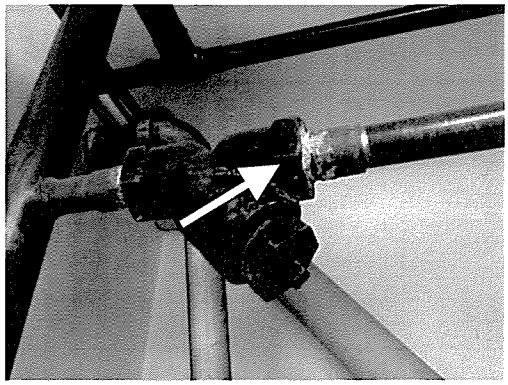
Sample Number	Material Description	Sample Location	Result (%/type asbestos)
TC-01B	Texture Coat, Applied to Drywall Ceilings	Unit 5, Second Floor Hallway (101)	Not Detected
TC-01C	Texture Coat, Applied to Drywall Ceilings	Unit 6, Second Floor Hallway (101)	Not Detected
Living Unit A4			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-03A	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03B	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03C	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
TC-01A	Texture Coat, Applied to Drywall Ceilings	Unit 7 & 8, Second Floor (101)	Not Detected
TC-01B	Texture Coat, Applied to Drywall Ceilings	Unit 7 & 8, Second Floor (101)	Not Detected
TC-01C	Texture Coat, Applied to Drywall Ceilings	Unit 7 & 8, Second Floor (101)	Not Detected
Living Unit B1			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected

Table L-1 Suspected ACM Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room	Not Detected
PS-01A	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**1.0% Chrysotile**
PS-01B	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
PS-01C	**Pipe Sealant, Blue, Applied to Sprinkler Lines**	**Mechanical Room**	**Positive Stop**
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Mechanical Room	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Mechanical Room	Not Detected
FS-03A	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03B	Fire Stopper, Red, Applied to Stack Seam	Mechanical Room	Not Detected
FS-03C	Fire Stopper, Red, Applied to Stack Sea8m	Mechanical Room	Not Detected
Living Unit B4			
DM-01A	Duct Mastic, Grey	Unit 7 & 8, Attic	Not Detected
DM-01B	Duct Mastic, Grey	Unit 7 & 8, Attic	Not Detected
DM-01C	Duct Mastic, Grey	Unit 7 & 8, Attic	Not Detected
Living Unit E4			
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Unit 8, Second Floor Bathroom	Not Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Unit 8, Second Floor Hallway	Not Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Unit 8, Second Floor Bathroom	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table L-2, below were identified as ACMs.

Table L-2 Summary of Identified ACMs
Living Units, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Blue pipe sealant applied to the sprinkler lines within the main floor mechanical rooms of each living unit.		
Friability	Non-friable	
Condition	Good	
Content	1.0% Chrysotile	

L.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used in bell fittings for cast iron pipes and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table L-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table L-3 Suspected LCP Sample Collection and Analysis Summary
Living Units, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
Living Unit A1				
L-25	White	Mechanical Room (10)	<230	No
L-26	Grey	Mechanical Room (10), Concrete Floors	<310	No
Living Unit A2				
L-27	Grey	Mechanical Room (10), Concrete Floors	<900	Yes

Table L-3 Suspected LCP Sample Collection and Analysis Summary Living Units, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-28	White	Mechanical Room (10)	<280	No
Living Unit A3				
L-29	Grey	Mechanical Room (10), Concrete Floors	<640	Yes
L-30	White	Mechanical Room (10)	<150	No
Living Unit A4				
L-31	White	Mechanical Room (10)	<200	No
L-32	Grey	Mechanical Room (10), Concrete Floors	<740	Yes
Living Unit B1				
L-33B	Grey	Mechanical Room (10), Concrete Floors	<330	No
L-34B	White	Mechanical Room (10)	<560	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

With regards to grey paint on mechanical room floors, insufficient sample was collected to reach a detection limit less than 600 ppm for three samples. As two other samples of visually similar floor paint in other mechanical rooms (which were reportedly constructed at the same time, with the same contractor using the same materials) indicated lead concentrations less than 600 ppm, the grey floor paint in mechanical rooms throughout the living units is not considered to be an LCP.

L.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject buildings, the fluorescent light ballasts are not suspected to contain PCBs.

L.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 10 fluorescent light fixtures observed in each living unit. Mercury may also be present in paints and adhesives.

L.5 MOULD

No mould and/or moisture–impacted building materials were observed.

L.6 OZONE-DEPLETING SUBSTANCES

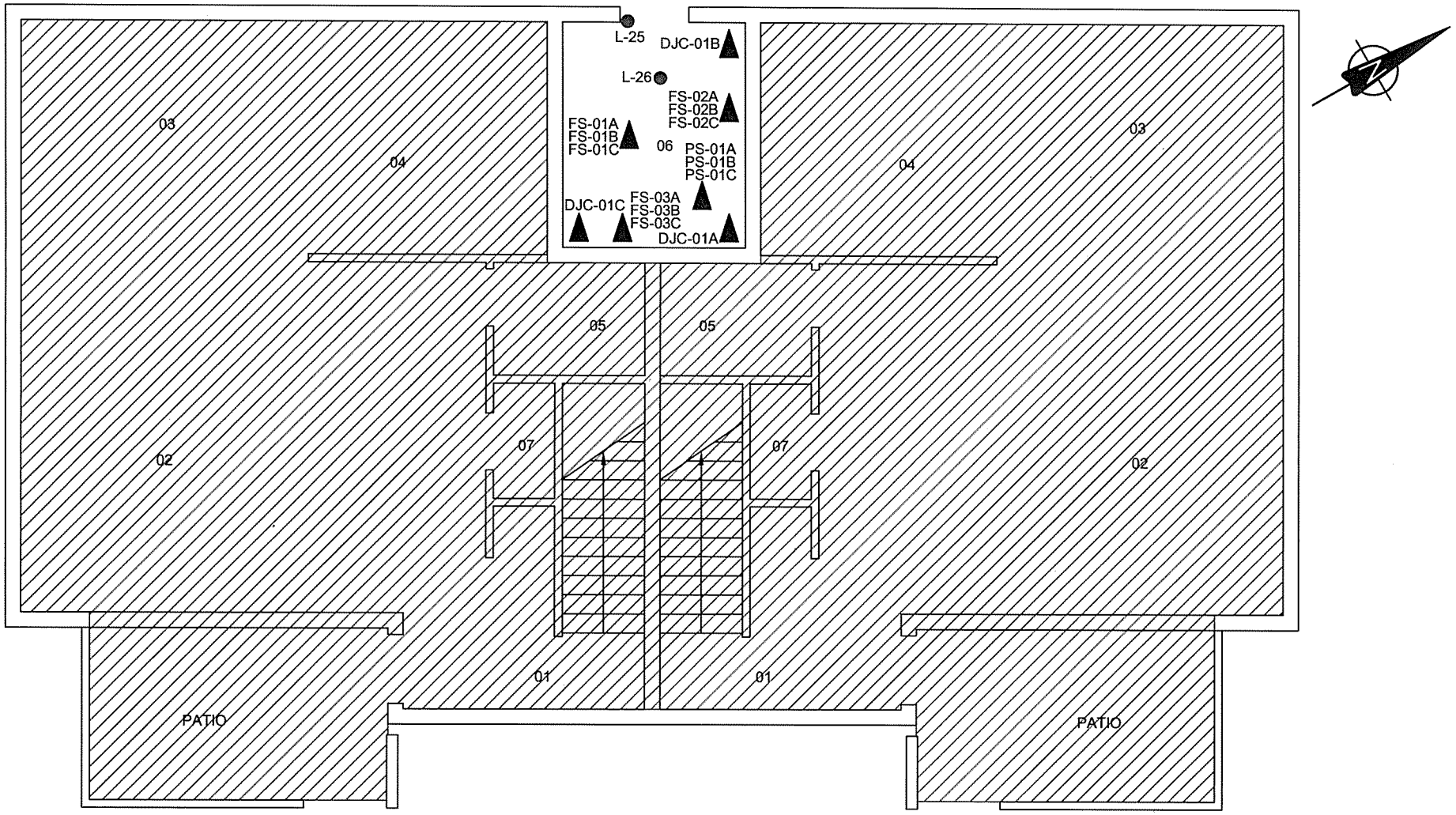
No building-related refrigerants or air conditioning equipment with suspected ODS-containing refrigerants was observed.

L.7 SILICA

Silica is presumed to be present in stucco, ceramic tiles, drywall, cement, and concrete materials observed.

L.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



MAIN FLOOR
LIVING UNIT A1

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.

2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU1, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030353 PK/DM
App'd By:	TW

Dwg. No.: L1

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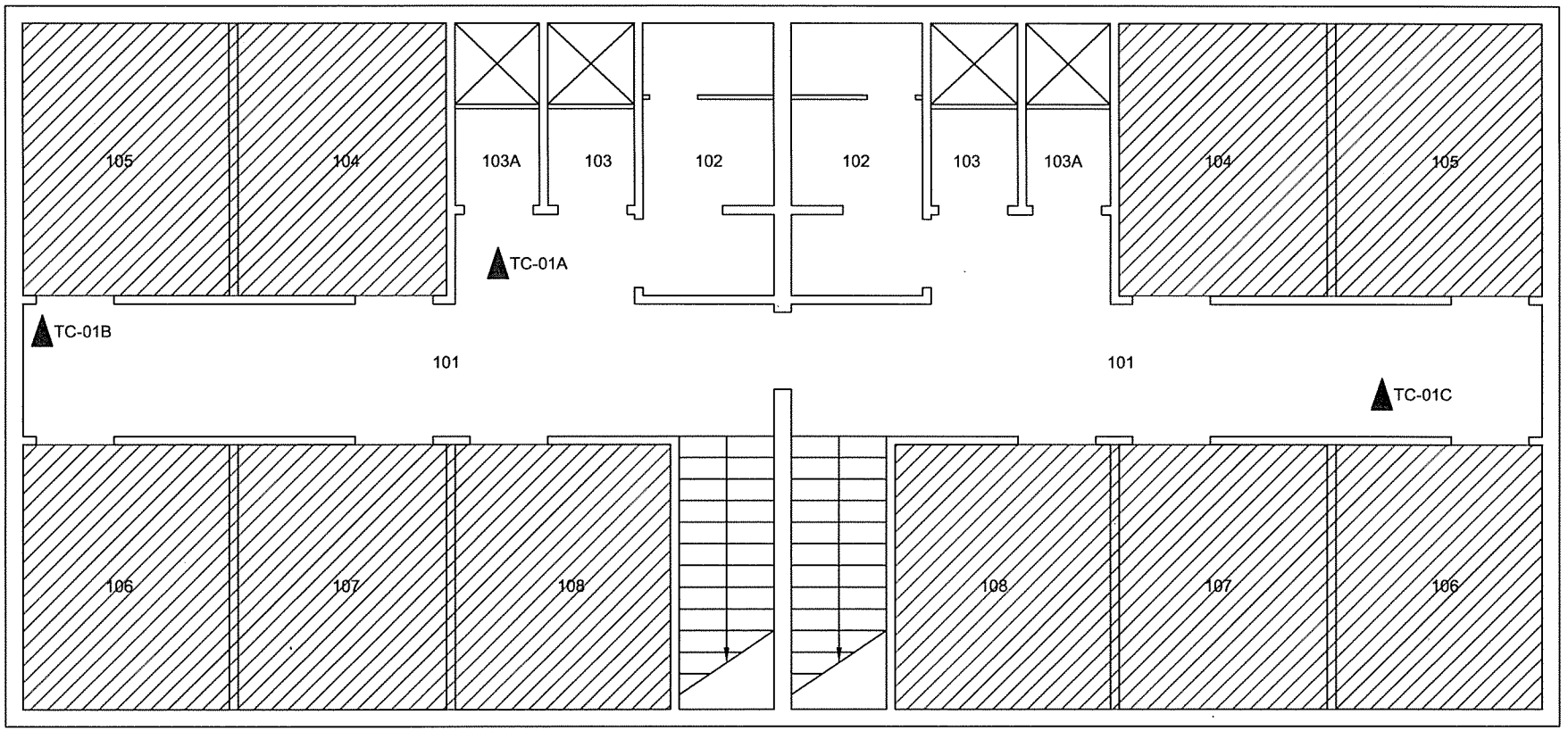

UPPER FLOOR
LIVING UNIT A1

LEGEND

▲ ASBESTOS BULK SAMPLE

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU1, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD PK/DM SL2016030354
App'd By:	TW

Dwg. No.: L2

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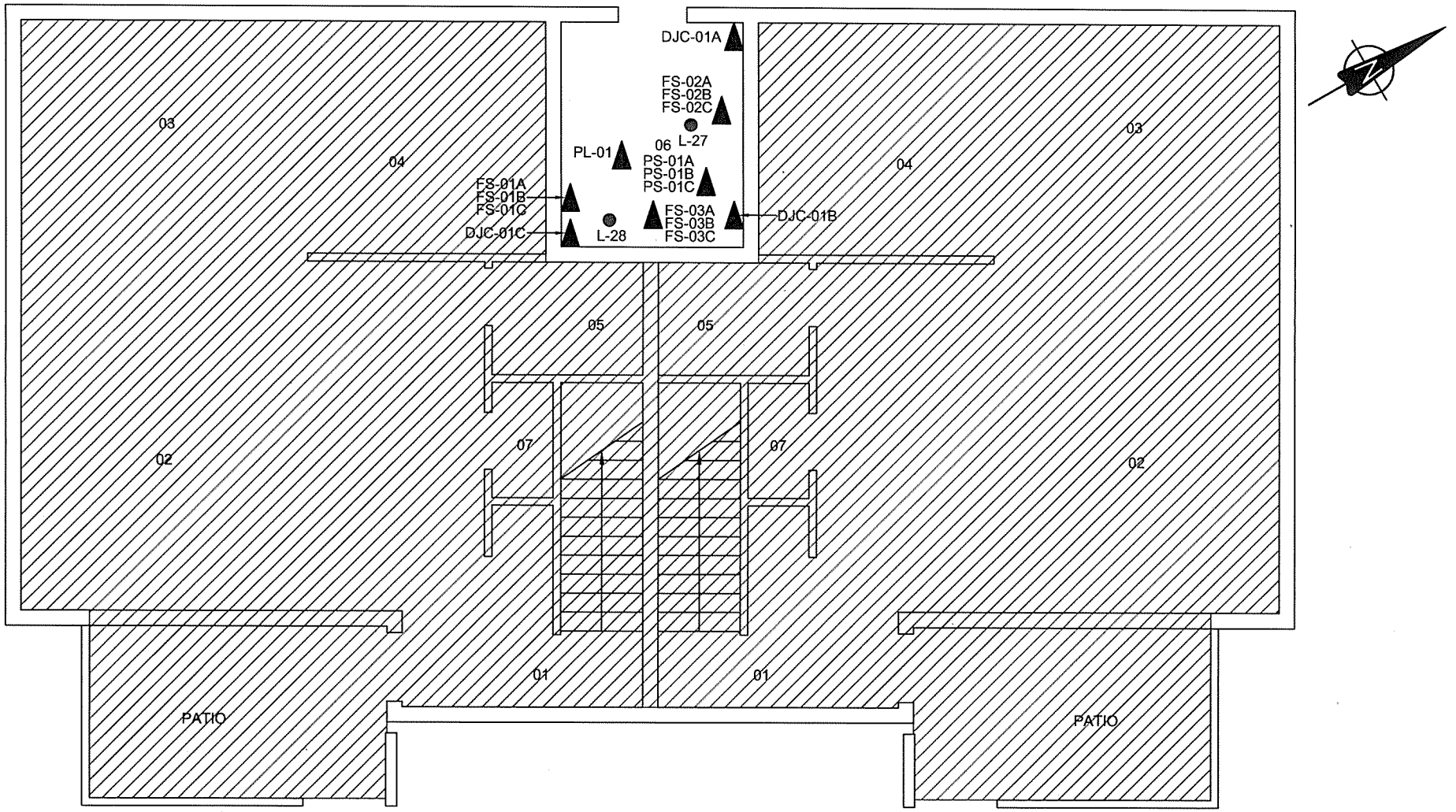

MAIN FLOOR
LIVING UNIT A2

LEGEND

- ▲ ASBESTOS BULK SAMPLE
- ● LEAD PAINT SAMPLE

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU2, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030355 PK/DM
App'd By:	TW

Dwg. No.: L3

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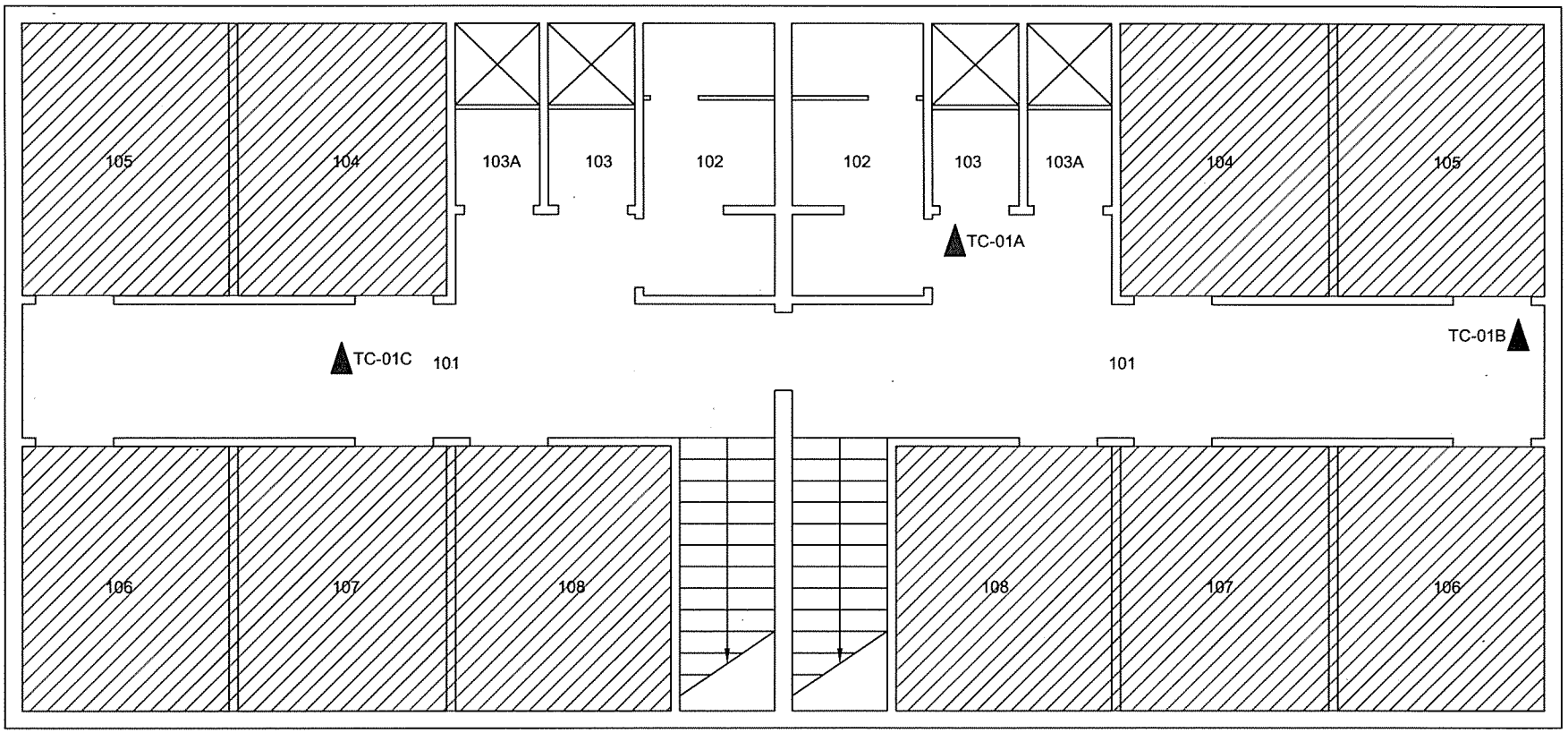

UPPER FLOOR
LIVING UNIT A2

LEGEND

▲ ASBESTOS BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU2, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD PK/DM SL2016030356
App'd By:	TW

Dwg. No.: L4

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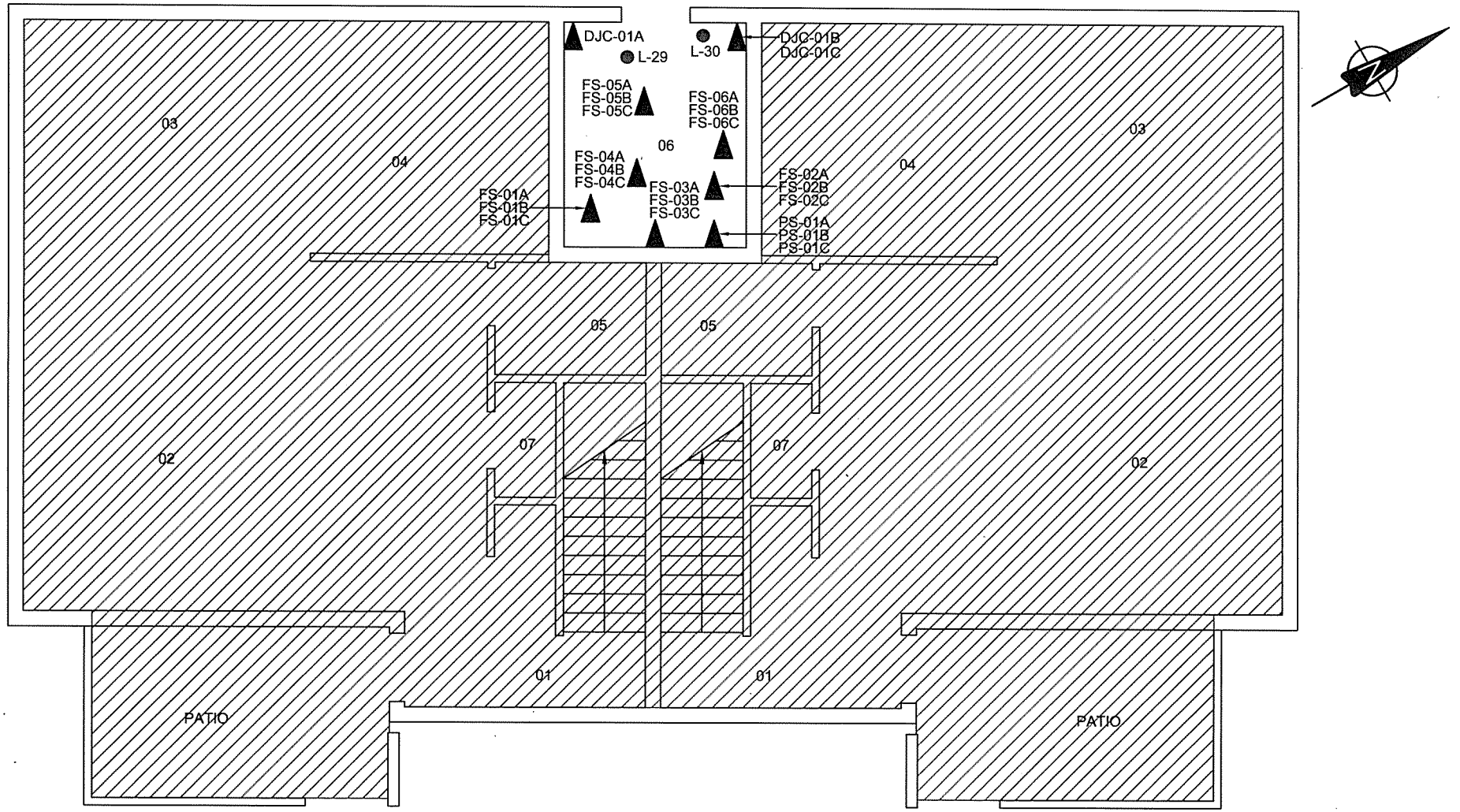

MAIN FLOOR
LIVING UNIT A3

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.
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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU3, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030357 PK/DM
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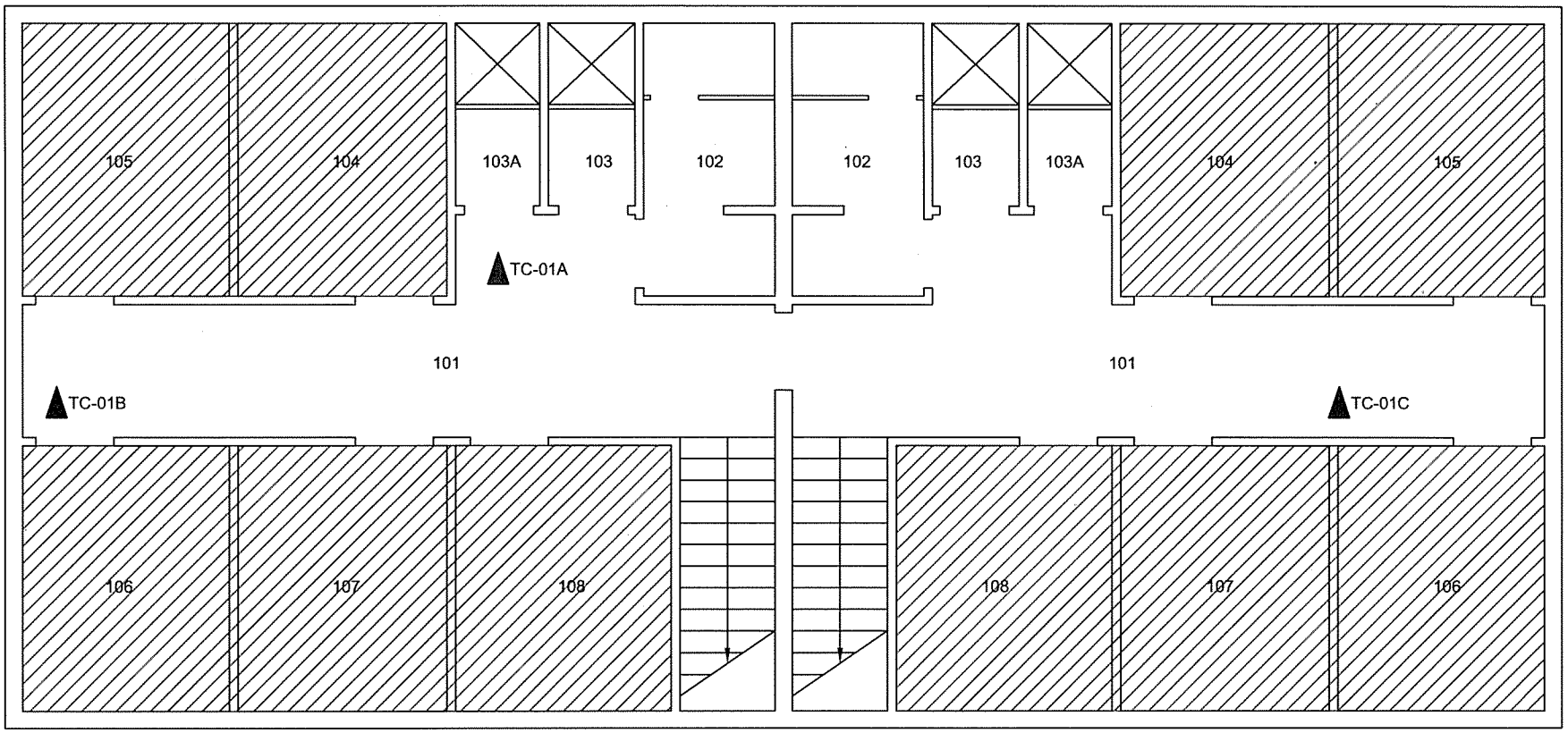

UPPER FLOOR
LIVING UNIT A3

LEGEND

▲ ASBESTOS BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NA-LU3, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030358 PK/DM
App'd By:	TW

Dwg. No.: L6

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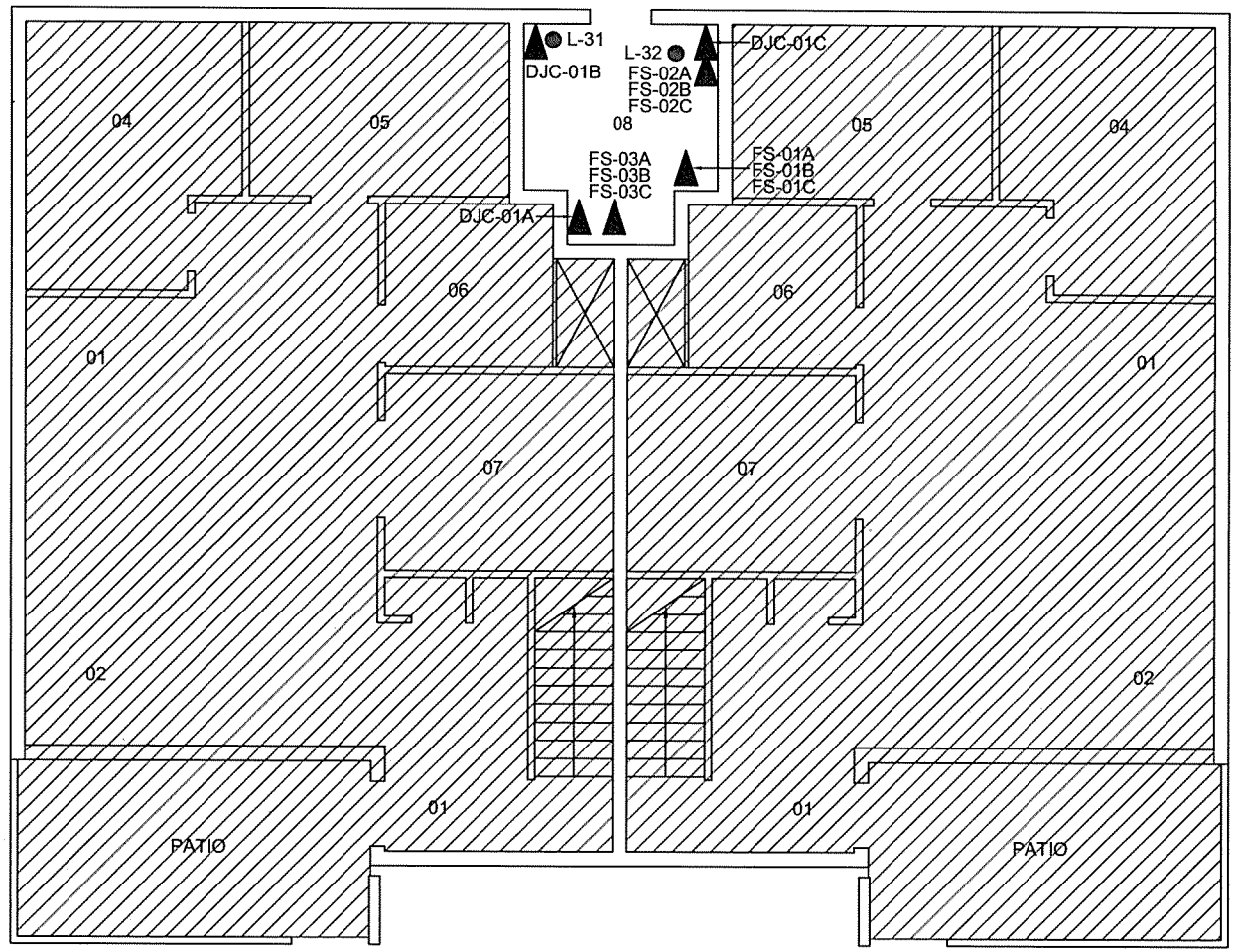

MAIN FLOOR
LIVING UNIT A4

LEGEND

- ▲ ASBESTOS BULK SAMPLE
- ● LEAD PAINT SAMPLE

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

BARRIER FREE UNIT NA-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030359 PK/DM
App'd By:	TW

Dwg. No.: L7

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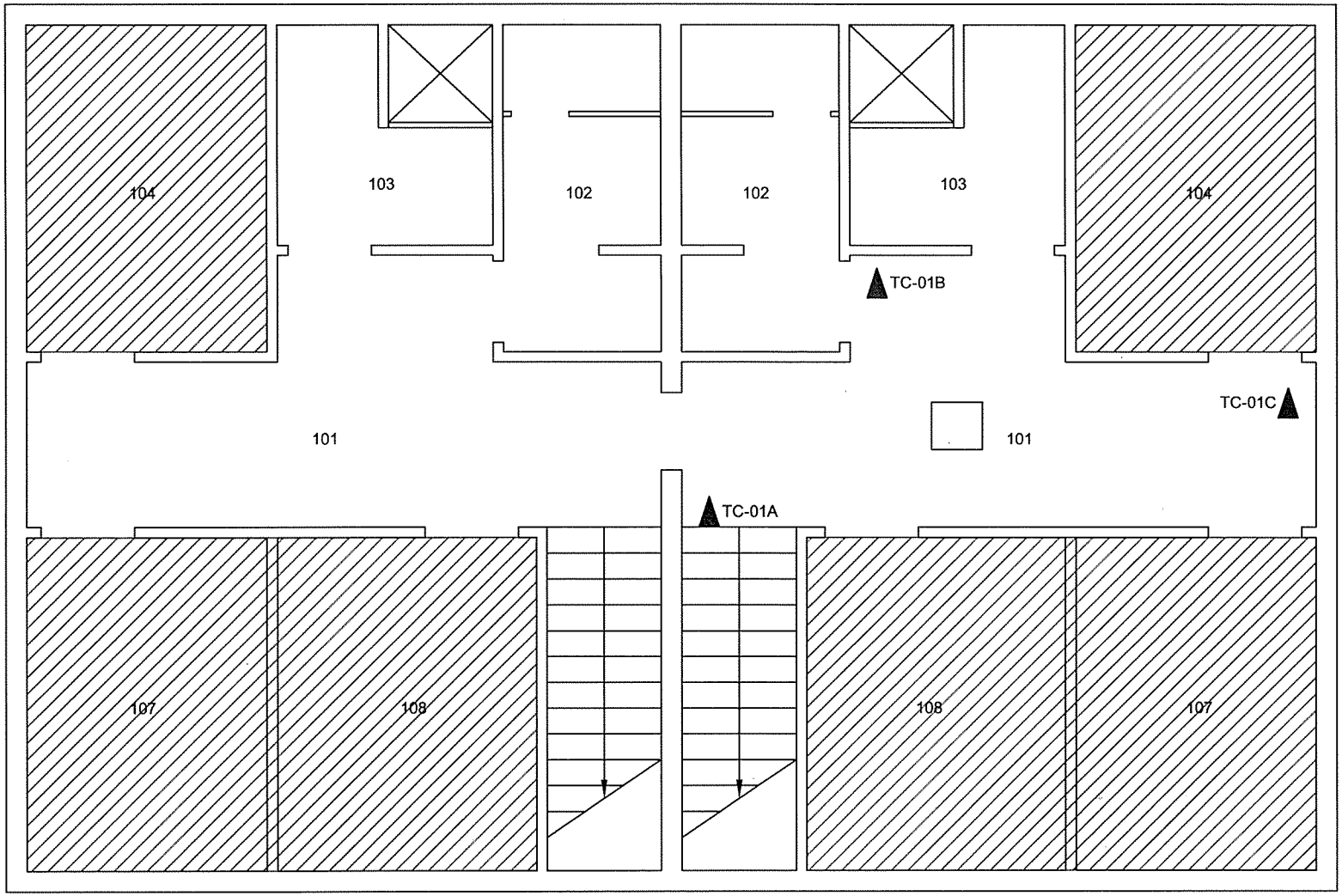

UPPER FLOOR
LIVING UNIT A4

LEGEND

▲ ASBESTOS BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

BARRIER FREE UNIT NA-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
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App'd By:	TW

Dwg. No.: L8

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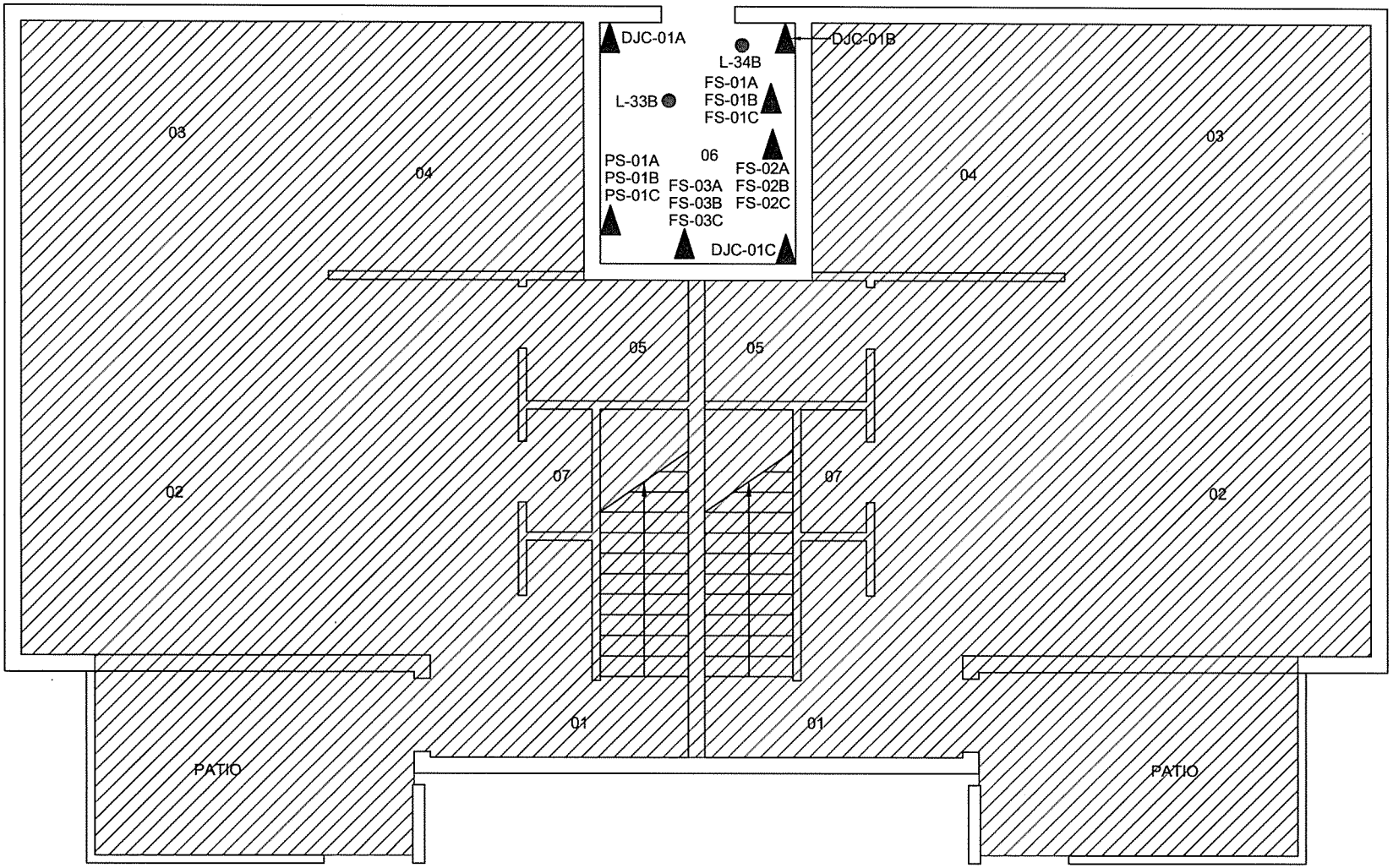

MAIN FLOOR
LIVING UNIT B1

LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.

2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NB-LU1, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD PK/DM SL2016030385
App'd By:	TW

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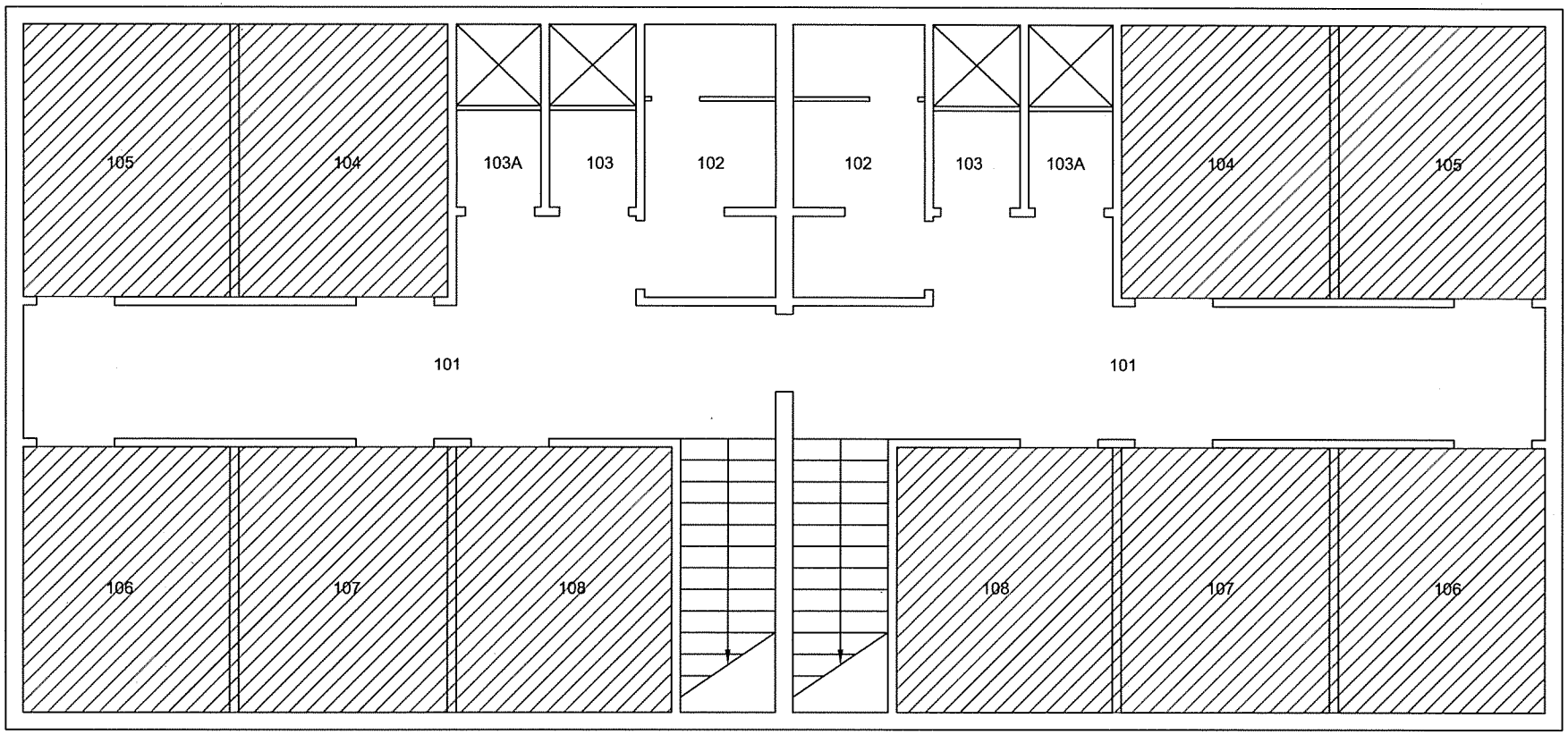


UPPER FLOOR
LIVING UNIT B1

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

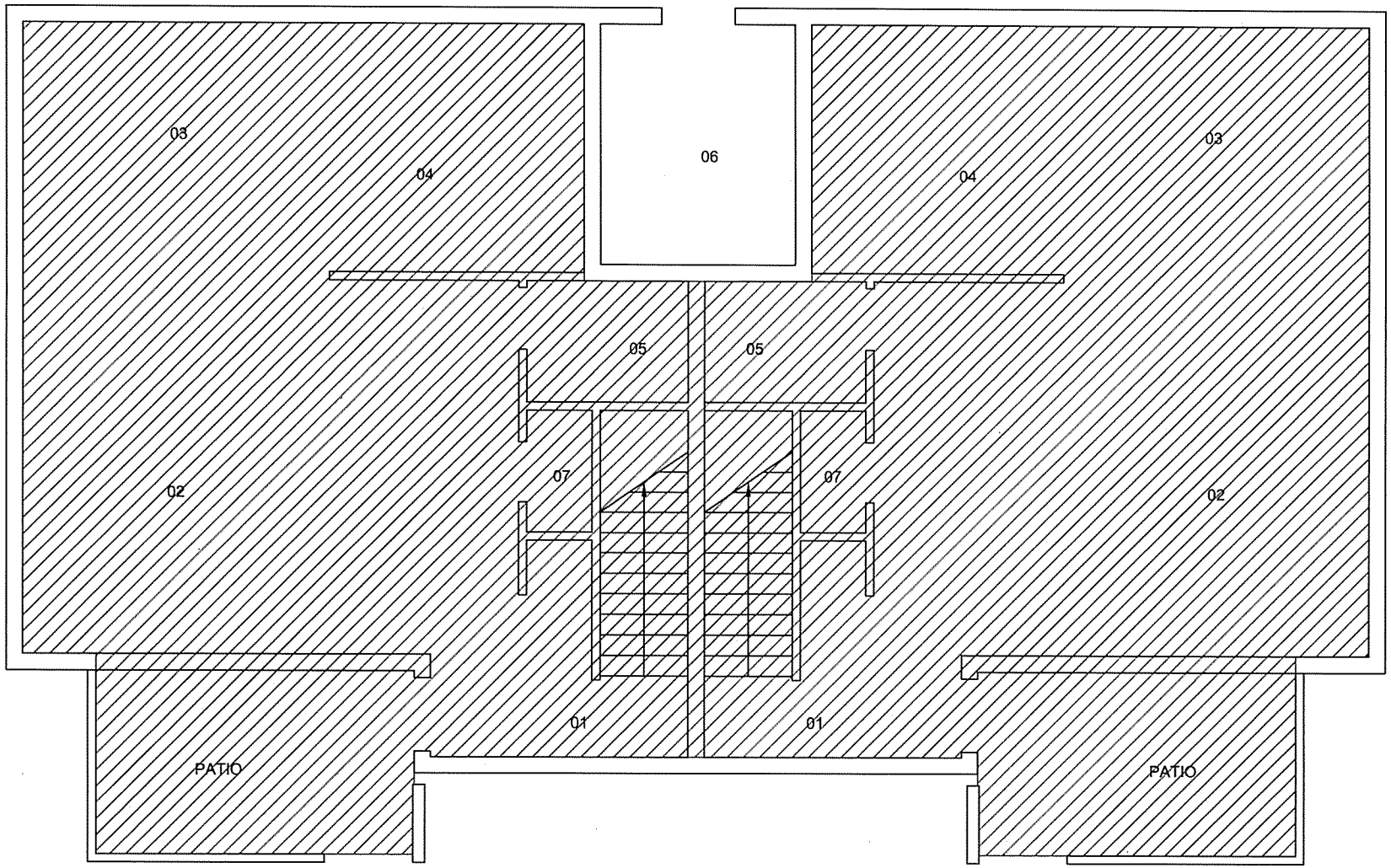
UNIT NB-LU1, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030362 PK/DM
App'd By:	TW

Dwg. No.: L10

Stantec



MAIN FLOOR
LIVING UNIT B4

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

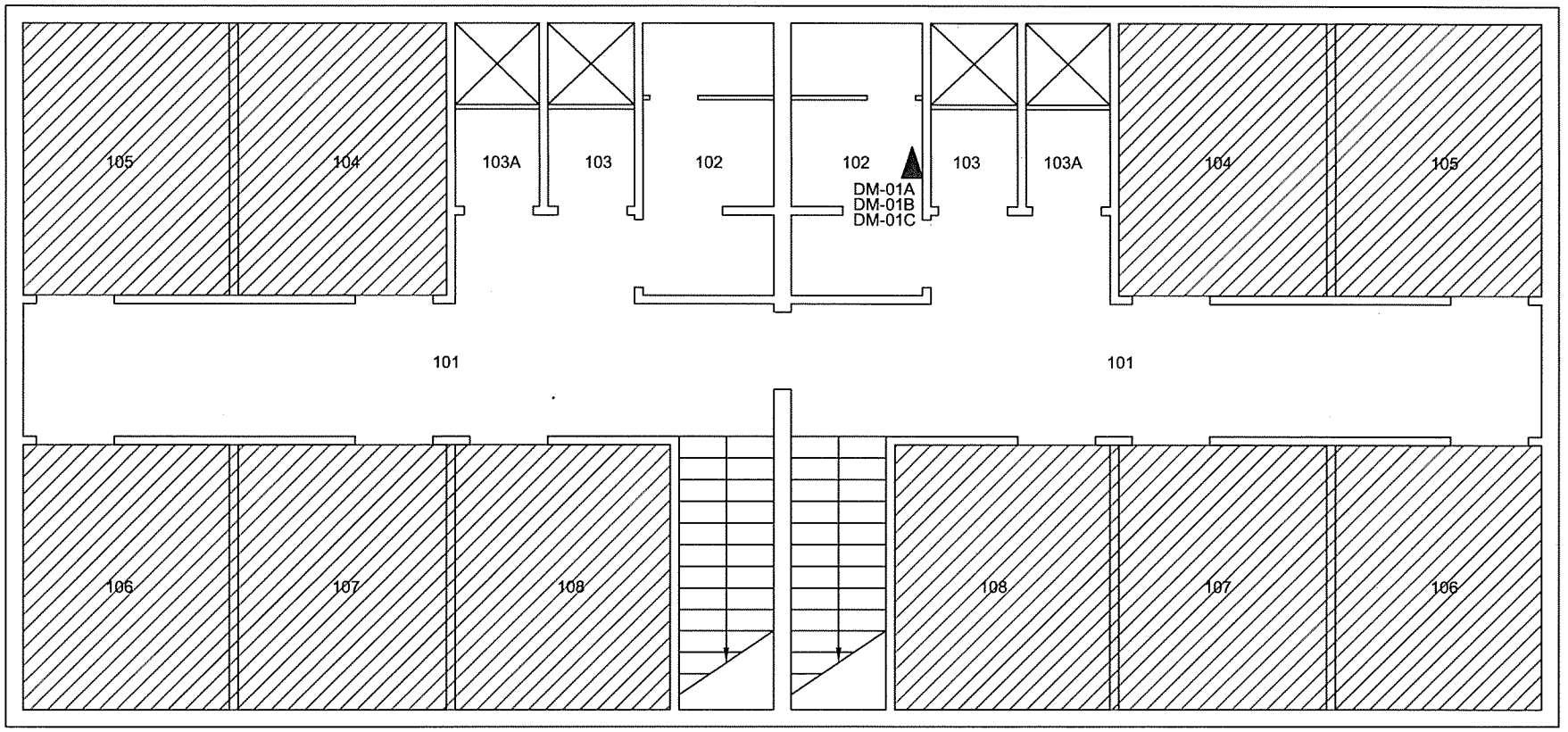
UNIT NB-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030363 PK/DM
App'd By:	TW

Dwg. No.: L11

Stantec



UPPER FLOOR
LIVING UNIT B4

LEGEND

▲ ASBESTOS BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

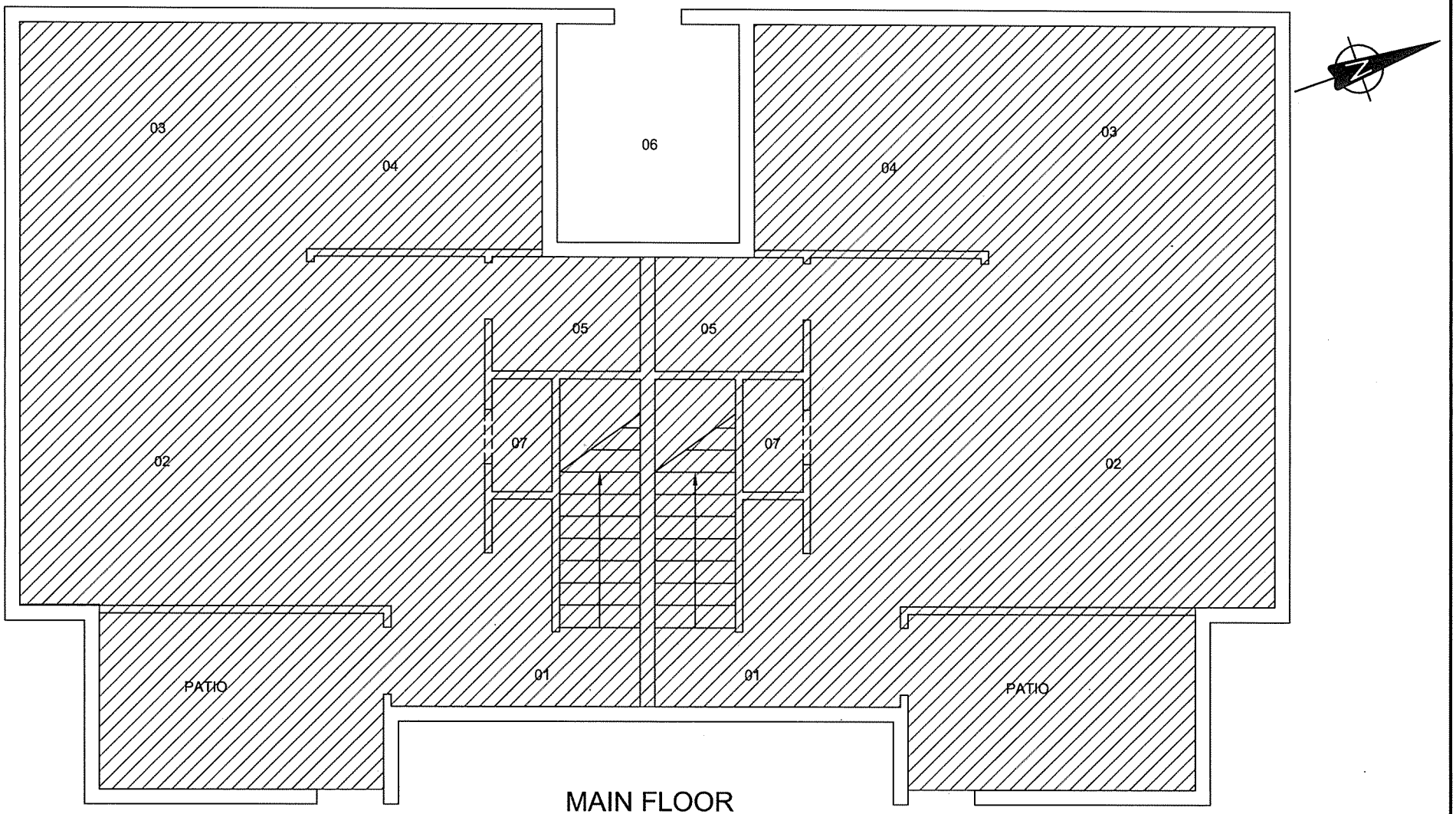
UNIT NB-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030364 PK/DM
App'd By:	TW

Dwg. No.: L12

Stantec



MAIN FLOOR
LIVING UNIT E4

NOTES: 1. BLUE PIPE SEALANT APPLIED TO SPRINKLER LINES IS ASBESTOS-CONTAINING.
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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NE-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030365 VM/DM
App'd By:	TW

Dwg. No.: L13

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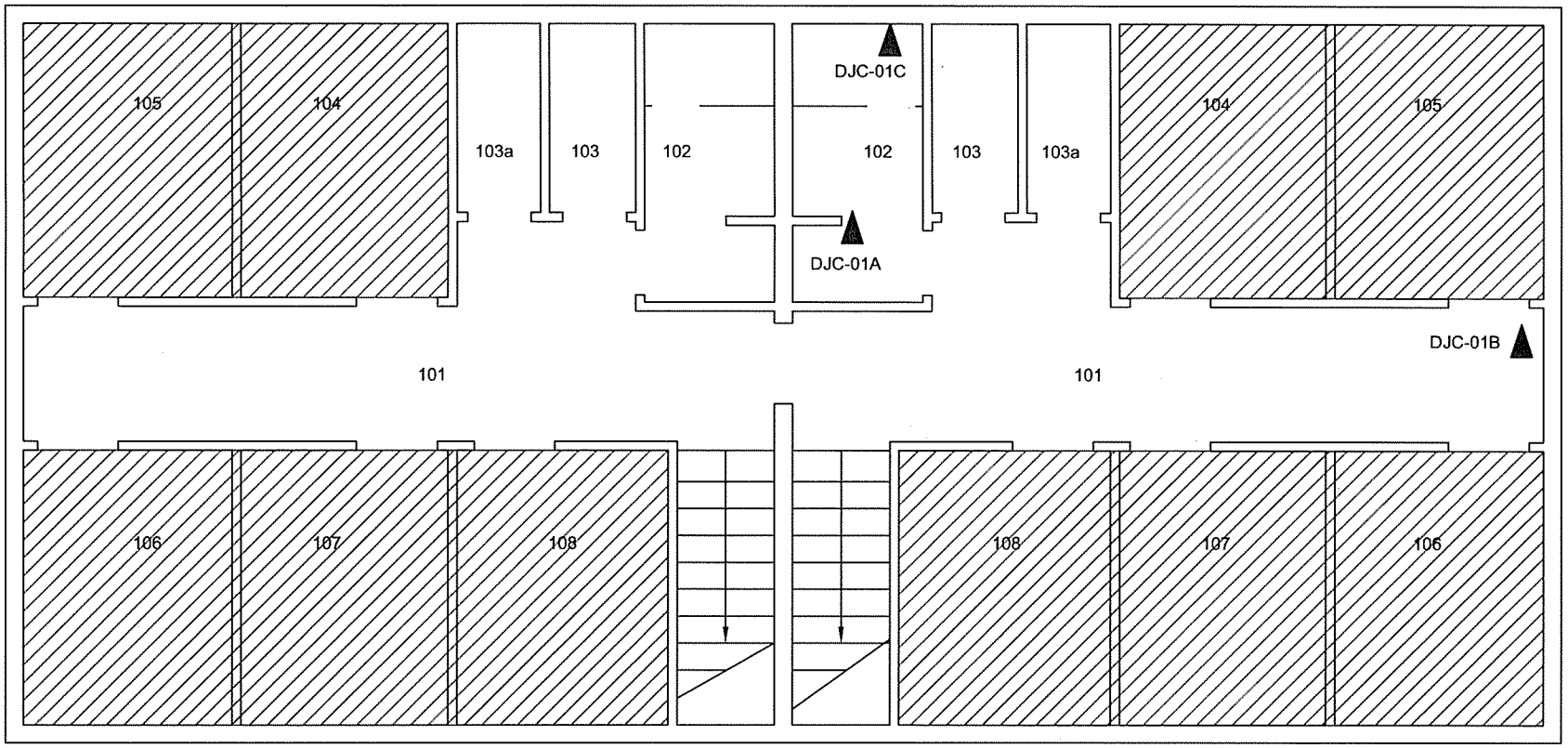

UPPER FLOOR
LIVING UNIT E4

LEGEND

▲ ASBESTOS BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NE-LU4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030366 VM/DM
App'd By:	TW

Dwg. No.: L14

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EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A **Lab Sample ID:** 691600131-0151
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691600131-0152
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C **Lab Sample ID:** 691600131-0153
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01A **Lab Sample ID:** 691600131-0154
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Blue/Green	0%	99%	1% Chrysotile	

Client Sample ID: PS-01B **Lab Sample ID:** 691600131-0155
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: PS-01C **Lab Sample ID:** 691600131-0156
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: FS-01A **Lab Sample ID:** 691600131-0157
Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01B **Lab Sample ID:** 691600131-0158

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C **Lab Sample ID:** 691600131-0159

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A **Lab Sample ID:** 691600131-0160

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-02B **Lab Sample ID:** 691600131-0161

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-02C **Lab Sample ID:** 691600131-0162

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-03A **Lab Sample ID:** 691600131-0163

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B **Lab Sample ID:** 691600131-0164

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03C **Lab Sample ID:** 691600131-0165

Sample Description: Living Unit A1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: TC-01A ***Lab Sample ID:*** **691600131-0166**

Sample Description: Living Unit A1 - Living Unit 1 & 2, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01B ***Lab Sample ID:*** **691600131-0167**

Sample Description: Living Unit A1 - Living Unit 1 & 2, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01C ***Lab Sample ID:*** **691600131-0168**

Sample Description: Living Unit A1 - Living Unit 1 & 2, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (5) PLM Grav. Reduction (3)
Kathleen Cruz	PLM (2) PLM Grav. Reduction (6)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201619:44:45

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0169**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0170**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0171**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01A ***Lab Sample ID:*** **691600131-0172**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Blue	0%	99%	**1% Chrysotile**	

Client Sample ID: PS-01B ***Lab Sample ID:*** **691600131-0173**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: PS-01C ***Lab Sample ID:*** **691600131-0174**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: PL-01 ***Lab Sample ID:*** **691600131-0175**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Pipe Lagging, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown/Tan	70%	30%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0176**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0177**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	3.0%	97.0%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0178**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A ***Lab Sample ID:*** **691600131-0179**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-02B ***Lab Sample ID:*** **691600131-0180**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-02C ***Lab Sample ID:*** **691600131-0181**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown/Green	0.0%	100%	None Detected	

Client Sample ID: FS-03A ***Lab Sample ID:*** **691600131-0182**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B ***Lab Sample ID:*** **691600131-0183**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-03C ***Lab Sample ID:*** **691600131-0184**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: TC-01A ***Lab Sample ID:*** **691600131-0185**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01B ***Lab Sample ID:*** **691600131-0186**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01C ***Lab Sample ID:*** **691600131-0187**

Sample Description: Living Unit A2 - Living Unit 3 & 4, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (6) PLM Grav. Reduction (3)
Kathleen Cruz	PLM (2) PLM Grav. Reduction (6)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201619:47:06

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A **Lab Sample ID:** 691600131-0188
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691600131-0189
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C **Lab Sample ID:** 691600131-0190
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01A **Lab Sample ID:** 691600131-0191
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Blue	0%	99%	1% Chrysotile	

Client Sample ID: PS-01B **Lab Sample ID:** 691600131-0192
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: PS-01C **Lab Sample ID:** 691600131-0193
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: FS-01A **Lab Sample ID:** 691600131-0194
Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Customer ID: 55JACQ30L
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Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01B **Lab Sample ID:** 691600131-0195

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C **Lab Sample ID:** 691600131-0196

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A **Lab Sample ID:** 691600131-0197

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-02B **Lab Sample ID:** 691600131-0198

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-02C **Lab Sample ID:** 691600131-0199

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Green	0.0%	100%	None Detected	

Client Sample ID: FS-03A **Lab Sample ID:** 691600131-0200

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B **Lab Sample ID:** 691600131-0201

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03C **Lab Sample ID:** 691600131-0202

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-04A ***Lab Sample ID:*** **691600131-0203**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Tan	1%	99%	None Detected	

Client Sample ID: FS-04B ***Lab Sample ID:*** **691600131-0204**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Tan	<0.25%	100%	None Detected	

Client Sample ID: FS-04C ***Lab Sample ID:*** **691600131-0205**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Tan, Applied to Copper Domestic Pipes, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Tan	<0.25%	100%	None Detected	

Client Sample ID: FS-05A ***Lab Sample ID:*** **691600131-0206**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-05B ***Lab Sample ID:*** **691600131-0207**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown/White/Black	0%	100%	None Detected	

Client Sample ID: FS-05C ***Lab Sample ID:*** **691600131-0208**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, Dark Red, Applied to Copper Domestic Pipes, Hanger Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Brown	5%	95%	None Detected	

Client Sample ID: FS-06A ***Lab Sample ID:*** **691600131-0209**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	White	<0.25%	100%	None Detected	

Client Sample ID: FS-06B ***Lab Sample ID:*** **691600131-0210**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-06C ***Lab Sample ID:*** **691600131-0211**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Mechanical Rm/Fire Stopper, White, Applied to Sprinkler Pipes, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01A ***Lab Sample ID:*** **691600131-0212**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01B ***Lab Sample ID:*** **691600131-0213**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01C ***Lab Sample ID:*** **691600131-0214**

Sample Description: Living Unit A3 - Living Unit 5 & 6, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Analyst(s):

Alice Feng — PLM (7); PLM Grav. Reduction (2)
Kathleen Cruz — PLM (5); PLM Grav. Reduction (11)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/24/201620:22:17

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0215**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0216**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0217**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0218**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0219**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0220**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A ***Lab Sample ID:*** **691600131-0221**

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Customer ID: 55JACQ30L
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Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-02B **Lab Sample ID:** 691600131-0222

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02C **Lab Sample ID:** 691600131-0223

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-03A **Lab Sample ID:** 691600131-0224

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B **Lab Sample ID:** 691600131-0225

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03C **Lab Sample ID:** 691600131-0226

Sample Description: Living Unit A4 - Living Unit 7 & 8, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: TC-01A **Lab Sample ID:** 691600131-0227

Sample Description: Living Unit A4 - Living Unit 7 & 8, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01B **Lab Sample ID:** 691600131-0228

Sample Description: Living Unit A4 - Living Unit 7 & 8, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01C **Lab Sample ID:** 691600131-0229

Sample Description: Living Unit A4 - Living Unit 7 & 8, Second Floor/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

Alice Feng	PLM (4)
	PLM Grav. Reduction (3)
Kathleen Cruz	PLM (2)
	PLM Grav. Reduction (6)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/24/201619:49:17

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0239**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0240**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0241**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01A ***Lab Sample ID:*** **691600131-0242**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Blue	0%	99%	**1% Chrysotile**	

Client Sample ID: PS-01B ***Lab Sample ID:*** **691600131-0243**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: PS-01C ***Lab Sample ID:*** **691600131-0244**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Pipe Sealant, Blue, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016				Stop Positive (Not Analyzed)	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0245**

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-01B **Lab Sample ID:** 691600131-0246

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C **Lab Sample ID:** 691600131-0247

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A **Lab Sample ID:** 691600131-0248

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Green	0.45%	99.5%	None Detected	

Client Sample ID: FS-02B **Lab Sample ID:** 691600131-0249

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	<0.25%	100%	None Detected	

Client Sample ID: FS-02C **Lab Sample ID:** 691600131-0250

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Brown, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-03A **Lab Sample ID:** 691600131-0251

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B **Lab Sample ID:** 691600131-0252

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03C **Lab Sample ID:** 691600131-0253

Sample Description: Living Unit B1 - Living Unit 1 & 2, Mechanical Rm/Fire Stopper, Red, Applied to Stack Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

Alice Feng	PLM (3)
	PLM Grav. Reduction (3)
Kathleen Cruz	PLM (1)
	PLM Grav. Reduction (6)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/24/201619:54:28

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DM-01A ***Lab Sample ID:*** **691600131-0254**

Sample Description: Living Unit B4 - Living Unit 7 & 8, Attic/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: DM-01B ***Lab Sample ID:*** **691600131-0255**

Sample Description: Living Unit B4 - Living Unit 7 & 8, Attic/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: DM-01C ***Lab Sample ID:*** **691600131-0256**

Sample Description: Living Unit B4 - Living Unit 7 & 8, Attic/Duct Mastic, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Analyst(s):

Alice Feng PLM (2)
Kathleen Cruz PLM (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201619:56:19

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0266**

Sample Description: Living Unit E4 - Living Unit 8 Bathrm, Second Flr/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0267**

Sample Description: Living Unit E4 - Living Unit 8 Hallway, Second Flr/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0268**

Sample Description: Living Unit E4 - Living Unit 8 Bathrm, Second Flr/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Analyst(s):

Alice Feng PLM (2)
Kathleen Cruz PLM (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201621:25:43

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 Or	551601657
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIVING UNIT A1**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-25	*551601657-0001*		2/18/2016	<230 ppm
	Site: WHITE- MECHANICAL ROOM (10)			
L-26	*551601657-0002*		2/18/2016	<310 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS			

Insufficient sample to reach reporting limit for sample #551601657 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 09:49:55

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 Or	551601658
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIVING UNIT A2**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-27	*551601658-0001*		2/18/2016	<900 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS			
L-28	*551601658-0002*		2/18/2016	<280 ppm
	Site: WHITE- MECHANICAL ROOM (10)			

Insufficient sample to reach reporting limit for sample #551601658 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 09:50:51

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 Or	551601659
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIVING UNIT A3**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-29	*551601659-0001*		2/18/2016	<640 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOOR			
L-30	*551601659-0002*		2/18/2016	<150 ppm
	Site: WHITE- MECHANICAL ROOM (10)			

Insufficient sample to reach reporting limit for sample #551601659 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 09:51:49

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 Or	551601661
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIVING UNIT A4**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-31	*551601661-0001*		2/19/2016	<200 ppm
	Site: WHITE- MECHANICAL ROOM (10)			
L-32	*551601661-0002*		2/19/2016	<740 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS			

Insufficient sample to reach reporting limit for sample #551601661 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:26:20

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 Or	551601691
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 LIVING UNIT B1**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-33B	*551601691-0001*		2/19/2016	<330 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS			
L-34B	*551601691-0002*		2/19/2016	<560 ppm
	Site: WHITE-MECHANICAL ROOM (10)			

Insufficient sample to reach reporting limit for sample #551601691 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:27:56

APPENDIX M
FINDINGS AND RECOMMENDATIONS—NATIVE HEALING CENTRE

Appendix M FINDINGS AND RECOMMENDATIONS—NATIVE HEALING CENTRE

The native healing centre was reportedly constructed in 2002 and consists of one level plus a crawlspace. The typical structural components and finishes associated with this building consist of wooden exterior, wooden floors, drywall interior walls, and drywall ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Wall and ceiling finishes throughout the building.

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

M.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table M-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table M-1 Suspected ACM Sample Collection and Analysis Summary Native Healing Centre, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall joint compound, applied to drywall walls and ceiling	Room 106	Not Detected
DJC-01B	Drywall joint compound, applied to drywall walls and ceiling	Room 111	Not Detected

Table M-1 Suspected ACM Sample Collection and Analysis Summary Native Healing Centre, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01C	Drywall joint compound, applied to drywall walls and ceiling	Room 110	Not Detected
DJC-01D	Drywall joint compound, applied to drywall walls and ceiling	Room 100	Insufficient Material
DJC-01E	Drywall joint compound, applied to drywall walls and ceiling	Room 100	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

M.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table M-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table M-2 Suspected LCP Sample Collection and Analysis Summary Native Healing Centre, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-105	Beige	Room 106, Drywall Walls	<90	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

M.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, the fluorescent light ballasts are not suspected to contain PCBs.

M.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 55 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

M.5 MOULD

No mould and/or moisture-impacted building materials were observed.

M.6 OZONE-DEPLETING SUBSTANCES

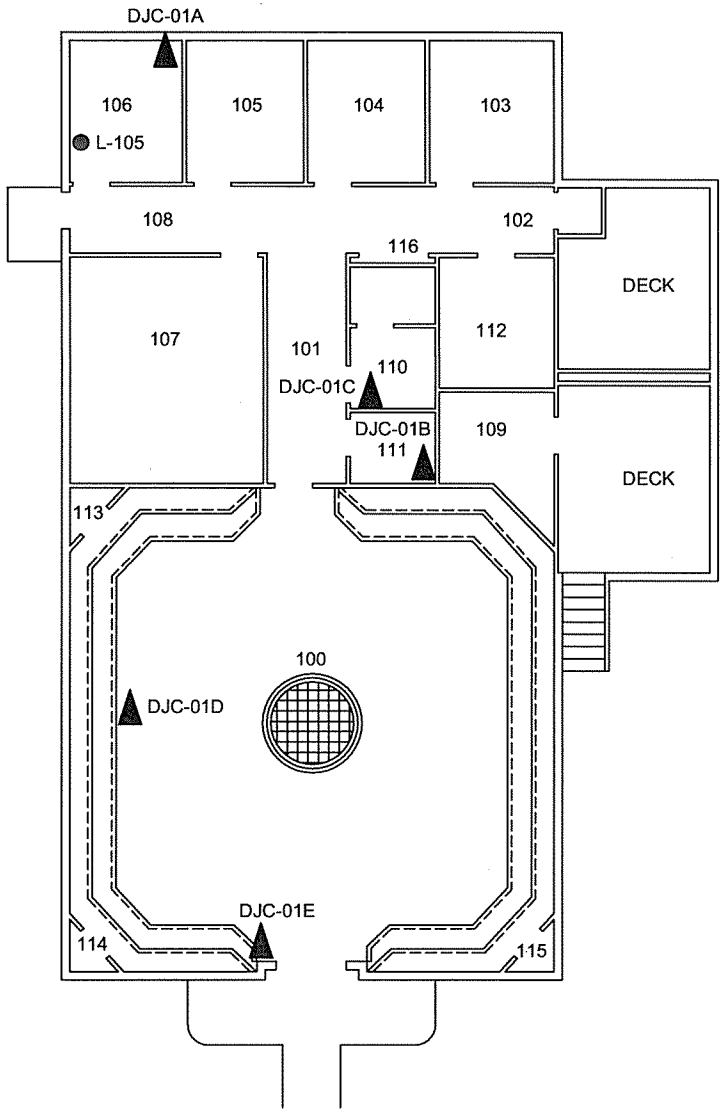
No building-related refrigerants or air conditioning equipment with suspected ODS-containing refrigerants was observed.

M.7 SILICA

Silica is presumed to be present in drywall, cement, and concrete materials observed.

M.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NATIVE HEALING CENTRE BUILDING

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 214, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030127 VM/DM
App'd By:	TW

Dwg. No.: M1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/20/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0535**

Sample Description: Native Healing Centre - Room 106/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0536**

Sample Description: Native Healing Centre - Room 111/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0537**

Sample Description: Native Healing Centre - Room 110/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D ***Lab Sample ID:*** **691600131-0538**

Sample Description: Native Healing Centre - Room 100/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016				Insufficient Material	

Client Sample ID: DJC-01E ***Lab Sample ID:*** **691600131-0539**

Sample Description: Native Healing Centre - Room 100/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki PLM (3)
Natalie D'Amico PLM (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:24:59

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 Or	551601757
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone:	(604) 412-3004
Fax:	
Received:	02/17/16 10:11 AM
Collected:	

Project: **123220504.200.1 NATIVE HEALING CENTRE**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-105	*551601757-0001*		2/22/2016	<90 ppm
	Site: BEIGE- ROOM 106			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:27:56

APPENDIX N
FINDINGS AND RECOMMENDATIONS—NEIGHBORHOOD UNITS

Appendix N FINDINGS AND RECOMMENDATIONS—NEIGHBOURHOOD UNITS

The neighbourhood unit buildings, which are each one-level buildings, were reportedly constructed in 1992, by the same contractor, under the same contract, using the same building materials (5 buildings total). The typical structural components and finishes associated with these buildings consist of stucco exterior walls, concrete and wood floors, drywall walls and ceilings.

Only the following areas (subject areas) were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Mechanical and electrical rooms

Based on the reported information pertaining to the construction date and consistency of the neighbourhood units, and although mechanical and electrical rooms within each of the buildings were visually assessed, sampling was conducted to be representative of all buildings, with various samples of each suspect material being collected from separate buildings (where applicable).

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

N.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Fire-stop/wall protector
- Assorted mastics, caulkings and sealants

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table N-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table N-1 Suspected ACM Sample Collection and Analysis Summary Neighbourhood Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
Neighbourhood Unit A			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Neighbourhood A, Mechanical and Electrical Room	Not Detected
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Neighbourhood A, Mechanical and Electrical Room	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Neighbourhood A, Mechanical and Electrical Room	Not Detected
FS-01A	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Neighbourhood A, Mechanical Room	Not Detected
FS-01B	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Neighbourhood A, Mechanical Room	Not Detected
FS-01C	Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration	Neighbourhood A, Mechanical Room	Not Detected
FS-02A	Fire Stopper, Grey, Applied to Electrical, Wall Penetration	Neighbourhood A, Electrical Room	Not Detected
FS-02B	Fire Stopper, Grey, Applied to Electrical, Wall Penetration	Neighbourhood A, Electrical Room	Not Detected
FS-02C	Fire Stopper, Grey, Applied to Electrical, Wall Penetration	Neighbourhood A, Electrical Room	Not Detected
Neighbourhood Unit B			
PS-01A	Pipe Sealant, Black	Mechanical Room (10)	Not Detected
PS-01B	Pipe Sealant, Black	Mechanical Room (10)	Not Detected
PS-01C	Pipe Sealant, Black	Mechanical Room (10)	Not Detected
FC-01A	Floor Caulking, Grey	Electrical Room (09)	Not Detected
FC-01B	Floor Caulking, Grey	Electrical Room (09)	Not Detected
FC-01C	Floor Caulking, Grey	Electrical Room (09)	Not Detected
Neighbourhood Unit E			
FC-01A	Floor Caulking, Red, Applied to Floor and Wall Seam	Electrical Room (09)	Not Detected
FC-01B	Floor Caulking, Red, Applied to Floor and Wall Seam	Electrical Room (09)	Not Detected
FC-01C	Floor Caulking, Red, Applied to Floor and Wall Seam	Electrical Room (09)	Not Detected
Neighbourhood Unit F			
DJC-01A	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Electrical Room (09)	Not Detected

Table N-1 Suspected ACM Sample Collection and Analysis Summary Neighbourhood Units, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01B	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room (10)	Not Detected
DJC-01C	Drywall Joint Compound Applied to Drywall Walls and Ceiling	Mechanical Room (10)	Not Detected
PS-01A	Pipe Sealant, White, Applied to Sprinkler Lines	Mechanical Room (10)	Not Detected
PS-01B	Pipe Sealant, White, Applied to Sprinkler Lines	Mechanical Room (10)	Not Detected
PS-01C	Pipe Sealant, White, Applied to Sprinkler Lines	Mechanical Room (10)	Not Detected
EPP-01A	Electrical Penetration Putty, Grey	Electrical Room (09)	Not Detected
EPP-01B	Electrical Penetration Putty, Grey	Electrical Room (09)	Not Detected
EPP-01C	Electrical Penetration Putty, Grey	Electrical Room (09)	Not Detected
FS-02A	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Electrical Room (09)	Not Detected
FS-02B	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Electrical Room (09)	Not Detected
FS-02C	Fire Stopper, Brown, Applied to Electrical, Wall Penetration	Electrical Room (09)	Not Detected
FS-03A	Fire Stopper, Red, Applied to Natural Gas Vents	Mechanical Room (10)	Not Detected
FS-03B	Fire Stopper, Red, Applied to Natural Gas Vents	Mechanical Room (10)	Not Detected
FS-03C	Fire Stopper, Red, Applied to Natural Gas Vents	Mechanical Room (10)	Not Detected
FS-04A	Fire Stopper, Light Grey, Applied to Copper Domestic Pipes, Ceiling Penetration	Mechanical Room (10)	Not Detected
FS-04B	Fire Stopper, Light Grey, Mastic, Ceiling Penetration	Mechanical Room (10)	Not Detected
FS-04C	Fire Stopper, Light Grey, Mastic, Ceiling Penetration	Mechanical Room (10)	Not Detected
FS-07A	Fire Stopper, Yellow, Applied to Electrical Penetrations	Electrical Room (09)	Not Detected
FS-07B	Fire Stopper, Yellow, Applied to Electrical Penetrations	Electrical Room (09)	Not Detected
FS-07C	Fire Stopper, Yellow, Applied to Electrical Penetrations	Electrical Room (09)	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

N.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table N-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table N-2 Suspected LCP Sample Collection and Analysis Summary Neighbourhood Units, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
Neighbourhood Unit A				
L-33A	Grey	Mechanical Room (10), Concrete Floors	<450	No
L-34A	White	Mechanical Room (10), Drywall Walls	<110	No
Neighbourhood Unit F				
L-37	White	Electrical Room (09), Drywall Walls	<610	Yes
L-38	Grey	Mechanical Room (10), Concrete Floors	<1100	Yes

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

With regards to white paint on mechanical room walls and grey paint on mechanical room floors, insufficient sample was collected to reach a detection limit less than 600 ppm for two samples. As two other samples of visually similar wall and floor paint in other mechanical rooms (which were reportedly constructed at the same time, with the same contractor using the same materials) indicated lead concentrations less than 600 ppm the white wall paint and grey floor paint in mechanical rooms throughout the living units are not considered to be LCPs.

N.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject buildings, PCBs are not likely to be present within the fluorescent light ballasts.

N.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 18 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

N.5 MOULD

No mould and/or moisture–impacted building materials were observed.

N.6 OZONE-DEPLETING SUBSTANCES

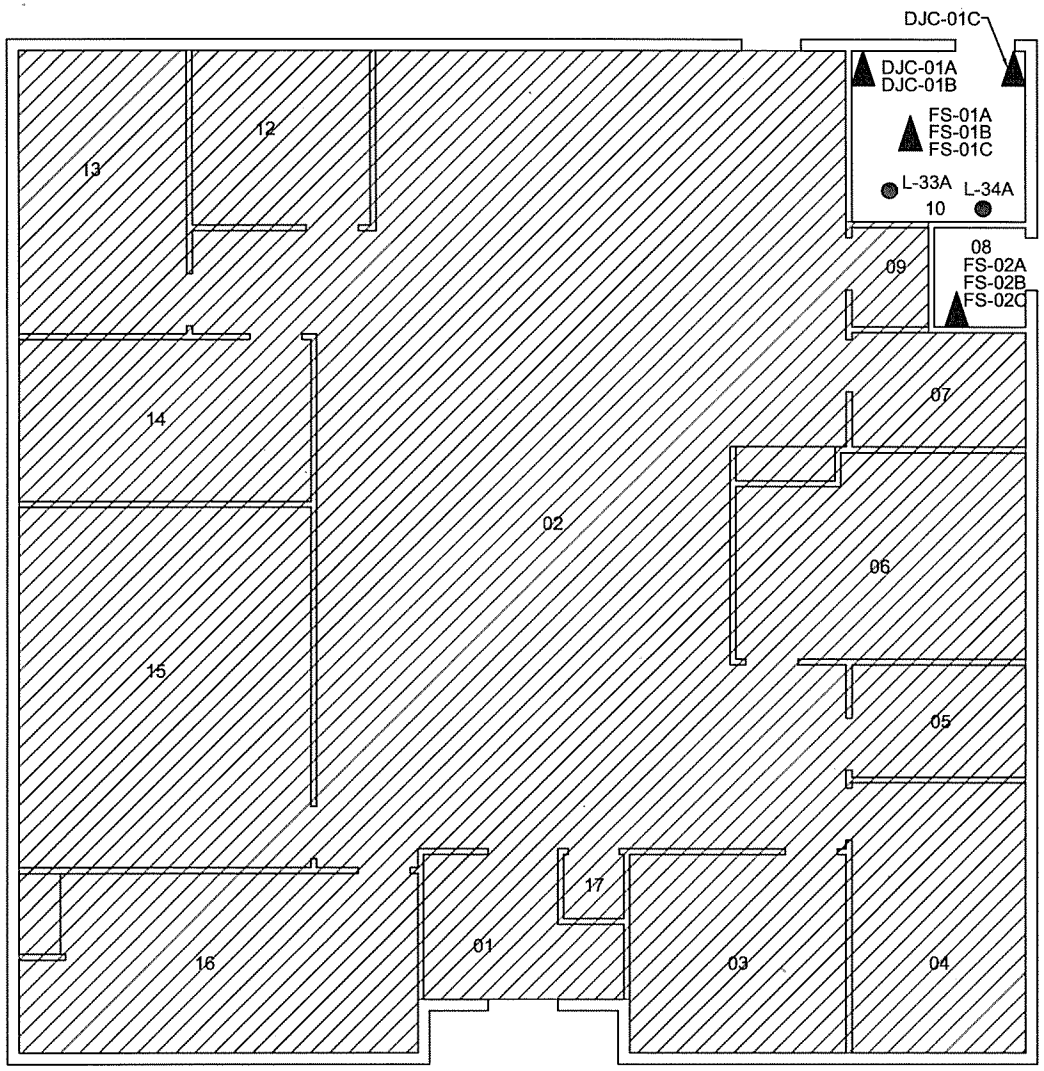
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

N.7 SILICA

Silica is presumed to be present in stucco, drywall, cement, and concrete materials observed.

N.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



NEIGHBORHOOD BUILDING A

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- AREAS NOT INCLUDED IN ASSESSMENT

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

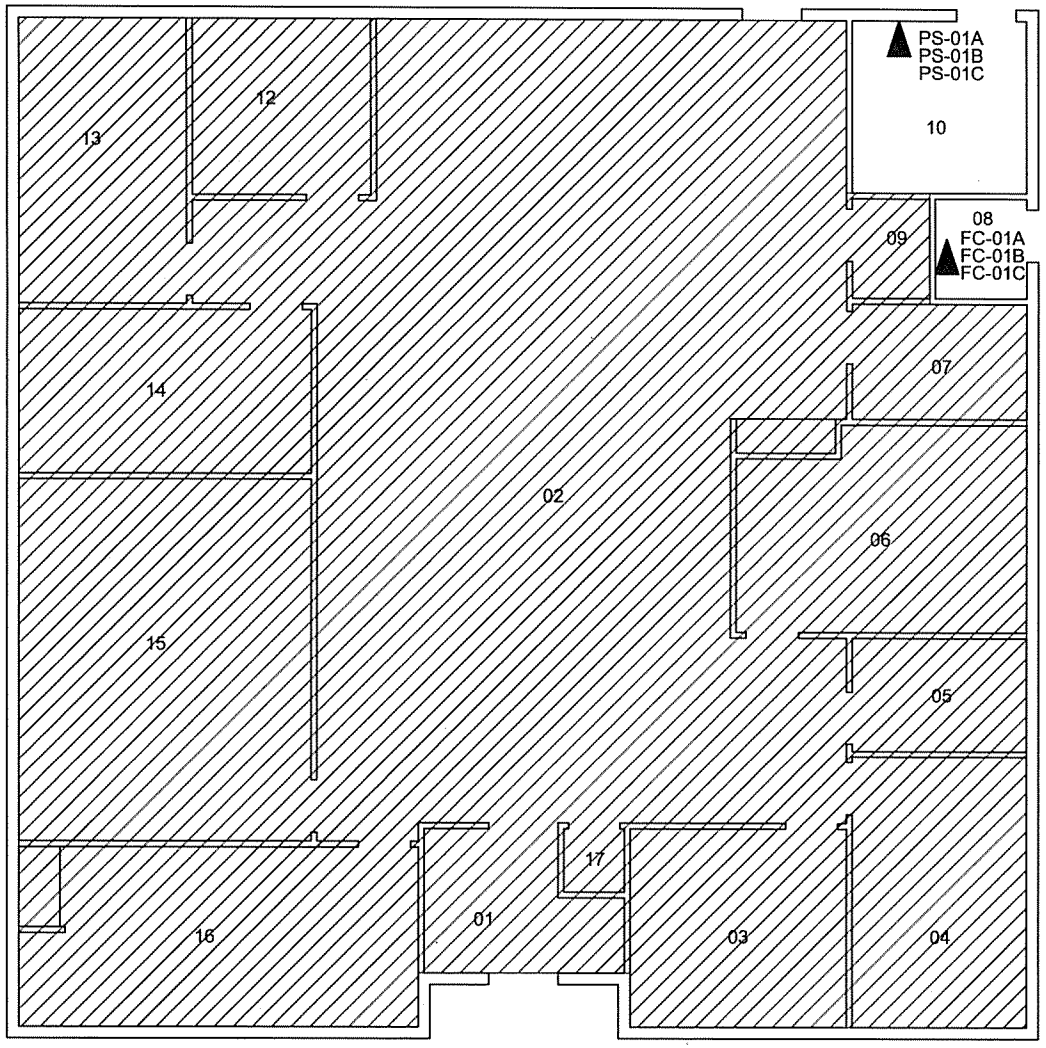
UNIT NUA, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030372 PK/DM
App'd By:	TW

Dwg. No.: N1

Stantec



NEIGHBORHOOD BUILDING B

LEGEND

▲ ASBESTOS BULK SAMPLE

▨ AREAS NOT INCLUDED IN ASSESSMENT

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

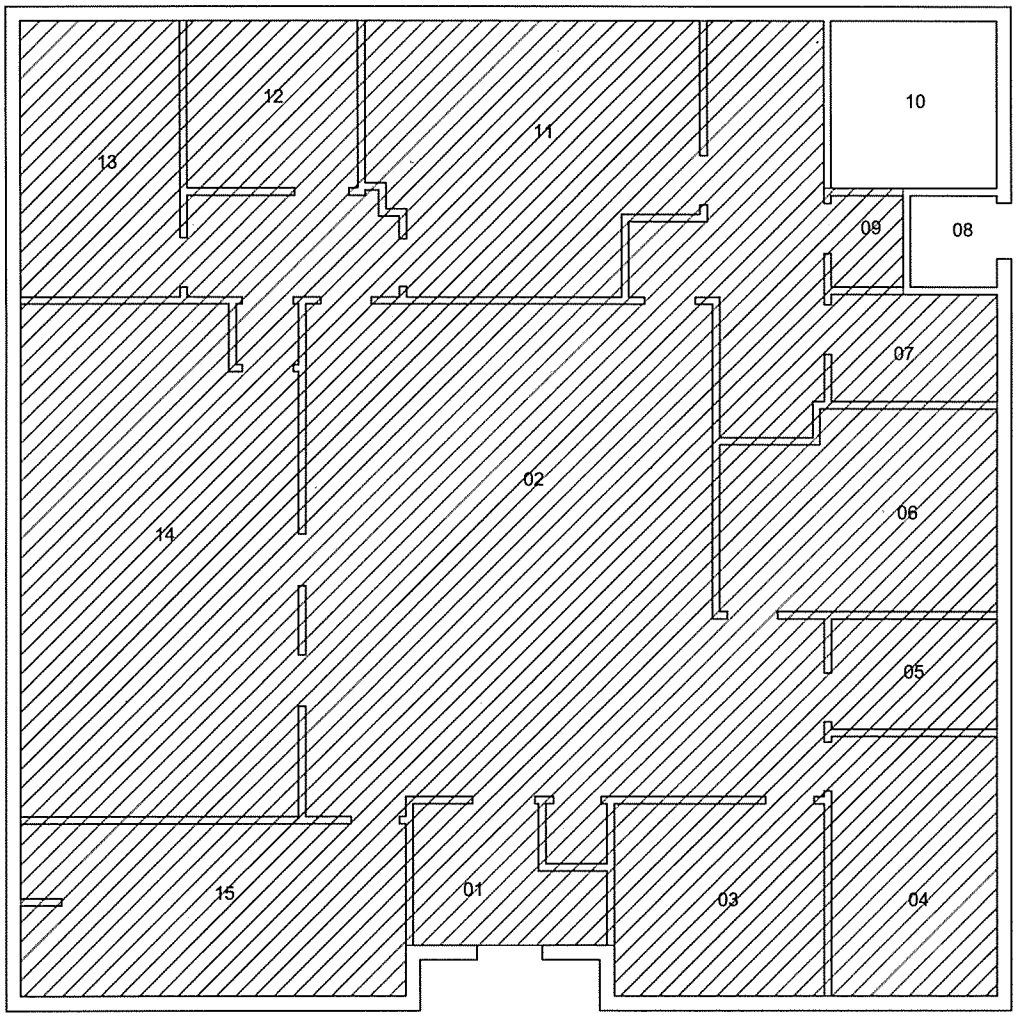
UNIT NUB, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030373 PK/DM
App'd By:	TW

Dwg. No.: N2

Stantec



NEIGHBORHOOD BUILDING C

LEGEND

AREAS NOT INCLUDED IN ASSESSMENT

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

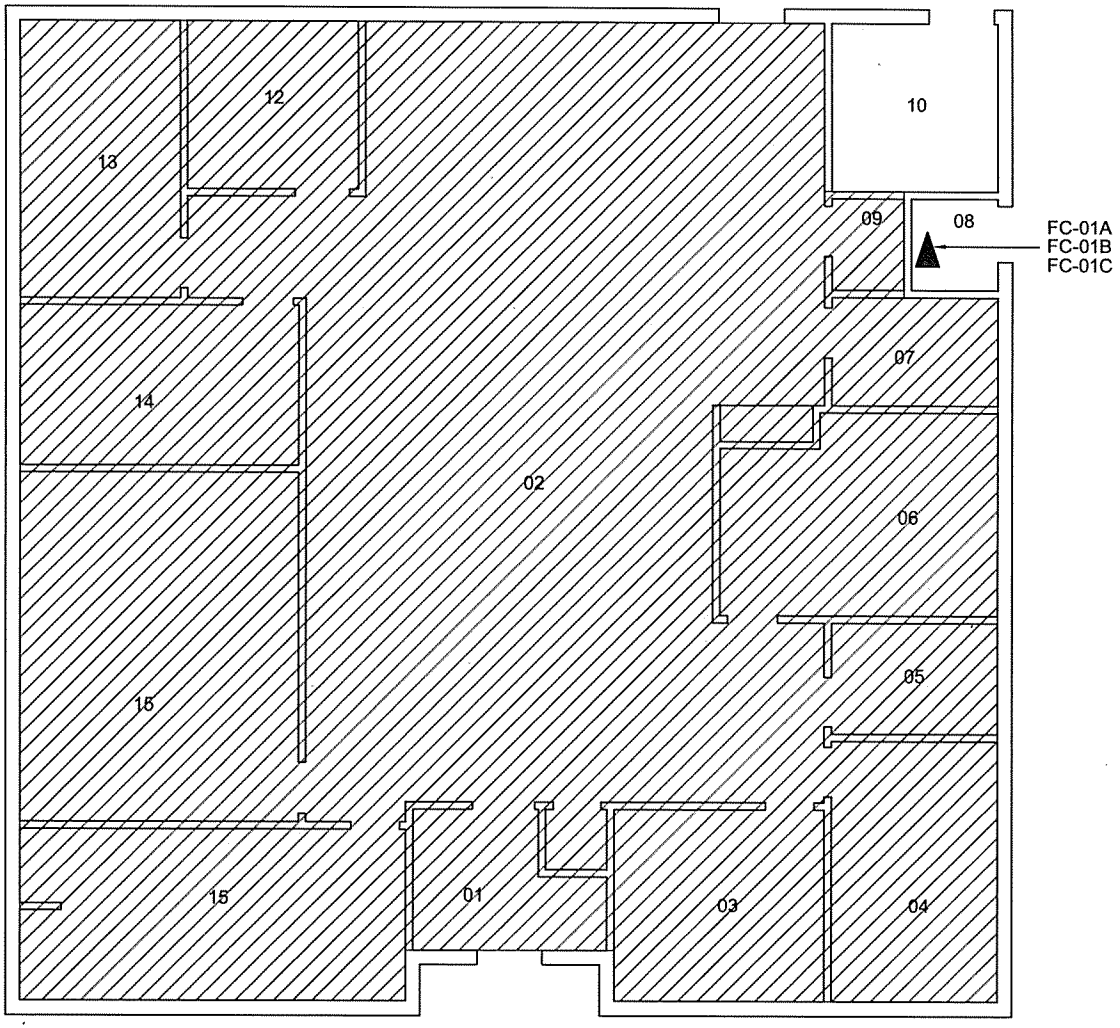
UNIT NUC, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030374 VM/DM
App'd By:	TW

Dwg. No.: N3

Stantec



N

NEIGHBORHOOD BUILDING E

LEGEND

ASBESTOS BULK SAMPLE

AREAS NOT INCLUDED IN ASSESSMENT

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NUE, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030375 VM/DM
App'd By:	TW

Dwg. No.: N4

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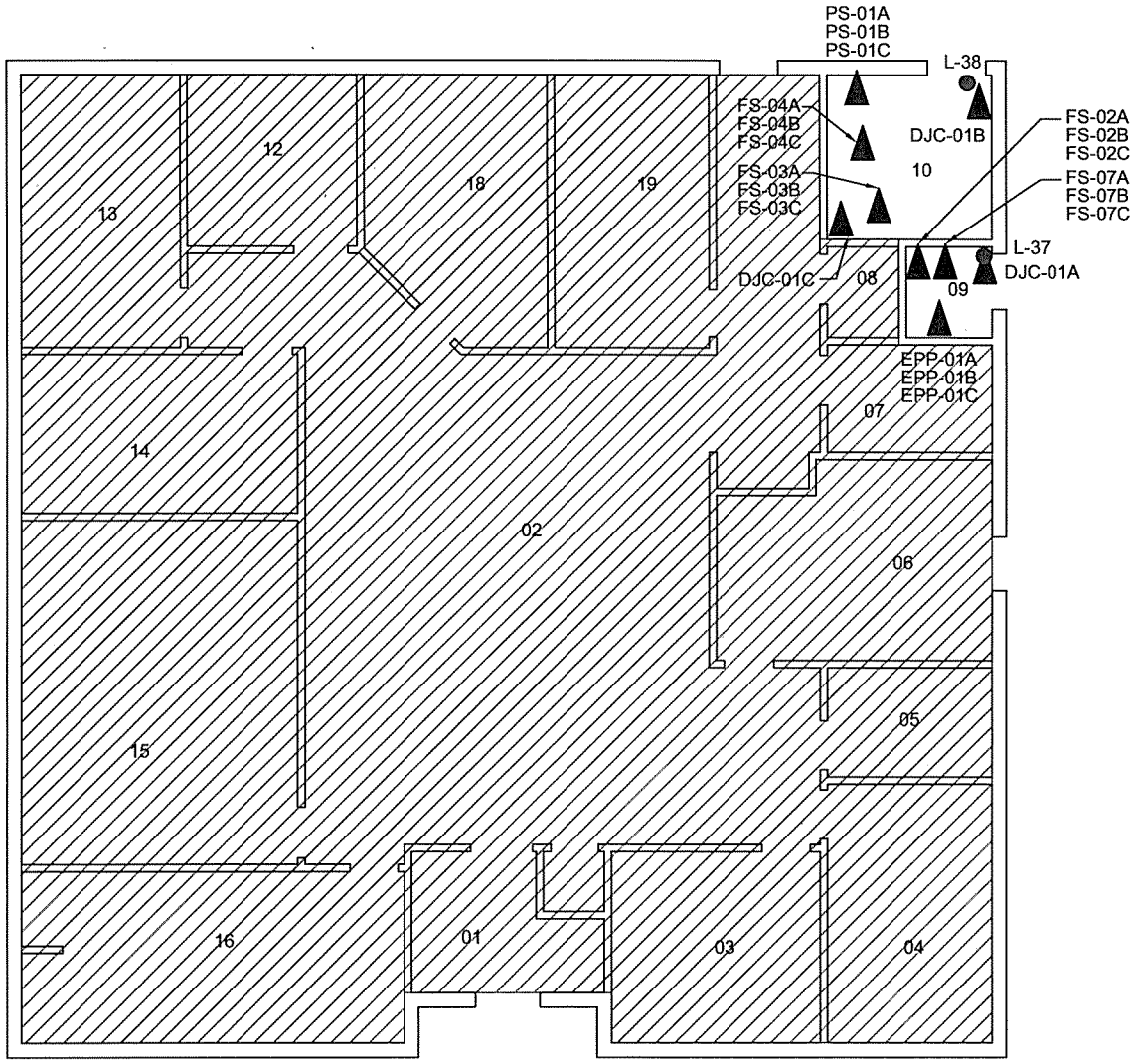

NEIGHBORHOOD BUILDING F

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- AREAS NOT INCLUDED IN ASSESSMENT

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT NUF, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030376 VM/DM
App'd By:	TW

Dwg. No.: N5

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EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0230**

Sample Description: Neighborhood Unit A - Neighborhd A, Mech & Elec Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0231**

Sample Description: Neighborhood Unit A - Neighborhd A, Mech & Elec Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0232**

Sample Description: Neighborhood Unit A - Neighborhd A, Mech & Elec Rm/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: FS-01A ***Lab Sample ID:*** **691600131-0233**

Sample Description: Neighborhood Unit A - Neighborhd A, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01B ***Lab Sample ID:*** **691600131-0234**

Sample Description: Neighborhood Unit A - Neighborhd A, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C ***Lab Sample ID:*** **691600131-0235**

Sample Description: Neighborhood Unit A - Neighborhd A, Mechanical Rm/Fire Stopper, Grey, Applied to Water Line, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A ***Lab Sample ID:*** **691600131-0236**

Sample Description: Neighborhood Unit A - Neighborhd A, Electrical Rm/Fire Stopper, Grey, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Green	<0.25%	100%	None Detected	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-02B ***Lab Sample ID:*** **691600131-0237**

Sample Description: Neighborhood Unit A - Neighborhd A, Electrical Rm/Fire Stopper, Grey, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Green	0.45%	99.5%	None Detected	

Client Sample ID: FS-02C ***Lab Sample ID:*** **691600131-0238**

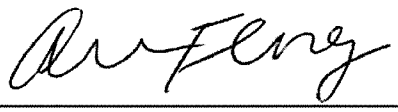
Sample Description: Neighborhood Unit A - Neighborhd A, Electrical Rm/Fire Stopper, Grey, Applied to Electrical, Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Green	0.0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (2) PLM Grav. Reduction (2)
Kathleen Cruz	PLM (1) PLM Grav. Reduction (4)

Reviewed and approved by:



Alice Feng, Laboratory Manager
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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/24/201619:52:37

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Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PS-01A ***Lab Sample ID:*** **691600131-0257**

Sample Description: Neighborhood Unit B - Mechanical Room (10)/Pipe Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Black	0%	100%	None Detected	

Client Sample ID: PS-01B ***Lab Sample ID:*** **691600131-0258**

Sample Description: Neighborhood Unit B - Mechanical Room (10)/Pipe Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White/Black	0%	100%	None Detected	

Client Sample ID: PS-01C ***Lab Sample ID:*** **691600131-0259**

Sample Description: Neighborhood Unit B - Mechanical Room (10)/Pipe Sealant, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Black	0%	100%	None Detected	

Client Sample ID: FC-01A ***Lab Sample ID:*** **691600131-0260**

Sample Description: Neighborhood Unit B - Electrical Room (09)/Floor Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FC-01B ***Lab Sample ID:*** **691600131-0261**

Sample Description: Neighborhood Unit B - Electrical Room (09)/Floor Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FC-01C ***Lab Sample ID:*** **691600131-0262**

Sample Description: Neighborhood Unit B - Electrical Room (09)/Floor Caulking, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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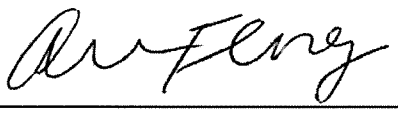
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

Alice Feng	PLM (2) PLM Grav. Reduction (2)
Kathleen Cruz	PLM (1) PLM Grav. Reduction (1)

Reviewed and approved by:



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or Other Approved Signatory

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FC-01A ***Lab Sample ID:*** **691600131-0269**

Sample Description: Neighborhood Unit E - Electrical Room (09)/Floor Caulking, Red, Applied to Floor & Wall Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: FC-01B ***Lab Sample ID:*** **691600131-0270**

Sample Description: Neighborhood Unit E - Electrical Room (09)/Floor Caulking, Red, Applied to Floor & Wall Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: FC-01C ***Lab Sample ID:*** **691600131-0271**

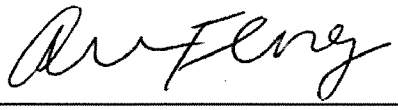
Sample Description: Neighborhood Unit E - Electrical Room (09)/Floor Caulking, Red, Applied to Floor & Wall Seam

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Brown	0.0%	100%	None Detected	

Analyst(s):

Alice Feng PLM Grav. Reduction (2)
Kathleen Cruz PLM Grav. Reduction (1)

Reviewed and approved by:



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Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 02/24/201621:31:33

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0272**

Sample Description: Neighborhood Unit F - Electrical Room (09)/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0273**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0274**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Drywall Joint Compound Applied to Drywall Walls & Ceiling

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PS-01A ***Lab Sample ID:*** **691600131-0275**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Pipe Sealant, White, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	White	1.7%	98.3%	None Detected	

Client Sample ID: PS-01B ***Lab Sample ID:*** **691600131-0276**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Pipe Sealant, White, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	3%	97%	None Detected	

Client Sample ID: PS-01C ***Lab Sample ID:*** **691600131-0277**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Pipe Sealant, White, Applied to Sprinkler Lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: EPP-01A ***Lab Sample ID:*** **691600131-0278**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Electrical Penetration Putty, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: EPP-01B ***Lab Sample ID:*** **691600131-0279**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Electrical Penetration Putty, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: EPP-01C ***Lab Sample ID:*** **691600131-0280**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Electrical Penetration Putty, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A ***Lab Sample ID:*** **691600131-0281**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Brown, Applied to Electrical Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02B ***Lab Sample ID:*** **691600131-0282**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Brown, Applied to Electrical Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Green	0.0%	100%	None Detected	

Client Sample ID: FS-02C ***Lab Sample ID:*** **691600131-0283**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Brown, Applied to Electrical Wall Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray/Green	0.0%	100%	None Detected	

Client Sample ID: FS-03A ***Lab Sample ID:*** **691600131-0284**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Red, Applied to Natural Gas Vents

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03B ***Lab Sample ID:*** **691600131-0285**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Red, Applied to Natural Gas Vents

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-03C ***Lab Sample ID:*** **691600131-0286**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Red, Applied to Natural Gas Vents

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-04A ***Lab Sample ID:*** **691600131-0287**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Light Grey, Applied to Copper Domestic Pipes, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Red	0.0%	100%	None Detected	

Client Sample ID: FS-04B ***Lab Sample ID:*** **691600131-0288**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Light Grey Mastic, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-04C ***Lab Sample ID:*** **691600131-0289**

Sample Description: Neighborhood Unit F - Mechanical Room (10)/Fire Stopper, Light Grey Mastic, Ceiling Penetration

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-07A ***Lab Sample ID:*** **691600131-0290**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Yellow Applied to Electrical Penetrations

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Tan	0.0%	100%	None Detected	

Client Sample ID: FS-07B ***Lab Sample ID:*** **691600131-0291**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Yellow Applied to Electrical Penetrations

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Yellow	0%	100%	None Detected	

Client Sample ID: FS-07C ***Lab Sample ID:*** **691600131-0292**

Sample Description: Neighborhood Unit F - Elecrical Unit (09)/Fire Stopper, Yellow Applied to Electrical Penetrations

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Tan	0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

Alice Feng	PLM (3) PLM Grav. Reduction (10)
Kathleen Cruz	PLM (4) PLM Grav. Reduction (4)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201621:33:26

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 Or	551601689
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 NEIGHBOURHOOD UNIT A**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-33A	*551601689-0001*		2/19/2016	<450 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS			
L-34A	*551601689-0002*		2/19/2016	<110 ppm
	Site: WHITE- MECHANICAL ROOM (10)			

Insufficient sample to reach reporting limit for sample #551601689 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:27:14

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 Or	551601694
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 NEIGHBORHOOD UNIT F**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-37	*551601694-0001*		2/22/2016	<610 ppm
	Site: WHITE- ELECTRICAL ROOM (09) Insufficient sample to reach reporting limit.			
L-38	*551601694-0002*		2/24/2016	<1100 ppm
	Site: GREY- MECHANICAL ROOM (10), CONCRETE FLOORS Insufficient sample to achieve quantitative result. (Result provided is an estimate)			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 13:45:48

APPENDIX O
FINDINGS AND RECOMMENDATIONS—PLUMBER'S SHOP

Appendix O FINDINGS AND RECOMMENDATIONS—PLUMBER'S SHOP

The plumber's shop was reportedly constructed prior to 1990 and consists of one level. The typical structural components and finishes associated with this building consist of brick exterior walls, concrete and vinyl floor tiles, plaster walls, and texture coat and plaster walls.

Building materials throughout the structure were assessed as part of this project.

The results of the assessment for each of the considered hazardous materials within the building are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

O.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Plaster
- Texture coat
- Vinyl floor tile
- Assorted mastics, caulkings, and sealants
- Pipe lagging
- Parging cement
- Mortar

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

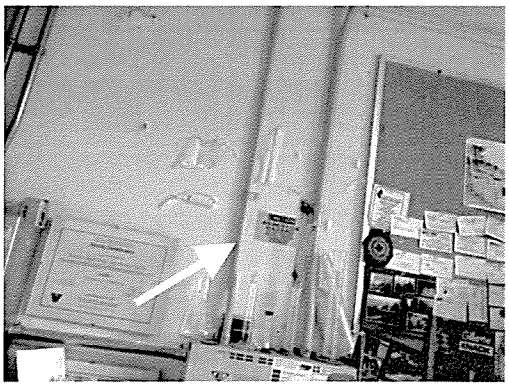
A summary of the sample types, locations and analytical results is presented in Table O-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table O-1 Suspected ACM Sample Collection and Analysis Summary Plumber's Shop, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
PLW-01A	Plaster, Applied to Walls and Ceilings	Room 103	Not Detected
PLW-01B-Skim Coat	Plaster, Applied to Walls and Ceilings, Skim Coat	Room 103	Not Detected
PLW-01B-Rough Coat	Plaster, Applied to Walls and Ceilings, Rough Coat	Office (102)	Not Detected
PLW-01C	Plaster, Applied to Walls and Ceilings	Office (102)	Not Detected
CTC-01A	Texture Coat, Applied to Plaster Ceilings	Room 103	Not Detected
CTC-01B	Texture Coat, Applied to Plaster Ceilings	Room 103	Not Detected
CTC-01C	Texture Coat, Applied to Plaster Ceilings	Bathroom (101)	Not Detected
VFT-01-Tile	Vinyl Floor Tile, Grey & White Streaks	Bathroom (101)	Not Detected
VFT-01-Mastic	Mastic Applied to VFT-01 Vinyl Floor Tiles	Bathroom (101)	Not Detected
PL-01A	Pipe Lagging, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
PL-01B	Pipe Lagging, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
PL-01C	Pipe Lagging, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
PS-01A	Pipe Sealant, Blue	Exterior, Near Mechanical Room	Not Detected
PS-01B	Pipe Sealant, Blue	Exterior, Near Mechanical Room	Not Detected
PS-01C	Pipe Sealant, Blue	Exterior, Near Mechanical Room	Not Detected
WC-01A	Window Caulking, Black	Office (102)	Not Detected
WC-01B	Window Caulking, Black	Office (102)	Not Detected
WC-01C	Window Caulking, Black	Office (102)	Not Detected
PC-01A	Parging Cement, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
PC-01B	Parging Cement, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
PC-01C	Parging Cement, Applied to Fiberglass Pipes	Mechanical Room (100)	Not Detected
BM-01A	Brick Mortar, Grey	Mechanical Room (100)	Not Detected
BM-01B	Brick Mortar, Grey	Exterior	Not Detected
BM-01C	Brick Mortar, Grey	Room 103	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table O-2, below were identified as ACMs.

Table O-2 Summary of Identified ACMs
Plumber's Shop, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Plaster walls and ceilings throughout.		
Friability	Non-friable	
Condition	Good	
Content	<1.0% Chrysotile Note that this material was sampled during this assessment and results indicated no asbestos detected. Previous sampling results indicate that the texture coat applied to the plaster walls contains <1.0% chrysotile asbestos, therefore this material should still be considered asbestos-containing.	

O.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the building. A summary of the sample types, locations and analytical results is presented in Table O-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table O-3 Suspected LCP Sample Collection and Analysis Summary Plumber's Shop, William Head Institution, Victoria, BC

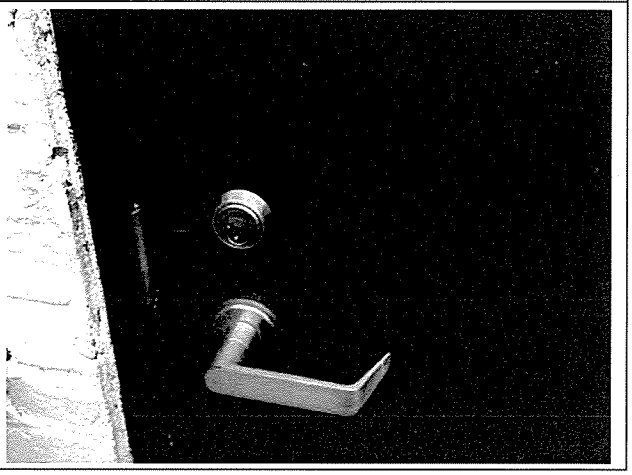
Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-45	**White**	**Office (102), Walls**	**910**	**Yes**
L-46	Grey	Office (103), Concrete Floor	310	No
L-47	Dark grey	Office (102) , Walls	<530	No
L-48	White	Exterior walls	<90	No
L-49	**Brown**	**Exterior Trim**	**<1,200**	**Potential**

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table O-4, below were identified as actual or potential LCPs.

Table O-4 Summary of Identified LCPs Plumber's Shop, William Head Institution, Victoria, BC

Identified LCP Description	Photo
White coloured paint on interior brick and plaster walls. This paint was observed to be in good condition (not bubbling, flaking or peeling).	

Table O-4 Summary of Identified LCPs
Plumber's Shop, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Brown coloured paint on the exterior doors and trim (potential LCP—additional sampling may indicate otherwise). This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

O.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately seven light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

O.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately seven fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

O.5 MOULD

No mould and/or moisture-impacted building materials were observed.

O.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

O.7 SILICA

Silica is presumed to be present in vinyl floor tiles, plaster, brick, mortar, cement, and concrete materials observed.

O.8 RECOMMENDATIONS

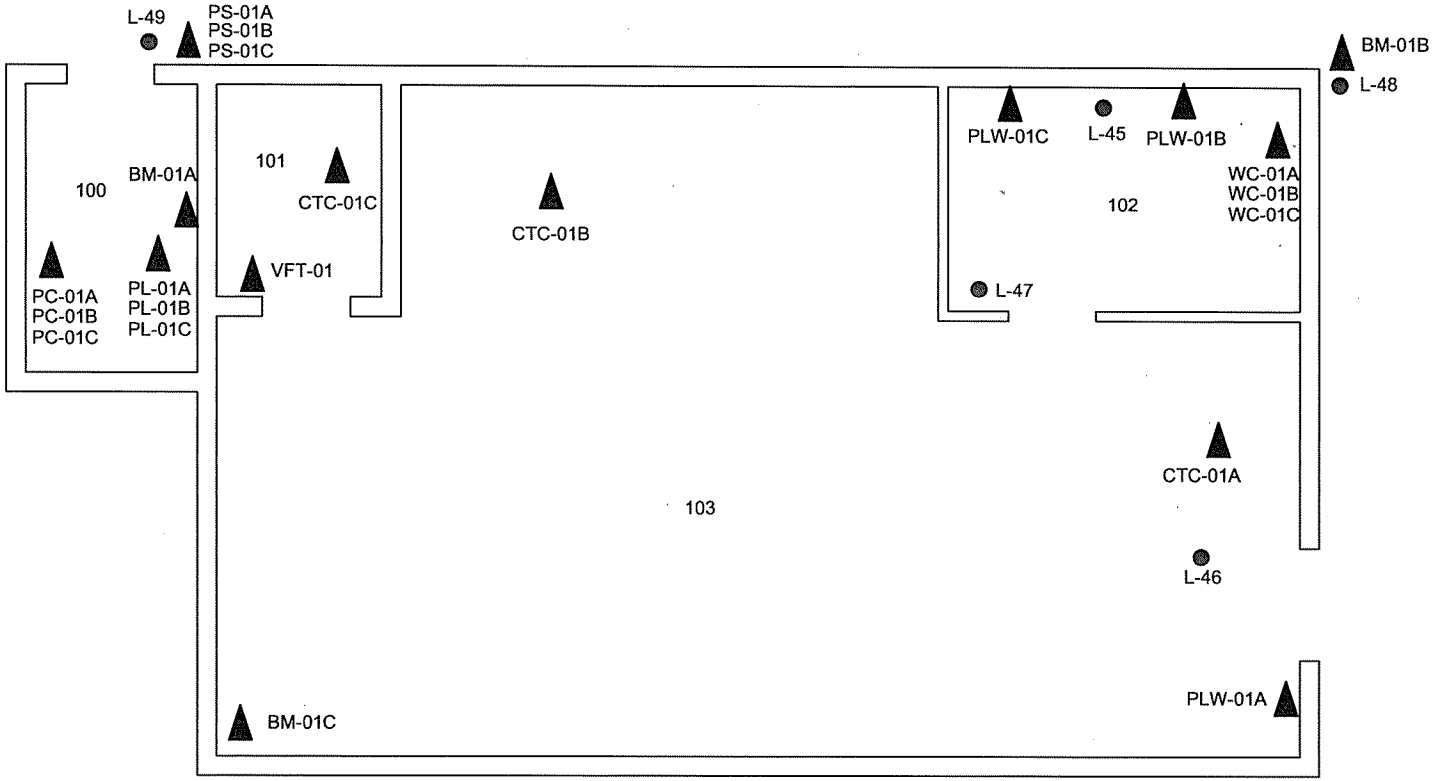
If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

O.8.1 Asbestos

Conflicting results were obtained for plaster (or "textured wall material") within the building. No asbestos was detected in samples collected as part of this assessment, while previous assessments indicate the presence of less than 1% chrysotile asbestos. This material should still be considered an ACM throughout the building and handled accordingly. Alternatively, and because the asbestos content of plaster materials is often inconsistent, prior to destructive action pertaining to plaster materials, additional area-specific sampling could be conducted to indicate whether or not specific areas are to be considered (and handled) as ACM.

O.8.2 Lead

If work will impact potential LCPs as outlined herein, additional sampling should be conducted to confirm lead content such that an appropriate risk assessment can be completed for the work that will be conducted.



PLUMBER'S SHOP

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTES: **1. ACM PLASTER WALLS AND CEILING ARE PRESENT THROUGHOUT.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 4, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD SL2016030386 VM/DM
App'd By:	TW

Dwg. No.: 01

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: PLW-01A ***Lab Sample ID:*** **691600131-0317**

Sample Description: Plumbers Shop - Room 103/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	No skim present

Client Sample ID: PLW-01B-Skim Coat ***Lab Sample ID:*** **691600131-0318**

Sample Description: Plumbers Shop - Office (102)/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	0%	100%	None Detected	

Client Sample ID: PLW-01B-Rough Coat ***Lab Sample ID:*** **691600131-0318A**

Sample Description: Plumbers Shop - Office (102)/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: PLW-01C ***Lab Sample ID:*** **691600131-0319**

Sample Description: Plumbers Shop - Office (102)/Plaster, Applied to Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray/White	0%	100%	None Detected	Layers inseparable.

Client Sample ID: CTC-01A ***Lab Sample ID:*** **691600131-0320**

Sample Description: Plumbers Shop - Room 103/Texture Coat, Applied to Plaster Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	5%	95%	None Detected	

Client Sample ID: CTC-01B ***Lab Sample ID:*** **691600131-0321**

Sample Description: Plumbers Shop - Room 103/Texture Coat, Applied to Plaster Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	5%	95%	None Detected	

Client Sample ID: CTC-01C ***Lab Sample ID:*** **691600131-0322**

Sample Description: Plumbers Shop - Bathroom (101)/Texture Coat, Applied to Plaster Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	5%	95%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VFT-01-Tile **Lab Sample ID:** 691600131-0323
Sample Description: Plumbers Shop - Bathroom (101)/Vinyl Floor Tile, Grey & White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: VFT-01-Mastic **Lab Sample ID:** 691600131-0323A
Sample Description: Plumbers Shop - Bathroom (101)/Vinyl Floor Tile, Grey & White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	100%	None Detected	

Client Sample ID: PL-01A **Lab Sample ID:** 691600131-0324
Sample Description: Plumbers Shop - Mechanical Room/Pipe Lagging, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: PL-01B **Lab Sample ID:** 691600131-0325
Sample Description: Plumbers Shop - Mechanical Room/Pipe Lagging, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: PL-01C **Lab Sample ID:** 691600131-0326
Sample Description: Plumbers Shop - Mechanical Room/Pipe Lagging, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Gray	1.4%	98.6%	None Detected	

Client Sample ID: PS-01A **Lab Sample ID:** 691600131-0327
Sample Description: Plumbers Shop - Exterior, Near Mechanical Room/Pipe Sealant, Blue

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White/Green	5%	95%	None Detected	

Client Sample ID: PS-01B **Lab Sample ID:** 691600131-0328
Sample Description: Plumbers Shop - Exterior, Near Mechanical Room/Pipe Sealant, Blue

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White/Green	5%	95%	None Detected	

Client Sample ID: PS-01C **Lab Sample ID:** 691600131-0329
Sample Description: Plumbers Shop - Exterior, Near Mechanical Room/Pipe Sealant, Blue

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White/Green	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: WC-01A **Lab Sample ID:** 691600131-0330
Sample Description: Plumbers Shop - Office (102)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: WC-01B **Lab Sample ID:** 691600131-0331
Sample Description: Plumbers Shop - Office (102)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: WC-01C **Lab Sample ID:** 691600131-0332
Sample Description: Plumbers Shop - Office (102)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Black	0%	100%	None Detected	

Client Sample ID: PC-01A **Lab Sample ID:** 691600131-0333
Sample Description: Plumbers Shop - Mechanical Room/Parging Cement, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	30%	70%	None Detected	

Client Sample ID: PC-01B **Lab Sample ID:** 691600131-0334
Sample Description: Plumbers Shop - Mechanical Room/Parging Cement, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	White	30%	70%	None Detected	

Client Sample ID: PC-01C **Lab Sample ID:** 691600131-0335
Sample Description: Plumbers Shop - Mechanical Room/Parging Cement, Applied to Fiberglass Pipes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Tan	8%	92%	None Detected	

Client Sample ID: BM-01A **Lab Sample ID:** 691600131-0336
Sample Description: Plumbers Shop - Room 100/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Client Sample ID: BM-01B **Lab Sample ID:** 691600131-0337
Sample Description: Plumbers Shop - Exterior/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: BM-01C ***Lab Sample ID:*** **691600131-0338**

Sample Description: Plumbers Shop - Room 103/Brick Mortar, Grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/24/2016	Gray	0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (6) PLM Grav. Reduction (4)
Kathleen Cruz	PLM (13) PLM Grav. Reduction (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201621:47:09

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 Or	551601700
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 PLUMBERS SHOP**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-45	*551601700-0001*		2/22/2016	910 ppm
	Site: WHITE- OFFICE (102), WALLS			
L-46	*551601700-0002*		2/22/2016	310 ppm
	Site: GREY- OFFICE (103), CONCRETE FLOOR			
L-47	*551601700-0003*		2/22/2016	<530 ppm
	Site: DARK GREY- OFFICE (102), WALLS Insufficient sample to reach reporting limit.			
L-48	*551601700-0004*		2/22/2016	<90 ppm
	Site: WHITE- EXTERIOR WALLS			
L-49	*551601700-0005*		2/24/2016	<1200 ppm
	Site: BROWN- EXTERIOR TRIM Insufficient sample to achieve quantitative result. (Result provided is an estimate)			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 15:33:29

APPENDIX P
FINDINGS AND RECOMMENDATIONS—PRINCIPAL ENTRANCE

Appendix P FINDINGS AND RECOMMENDATIONS—PRINCIPAL ENTRANCE

The principal/entrance building was reportedly constructed prior to 1990 and consists of two levels. The typical structural components and finishes associated with this building consist of vinyl sheet flooring, vinyl floor tiles, drywall walls, suspended ceiling tiles.

Only the following areas (subject areas) and materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Ceilings within room 100, 101a, 101, and 102

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

P.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Ceiling tile

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table P-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table P-1 Suspected ACM Sample Collection and Analysis Summary Principal Entrance, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
CT-01A	Suspended ceiling tile, square, worm and pinhole fissure	Room 101	Not Detected
CT-01B	Suspended ceiling tile, square, worm and pinhole fissure	Room 101	Not Detected
CT-01C	Suspended ceiling tile, square, worm and pinhole fissure	Room 101	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

P.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used on domestic water lines, in bell fittings for cast iron pipes, and in electrical equipment
- Vent and pipe flashings

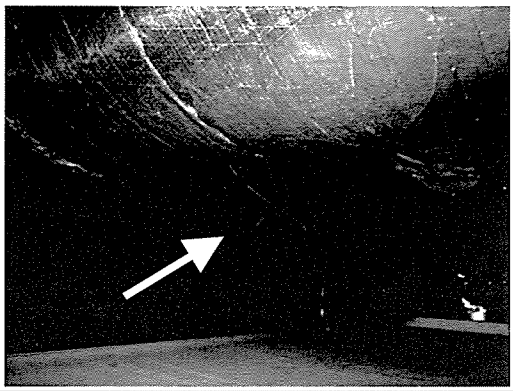
With respect to paint, one paint chip sample was obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table P-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table P-2 Suspected LCP Sample Collection and Analysis Summary Principal Entrance, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-102	Red primer	Room 101, Open Web Steel Joist	2,100	Yes

Based on our observations and on our interpretations of suspected LCP sample analytical results, the material presented in Table P-3, below was identified as an LCP.

Table P-3 Summary of Identified LCPs
Principal Entrance, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Red colored paint on open web steel joists located above the suspended ceiling tiles. This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

P.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 22 light fixtures observed within the subject areas. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

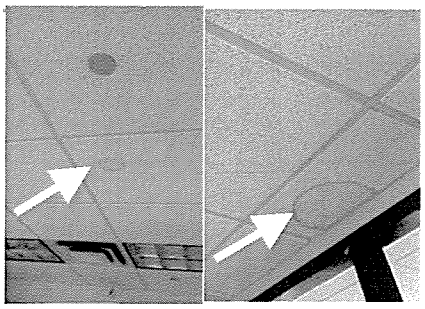
P.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 22 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

P.5 MOULD

Observations pertaining to mould and/or moisture impacted building materials are summarized in the following table.

Table P-4 Mould/Moisture Observations Summary—February 12, 2016 Principal Entrance, William Head Institution, Victoria, BC

Building Area	Observation	Suspected Source of Moisture	Photo
Principal Entrance Room 102	Moisture-stained ceiling tiles in two locations	Pipe leaks	

P.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

P.7 SILICA

Silica is presumed to be present in ceiling tiles, drywall, cement, and concrete materials observed.

P.8 RECOMMENDATIONS

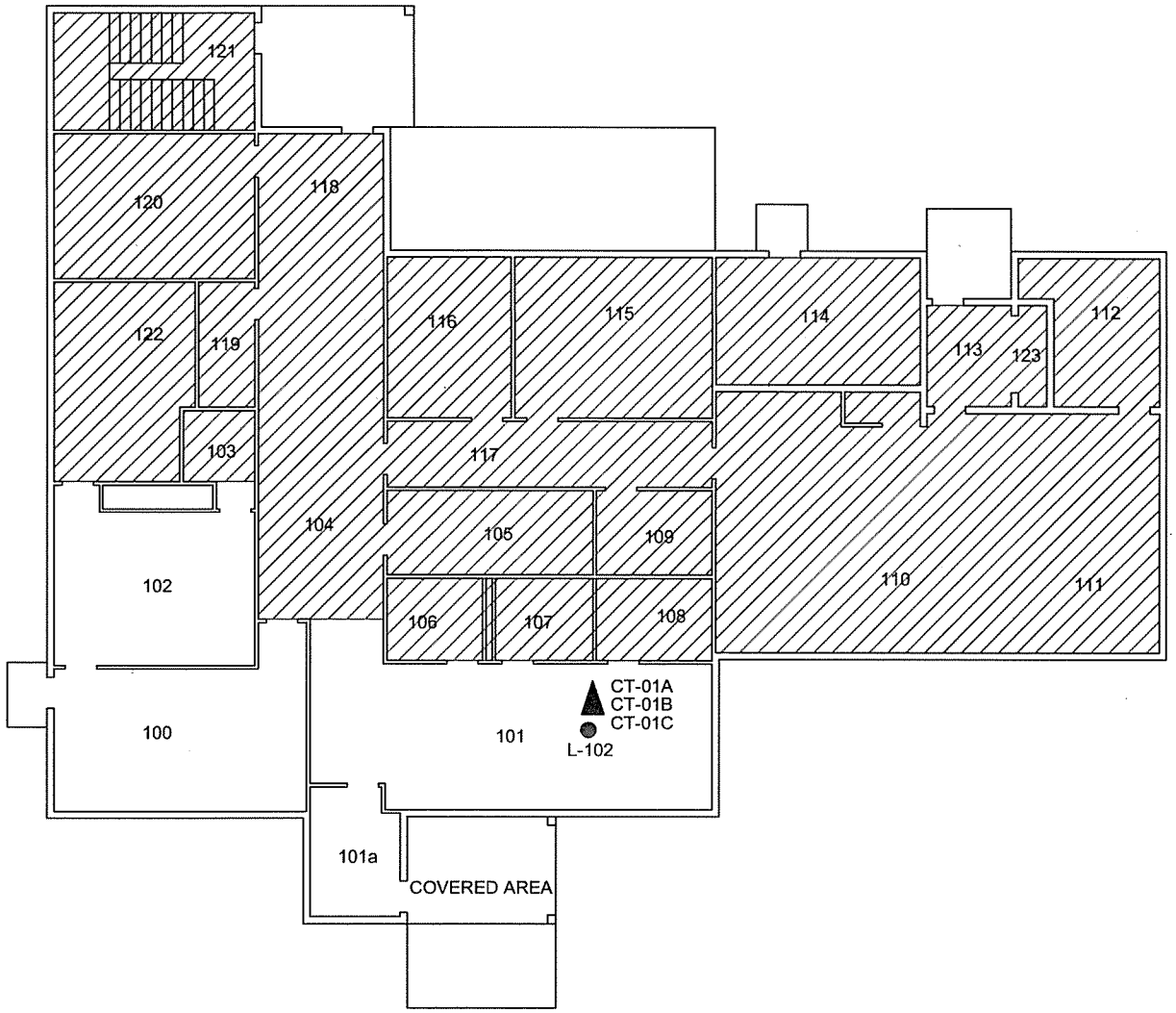
If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

Additional material-specific recommendations to be considered are provided below.

P.8.1 Mould

Stantec recommends the following course of action within the subject building:

- Remove and replace moisture-stained ceiling tiles with new tiles. If staining re-appears on the new tiles, the source of moisture should be identified and corrected. This work can be conducted by regular facility maintenance staff, if conducted prior to the onset of mould growth.



GROUND FLOOR
PRINCIPAL ENTRANCE

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- AREAS NOT INCLUDED IN ASSESSMENT

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 104, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/30
Dwn. By:	CD SL2016030378 VM/DM
App'd By:	TW

Dwg. No.: P1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/22/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: CT-01A ***Lab Sample ID:*** **691600131-0540**

Sample Description: Principal/Entrance-Room 101/Suspended Ceiling Tile, Square Worm & Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/22/2016	Gray	80%	20%	None Detected	

Client Sample ID: CT-01B ***Lab Sample ID:*** **691600131-0541**

Sample Description: Principal/Entrance-Room 101/Suspended Ceiling Tile, Square Worm & Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/22/2016	Gray	80%	20%	None Detected	

Client Sample ID: CT-01C ***Lab Sample ID:*** **691600131-0542**

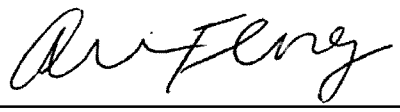
Sample Description: Principal/Entrance-Room 101/Suspended Ceiling Tile, Square Worm & Pinhole Fissure

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	Gray	75%	25%	None Detected	

Analyst(s):

John Biesiadecki PLM (2)
Natalie D'Amico PLM (1)

Reviewed and approved by:



Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:26:39

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 Or	551601754
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/18/16 10:11 AM
Collected:

Project: **123220504.200.1 PRINCIPAL ENTRANCE**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-102	*551601754-0001*		2/22/2016	2100 ppm
	Site: RED PRIMER- ROOM 101, OWSJC			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:26:43

APPENDIX Q
FINDINGS AND RECOMMENDATIONS—PRIVATE FAMILY UNIT 1

Appendix Q FINDINGS AND RECOMMENDATIONS—PRIVATE FAMILY UNIT 1

The private family unit 1 building was reportedly constructed prior to 1990 and consists of one level and an attic space. The typical structural components and finishes associated with this building consist of exterior vinyl siding, vinyl sheet flooring and vinyl floor tiles, drywall interior walls, and drywall and texture coat ceilings.

Building materials throughout the structure were assessed as part of this project.

The results of the assessment for each of the considered hazardous materials within the building are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

Q.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Texture coat
- Vinyl sheet flooring
- Vinyl floor tile
- Assorted mastics and caulkings

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table Q-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table Q-1 Suspected ACM Sample Collection and Analysis Summary Private Family Unit 1, William Head Institution, Victoria, BC

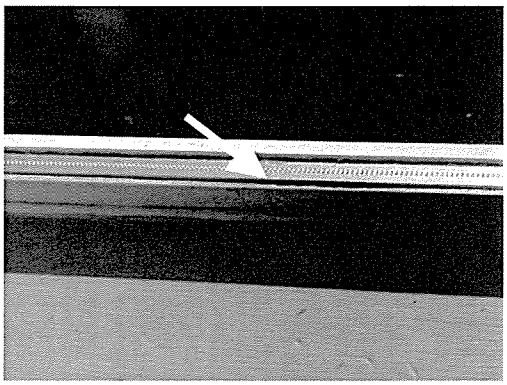
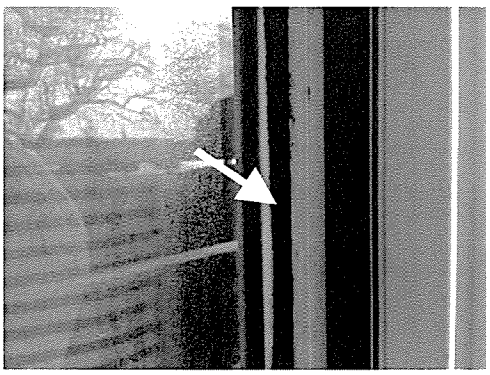
Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Back Entrance (102)	Not Detected

Table Q-1 Suspected ACM Sample Collection and Analysis Summary Private Family Unit 1, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Second Bedroom (100)	Not Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Bedroom (107)	Not Detected
DJC-01D	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Child Bedroom (101)	Not Detected
DJC-01E	Drywall Joint Compound, Applied to Drywall Walls and Ceilings	Hallway Closet	Not Detected
CTC-01A	Texture Coat, Applied to Drywall Ceilings	Living Room (102)	Not Detected
CTC-01B	Texture Coat, Applied to Drywall Ceilings	Childs Room (101)	Not Detected
CTC-01C	Texture Coat, Applied to Drywall Ceilings	Second Bedroom (100)	Not Detected
CTC-01D	Texture Coat, Applied to Drywall Ceilings	Bedroom (107)	Not Detected
CTC-01E	Texture Coat, Applied to Drywall Ceilings	Kitchen (105)	Not Detected
VSF-01-Flooring	Vinyl Sheet Flooring, Blue Streaks	Bathroom (106)	Not Detected
VSF-01-Mastic	Mastic Applied to VSF-01 Vinyl Sheet Flooring	Bathroom (106)	Not Detected
VFT-01-Flooring	Vinyl Floor Tile, Light Pink & White Smudges	Living Room Closet (102)	Not Detected
VFT-01-Mastic	Mastic Applied to VFT-01 Vinyl Floor Tile	Living Room Closet (102)	Not Detected
VFT-02-Flooring	Vinyl Floor Tile, Grey & White Smudges	Laundry Room (104)	Not Detected
VFT-02-Mastic	Mastic Applied to VFT-02 Vinyl Floor Tile	Laundry Room (104)	Not Detected
WC-01A	**Window Caulking, Black**	**Kitchen (105)**	**2.5% Chrysotile**
WC-01B	**Window Caulking, Black**	**Kitchen (105)**	**Positive Stop**
WC-01C	**Window Caulking, Black**	**Kitchen (105)**	**Positive Stop**
DC-01A	**Door Caulking, Black, Applied to Sliding Glass Door**	**Exterior**	**4.0% Chrysotile**
DC-01B	**Door Caulking, Black, Applied to Sliding Glass Door**	**Exterior**	**Positive Stop**
DC-01C	**Door Caulking, Black, Applied to Sliding Glass Door**	**Exterior**	**Positive Stop**
FM-01A	Foundation Mastic, Black	Exterior	Not Detected
FM-01B	Foundation Mastic, Black	Exterior	Not Detected
FM-01C	Foundation Mastic, Black	Exterior	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table Q-2, below were identified as ACMs.

Table Q-2 Summary of Identified ACMs
Private Family Unit 1, William Head Institution, Victoria, BC

Identified ACM Description and Condition Information		Photo
Black window pane caulking throughout the building.		
Friability	Non-friable	
Condition	Good	
Content	2.5% Chrysotile	
Black exterior door caulking.		
Friability	Non-friable	
Condition	Good	
Content	4.0% Chrysotile	

Q.2 LEAD

Lead is expected to be present in the following:

- Older electrical wiring materials and sheathing
- Solder used on domestic water lines and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the building. A summary of the sample types, locations and analytical results

is presented in Table Q-3, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table Q-3 Suspected LCP Sample Collection and Analysis Summary Private Family Unit 1, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-35	White	Storage (104), Drywall Walls	<210	No
L-36	Brown	Exterior Wooden Trim	<290	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

Q.3 POLYCHLORINATED BIPHENYLS

No suspected PCB-containing electrical equipment was observed.

Q.4 MERCURY

No suspected mercury-containing items were observed. Mercury may be present in paints and adhesives.

Q.5 MOULD

No mould and/or moisture impacted building materials were observed.

Q.6 OZONE-DEPLETING SUBSTANCES

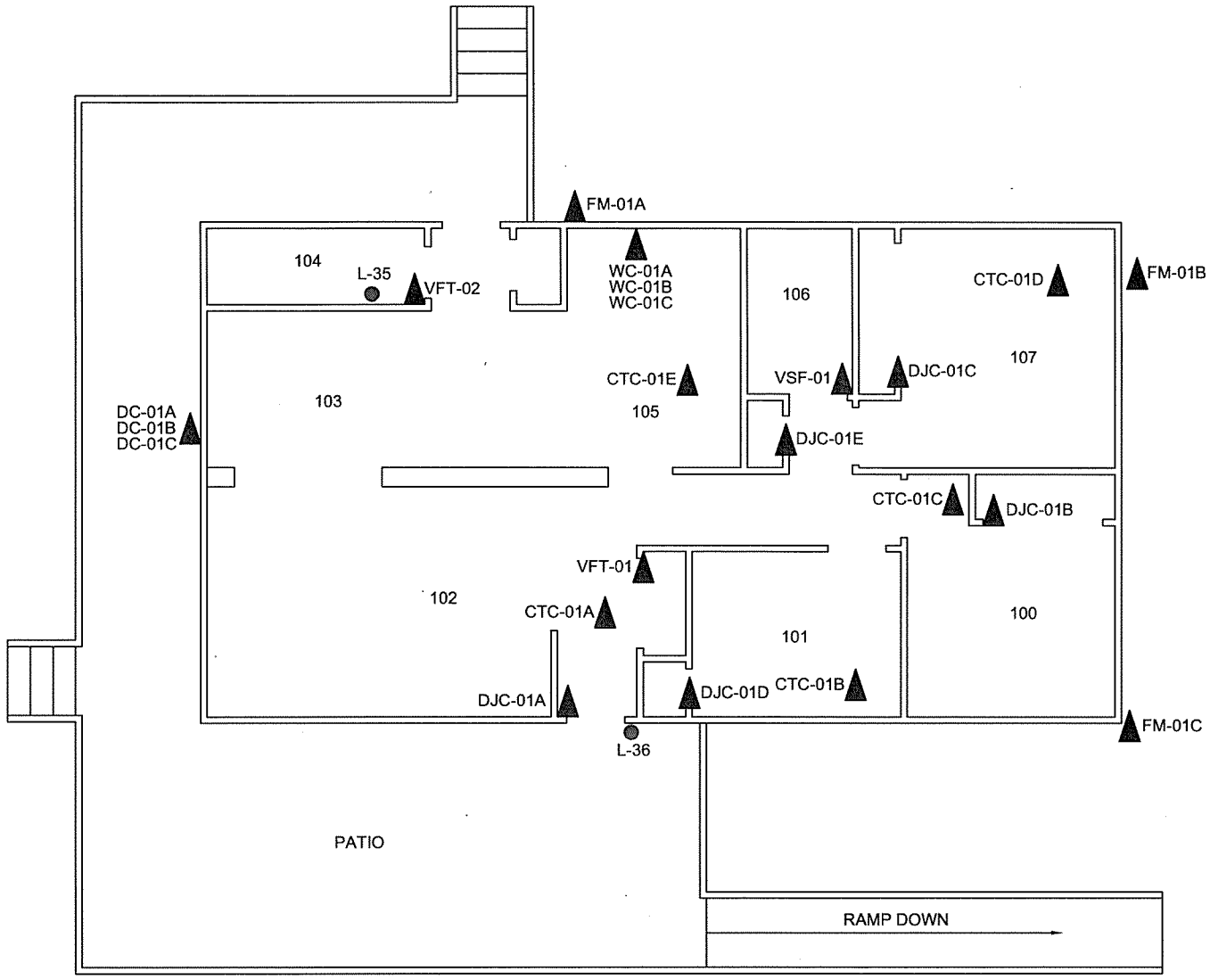
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

Q.7 SILICA

Silica is presumed to be present in vinyl floor tiles, ceramic tiles, drywall, cement, and concrete materials observed.

Q.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



PRIVATE FAMILT UNIT

LEGEND

▲ ASBESTOS BULK SAMPLE

● LEAD PAINT SAMPLE

NOTES: 1. INTERIOR BLACK ASBESTOS-CONTAINING WINDOW CAULKING IS PRESENT THROUGHOUT THE BUILDING.
2. BLACK ASBESTOS-CONTAINING DOOR CAULKING IS PRESENT THROUGHOUT THE EXTERIOR OF THE BUILDING.
3. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

BARRIER FREE UNIT 1, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030115 PK/DM
App'd By:	TW

Dwg. No.: Q1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0106**

Sample Description: Private Family Unit 1 - Back Entrance (102)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0107**

Sample Description: Private Family Unit 1 - Second Bedroom (100)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0108**

Sample Description: Private Family Unit 1 - Bedroom (107)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016				Not Submitted	No sample in bag.

Client Sample ID: DJC-01D ***Lab Sample ID:*** **691600131-0109**

Sample Description: Private Family Unit 1 - Child Bedroom (101)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E ***Lab Sample ID:*** **691600131-0110**

Sample Description: Private Family Unit 1 - Hallway Closet/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: CTC-01A ***Lab Sample ID:*** **691600131-0111**

Sample Description: Private Family Unit 1 - Living Room (102)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: CTC-01B ***Lab Sample ID:*** **691600131-0112**

Sample Description: Private Family Unit 1 - Childs Room (101)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

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Phone/Fax: 604-757-3158 / (604) 757-4731
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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: CTC-01C ***Lab Sample ID:*** **691600131-0113**

Sample Description: Private Family Unit 1 - Second Bedroom (100)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: CTC-01D ***Lab Sample ID:*** **691600131-0114**

Sample Description: Private Family Unit 1 - Bedroom (107)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: CTC-01E ***Lab Sample ID:*** **691600131-0115**

Sample Description: Private Family Unit 1 - Kitchen (105)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: VSF-01 ***Lab Sample ID:*** **691600131-0116**

Sample Description: Private Family Unit 1 - Bathroom (106)/Vinyl Sheet Flooring, Blue Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Blue	0.0%	100%	None Detected	

Client Sample ID: VSF-01-Mastic ***Lab Sample ID:*** **691600131-0116B**

Sample Description: Private Family Unit 1 - Bathroom (106)/Vinyl Sheet Flooring, Blue Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Brown	0%	100%	None Detected	

Client Sample ID: VFT-01 ***Lab Sample ID:*** **691600131-0117**

Sample Description: Private Family Unit 1 - Living Room Closet (102)/Vinyl Floor Tile, Light Pink & White Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Beige	0.0%	100%	None Detected	

Client Sample ID: VFT-01-Mastic ***Lab Sample ID:*** **691600131-0117A**

Sample Description: Private Family Unit 1 - Living Room Closet (102)/Vinyl Floor Tile, Light Pink & White Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: VFT-02 ***Lab Sample ID:*** **691600131-0118**

Sample Description: Private Family Unit 1 - Laundry Room (104)/Vinyl Floor Tile, Grey & White Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray	0.0%	100%	None Detected	

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: VFT-02-Mastic ***Lab Sample ID:*** **691600131-0118A**

Sample Description: Private Family Unit 1 - Laundry Room (104)/Vinyl Floor Tile, Grey & White Smudges

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: WC-01A ***Lab Sample ID:*** **691600131-0119**

Sample Description: Private Family Unit 1 - Kitchen (105)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	97.5%	**2.5% Chrysotile**	

Client Sample ID: WC-01B ***Lab Sample ID:*** **691600131-0120**

Sample Description: Private Family Unit 1 - Kitchen (105)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: WC-01C ***Lab Sample ID:*** **691600131-0121**

Sample Description: Private Family Unit 1 - Kitchen (105)/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DC-01A ***Lab Sample ID:*** **691600131-0122**

Sample Description: Private Family Unit 1 - Exterior/Door Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	96.0%	**4.0% Chrysotile**	

Client Sample ID: DC-01B ***Lab Sample ID:*** **691600131-0123**

Sample Description: Private Family Unit 1 - Exterior/Door Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: DC-01C ***Lab Sample ID:*** **691600131-0124**

Sample Description: Private Family Unit 1 - Exterior/Door Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016				Positive Stop (Not Analyzed)	

Client Sample ID: FM-01A ***Lab Sample ID:*** **691600131-0125**

Sample Description: Private Family Unit 1 - Exterior/Foundation Mastic, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FM-01B ***Lab Sample ID:*** **691600131-0126**

Sample Description: Private Family Unit 1 - Exterior/Foundation Mastic, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: FM-01C ***Lab Sample ID:*** **691600131-0127**

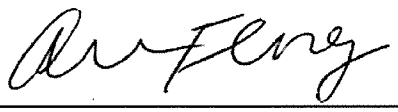
Sample Description: Private Family Unit 1 - Exterior/Foundation Mastic, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (8) PLM Grav. Reduction (1)
Kathleen Cruz	PLM (4) PLM Grav. Reduction (7)

Reviewed and approved by:



Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201619:33:31

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 Or	551601693
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone:	(604) 412-3004
Fax:	
Received:	02/17/16 10:11 AM
Collected:	

Project: **123220504.200.1 PRIVATE FAMILY UNIT 1**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-35	*551601693-0001*		2/19/2016	<210 ppm
	Site: WHITE-STORAGE (104)			
L-36	*551601693-0002*		2/19/2016	<290 ppm
	Site: BROWN- EXTERIOR TRIM			

Insufficient sample to reach reporting limit for sample #551601693 -0001/ -0002.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 14:28:34

APPENDIX R
FINDINGS AND RECOMMENDATIONS—PRIVATE FAMILY UNIT 2

Appendix R FINDINGS AND RECOMMENDATIONS—PRIVATE FAMILY UNIT 2

The private family unit 2 building was reportedly constructed prior to 1990 and consists of one level and a crawlspace and attic space. The typical structural components and finishes associated with this building consist of stucco exterior walls, vinyl sheet flooring and wood floors, drywall interior walls, and drywall and texture coat ceilings.

Building materials throughout the structure were assessed as part of this project.

The results of the assessment for each of the considered hazardous materials within the building are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

R.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound
- Texture coat
- Vinyl sheet flooring
- Stucco
- Window caulking
- Asphalt shingle
- Tar

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table R-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table R-1 Suspected ACM Sample Collection and Analysis Summary Private Family Unit 2, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Bedroom (100)	Not Detected
DJC-01B	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Laundry Room (105)	Not Detected
DJC-01C	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Kitchen (103)	Not Detected
DJC-01D	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Dining Room (102)	Not Detected
DJC-01E	Drywall Joint Compound, Applied to Drywall Walls & Ceilings	Living Room Closet (101)	Not Detected
TC-01A	Texture Coat, Applied to Drywall Ceilings	Living Room (100)	Not Detected
TC-01B	Texture Coat, Applied to Drywall Ceilings	Bedroom (100)	Not Detected
TC-01C	Texture Coat, Applied to Drywall Ceilings	Hallway	Not Detected
TC-01D	Texture Coat, Applied to Drywall Ceilings	Kitchen (103)	Not Detected
TC-01E	Texture Coat, Applied to Drywall Ceilings	Laundry Room (105)	Not Detected
VSF-01-Flooring	Vinyl Sheet Flooring, Grey/Blue, Small Rock Pattern	Laundry Room (105)	Not Detected
VSF-01-Mastic	Mastic Applied to VSF-01 Vinyl Sheet Flooring	Laundry Room (105)	Not Detected
ES-01A	Stucco, Applied to Exterior Walls	Exterior	Not Detected
ES-01B	Stucco, Applied to Exterior Walls	Exterior	Not Detected
ES-01C	Stucco, Applied to Exterior Walls	Exterior	Not Detected
ES-01D	Stucco, Applied to Exterior Walls	Exterior	Not Detected
ES-01E	Stucco, Applied to Exterior Walls	Exterior	Not Detected
WPC-01A	Window Caulking, Black	Exterior	<0.48% Chrysotile
WPC-01B	Window Caulking, Black	Exterior	<0.43% Chrysotile
WPC-01C	Window Caulking, Black	Exterior	0.48% Chrysotile
R-01	Crawlspace Hatch, Asphalt Shingle	Exterior, Crawlspace Hatch	Not Detected
T-01A	Tar, Black, Applied to Concrete Foundation	Exterior	Not Detected
T-01B	Tar, Black, Applied to Concrete Foundation	Exterior	Not Detected
T-01C	Tar, Black, Applied to Concrete Foundation	Exterior	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

R.1.1 Materials with less than 0.5% Asbestos

It should be noted that asbestos was detected in low concentrations in each sample of black exterior window caulking (less than 0.48%, less than 0.43% and 0.48% chrysotile) respectively. As the asbestos content detected in each sample was less than 0.5%, as the number of samples collected for the homogenous application of this material would be considered sufficient to appropriately characterize it based on published provincial standards published (i.e., the *BC Asbestos Guide*), and based on the limited extent of this material within the building, the black exterior window caulking is not considered to be an ACM.

R.2 LEAD

Lead is expected to be present in the following:

- Older electrical wiring materials and sheathing
- Solder used on domestic water lines and in electrical equipment
- Vent and pipe flashings

With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the building. A summary of the sample types, locations and analytical results is presented in Table R-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table R-2 Suspected LCP Sample Collection and Analysis Summary Private Family Unit 2, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-10	Beige	Exterior	<180	No
L-11	Brown	Exterior	<110	No
L-12	White	Laundry Room (105)	<220	No
L-13	Dusty rose	Bedroom (100)	<140	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

R.3 POLYCHLORINATED BIPHENYLS

No suspected PCB-containing electrical equipment was observed.

R.4 MERCURY

No suspected mercury-containing items were observed. Mercury may be present in paints and adhesives.

R.5 MOULD

No mould and/or moisture-impacted building materials were observed.

R.6 OZONE-DEPLETING SUBSTANCES

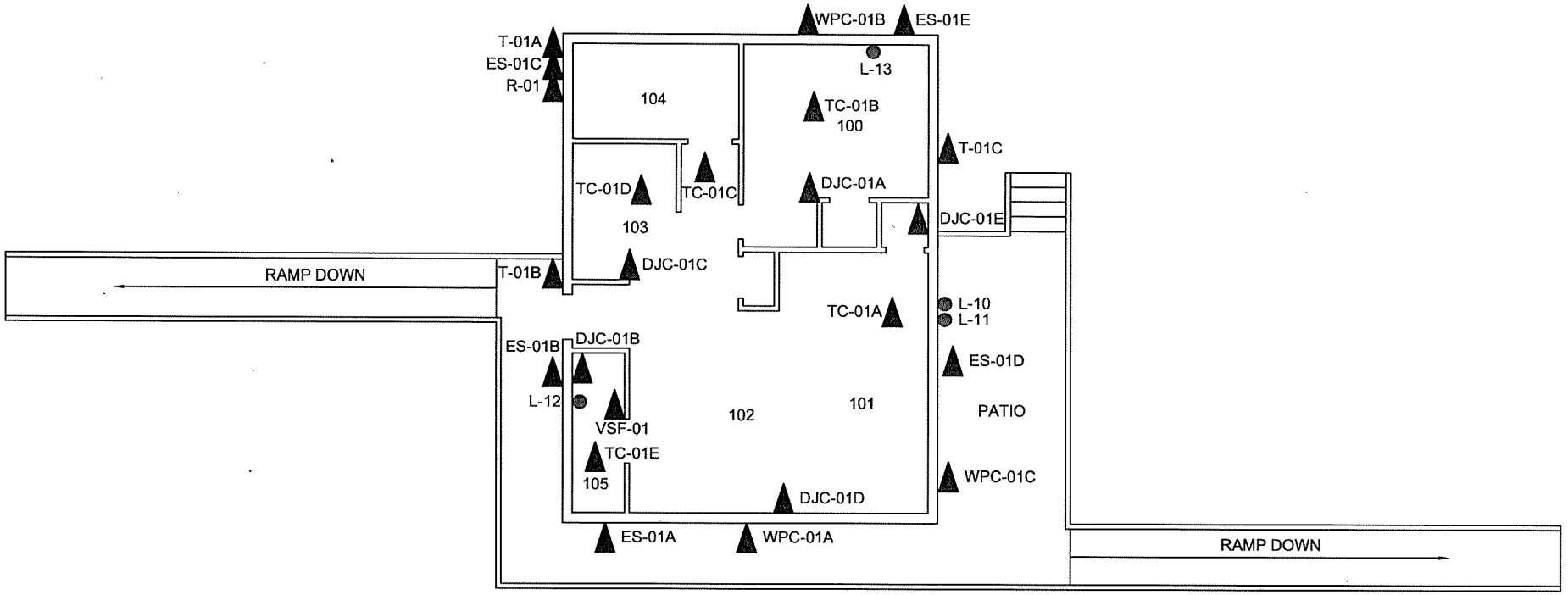
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

R.7 SILICA

Silica is presumed to be present in stucco, ceramic tiles, asphalt, drywall, cement, and concrete materials observed.

R.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



PRIVATE FAMILT UNIT 2

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 2, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030130 PK/DM
App'd By:	TW

Dwg. No.: R1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/24/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0128**

Sample Description: Private Family Unit 2 - Bedroom (100)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0129**

Sample Description: Private Family Unit 2 - Laundry Room (105)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0130**

Sample Description: Private Family Unit 2 - Kitchen (103)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D ***Lab Sample ID:*** **691600131-0131**

Sample Description: Private Family Unit 2 - Dining Room (102)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E ***Lab Sample ID:*** **691600131-0132**

Sample Description: Private Family Unit 2 - Living Room Closet (101)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01A ***Lab Sample ID:*** **691600131-0133**

Sample Description: Private Family Unit 2 - Living Room (100)/Texture Coat, Applied to Drywall Ceilings.

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01B ***Lab Sample ID:*** **691600131-0134**

Sample Description: Private Family Unit 2 - Bedroom (100)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

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EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: TC-01C ***Lab Sample ID:*** **691600131-0135**

Sample Description: Private Family Unit 2 - Hallway/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01D ***Lab Sample ID:*** **691600131-0136**

Sample Description: Private Family Unit 2 - Kitchen (103)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: TC-01E ***Lab Sample ID:*** **691600131-0137**

Sample Description: Private Family Unit 2 - Laundry Room (105)/Texture Coat, Applied to Drywall Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: VSF-01 ***Lab Sample ID:*** **691600131-0138**

Sample Description: Private Family Unit 2 - Laundry Room (105)/Vinyl Sheet Flooring, Grey/Blue, Small Rock

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Gray/Various	1.4%	98.6%	None Detected	

Client Sample ID: VSF-01-Mastic ***Lab Sample ID:*** **691600131-0138A**

Sample Description: Private Family Unit 2 - Laundry Room (105)/Vinyl Sheet Flooring, Grey/Blue, Small Rock

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Yellow	0%	100%	None Detected	

Client Sample ID: ES-01A ***Lab Sample ID:*** **691600131-0139**

Sample Description: Private Family Unit 2 - Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: ES-01B ***Lab Sample ID:*** **691600131-0140**

Sample Description: Private Family Unit 2 - Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

Client Sample ID: ES-01C ***Lab Sample ID:*** **691600131-0141**

Sample Description: Private Family Unit 2 - Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	Gray	0%	100%	None Detected	

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4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

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Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: ES-01D **Lab Sample ID:** **691600131-0142**

Sample Description: Private Family Unit 2 - Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: ES-01E **Lab Sample ID:** **691600131-0143**

Sample Description: Private Family Unit 2 - Exterior/Stucco, Applied to Exterior Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: WPC-01A **Lab Sample ID:** **691600131-0144**

Sample Description: Private Family Unit 2 - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	100%	**<0.48% Chrysotile**	

Client Sample ID: WPC-01B **Lab Sample ID:** **691600131-0145**

Sample Description: Private Family Unit 2 - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	100%	**<0.43% Chrysotile**	

Client Sample ID: WPC-01C **Lab Sample ID:** **691600131-0146**

Sample Description: Private Family Unit 2 - Exterior/Window Caulking, Black

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	99.5%	**0.48% Chrysotile**	

Client Sample ID: R-01 **Lab Sample ID:** **691600131-0147**

Sample Description: Private Family Unit 2 - Exterior, Crawlspace Hatch/Roof, Asphalt Shingle

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: T-01A **Lab Sample ID:** **691600131-0148**

Sample Description: Private Family Unit 2 - Exterior/Tar, Black, Applied to Concrete Foundation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

Client Sample ID: T-01B **Lab Sample ID:** **691600131-0149**

Sample Description: Private Family Unit 2 - Exterior/Tar, Black, Applied to Concrete Foundation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/23/2016	Black	0.0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: T-01C ***Lab Sample ID:*** **691600131-0150**

Sample Description: Private Family Unit 2 - Exterior/Tar, Black, Applied to Concrete Foundation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/24/2016	Black	0.0%	100%	None Detected	

Analyst(s):

Alice Feng	PLM (10) PLM Grav. Reduction (4)
Kathleen Cruz	PLM (6) PLM Grav. Reduction (4)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/24/201611:21:57

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 Or	551601655
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 PRIVATE FAMILY UNIT 2**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-10	*551601655-0001*		2/18/2016	<180 ppm
	Site: BEIGE- EXTERIOR			
L-11	*551601655-0002*		2/18/2016	<110 ppm
	Site: BROWN- EXTERIOR			
L-12	*551601655-0003*		2/18/2016	<220 ppm
	Site: WHITE- LAUNDRY ROOM (105)			
L-13	*551601655-0004*		2/18/2016	<140 ppm
	Site: DUSTY ROSE - BEDROOM (100)			

Insufficient sample to reach reporting limit for sample #551601655 -0001/ -0002/ -0003/ -0004.

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/22/2016 09:48:38

APPENDIX S
FINDINGS AND RECOMMENDATIONS—STAFF FITNESS

Appendix S FINDINGS AND RECOMMENDATIONS—STAFF FITNESS

The staff fitness building was reportedly constructed in 2000 and consists of one level. The typical structural components and finishes associated with this building consist of stucco exterior walls, rubber and concrete floor, drywall walls, and drywall ceilings.

Only the following areas (subject areas) and/or materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Wall and ceiling finishes throughout the building

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

S.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table S-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table S-1 Suspected ACM Sample Collection and Analysis Summary Staff Fitness, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall joint compound, applied to drywall walls and ceilings	Room 101	Not Detected
DJC-01B	Drywall joint compound, applied to drywall walls and ceilings	Room 102	Not Detected
DJC-01C	Drywall joint compound, applied to drywall walls and ceilings	Room 103	Not Detected
DJC-01D	Drywall joint compound, applied to drywall walls and ceilings	Room 101	Not Detected

Table S-1 Suspected ACM Sample Collection and Analysis Summary Staff Fitness, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01E	Drywall joint compound, applied to drywall walls and ceilings	Room 100	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

S.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder in bell fittings for cast iron pipes and in electrical equipment
- Vent and pipe flashings

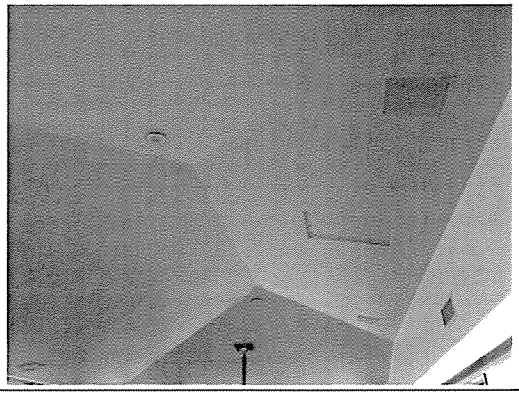
With respect to paint, paint chip samples were obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table S-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table S-2 Suspected LCP Sample Collection and Analysis Summary Staff Fitness, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-103	**Off-white**	**Room 100, Drywall Walls and Ceiling**	**<1,400**	**Potential**
L-104	Dusty rose	Room 105, Drywall Walls and Ceiling	<300	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the material presented in Table S-3, below was identified as a potential LCP.

Table S-3 Summary of Identified LCPs
Staff Fitness, William Head Institution, Victoria, BC

Identified LCP Description	Photo
Off-white colored paint on drywall walls and ceiling (potential LCP—additional sampling may indicate otherwise). This paint was observed to be in good condition (not bubbling, flaking, or peeling).	

S.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs are not presumed to be present within the fluorescent light fixture ballasts.

S.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 20 fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

S.5 MOULD

No mould and/or moisture–impacted building materials were observed.

S.6 OZONE-DEPLETING SUBSTANCES

No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

S.7 SILICA

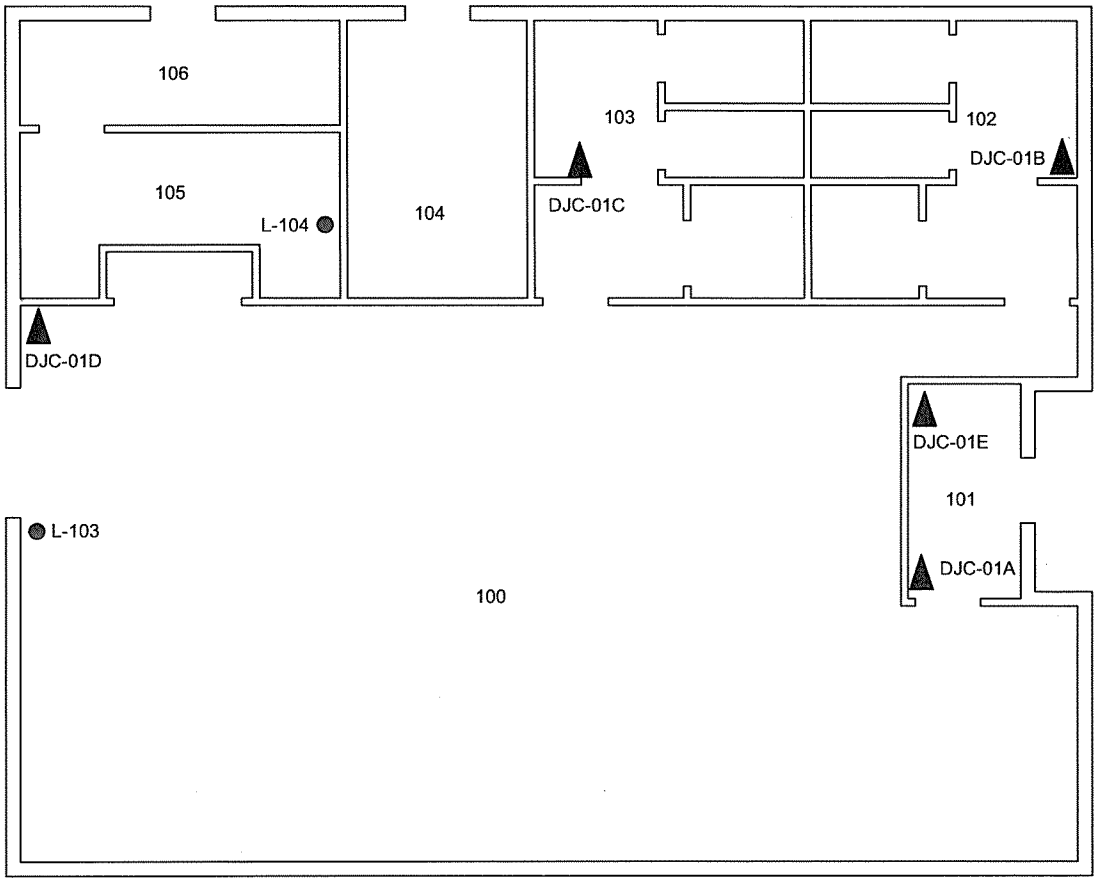
Silica is presumed to be present in ceramic tiles, drywall, cement, and concrete materials observed.

S.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.

S.8.1 Lead

If work will impact potential LCPs as outlined herein, additional sampling should be conducted to confirm lead content such that an appropriate risk assessment can be completed for the work that will be conducted.



STAFF FITNESS / ERT BUILDING

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 213, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030131 VM/DM
App'd By:	TW

Dwg. No.: S1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Proj: 123220504.200.1

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/20/2016

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A **Lab Sample ID:** 691600131-0543
Sample Description: Staff Fitness Building - Room 101/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691600131-0544
Sample Description: Staff Fitness Building - Room 102/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C **Lab Sample ID:** 691600131-0545
Sample Description: Staff Fitness Building - Room 103/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/19/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01D **Lab Sample ID:** 691600131-0546
Sample Description: Staff Fitness Building - Room 101/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01E **Lab Sample ID:** 691600131-0547
Sample Description: Staff Fitness Building - Room 100/Drywall Joint Compound Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/20/2016	White	0%	100%	None Detected	

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Analyst(s):

John Biesiadecki PLM (3)
Natalie D'Amico PLM (2)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201614:28:03

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 Or	551601755
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 STAFF FITNESS/ ERT BUILDING**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-103	*551601755-0001*		2/24/2016	<1400 ppm
	Site: OFF-WHITE- ROOM 100 Insufficient sample to achieve quantitative result. (Result provided is an estimate)			
L-104	*551601755-0002*		2/22/2016	<300 ppm
	Site: DUSTY ROSE- ROOM 105 Insufficient sample to reach reporting limit.			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 15:41:37

APPENDIX T
FINDINGS AND RECOMMENDATIONS—WORK RELEASE

Appendix T FINDINGS AND RECOMMENDATIONS—WORK RELEASE

The work release building was reportedly constructed in 1999 and consists of one level located outside of the main gates. The typical structural components and finishes associated with this building consist of stucco exterior walls, vinyl sheet flooring and concrete floors, drywall walls and ceilings.

Only the following areas (subject areas) and materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Drywall walls and ceilings throughout building

It should be noted that the following building locations, although included in the proposed scope of work, were not accessed during the project due to security restrictions or the lack of keys required to provide access. As such, limited comments, if any, will be made regarding the presence, extent and/or condition of hazardous building materials in the following areas:

- Rooms 104 and 106 were not accessed because the doors were locked and staff did not have a key during the assessment

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), are attached to this Appendix.

T.1 ASBESTOS

Stantec identified and sampled the following suspected ACMs:

- Drywall joint compound

Samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature.

A summary of the sample types, locations and analytical results is presented in Table T-1, below. A copy of the certificate of analysis provided by EMSL for the suspected ACM samples submitted is attached at the end of this Appendix.

Table T-1 Suspected ACM Sample Collection and Analysis Summary Work Release, William Head Institution, Victoria, BC

Sample Number	Material Description	Sample Location	Result (%/type asbestos)
DJC-01A	Drywall joint compound, applied to drywall walls and ceilings	Bathroom (101)	Not Detected
DJC-01B	Drywall joint compound, applied to drywall walls and ceilings	Bathroom (102)	Not Detected
DJC-01C	Drywall joint compound, applied to drywall walls and ceilings	Laundry Room (103)	Not Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, no ACMs were identified.

T.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing
- Solder used in bell fittings for cast iron pipes and in electrical equipment
- Vent and pipe flashings

With respect to paint, one paint chip sample was obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table T-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table T-2 Suspected LCP Sample Collection and Analysis Summary Work Release, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-08	Purple	Laundry Room (103)	<150	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCP's were identified.

T.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs are not presumed to be present within the fluorescent light fixture ballasts.

T.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately seven fluorescent light fixtures observed. Mercury may also be present in paints and adhesives.

T.5 MOULD

No mould and/or moisture-impacted building materials were observed.

T.6 OZONE-DEPLETING SUBSTANCES

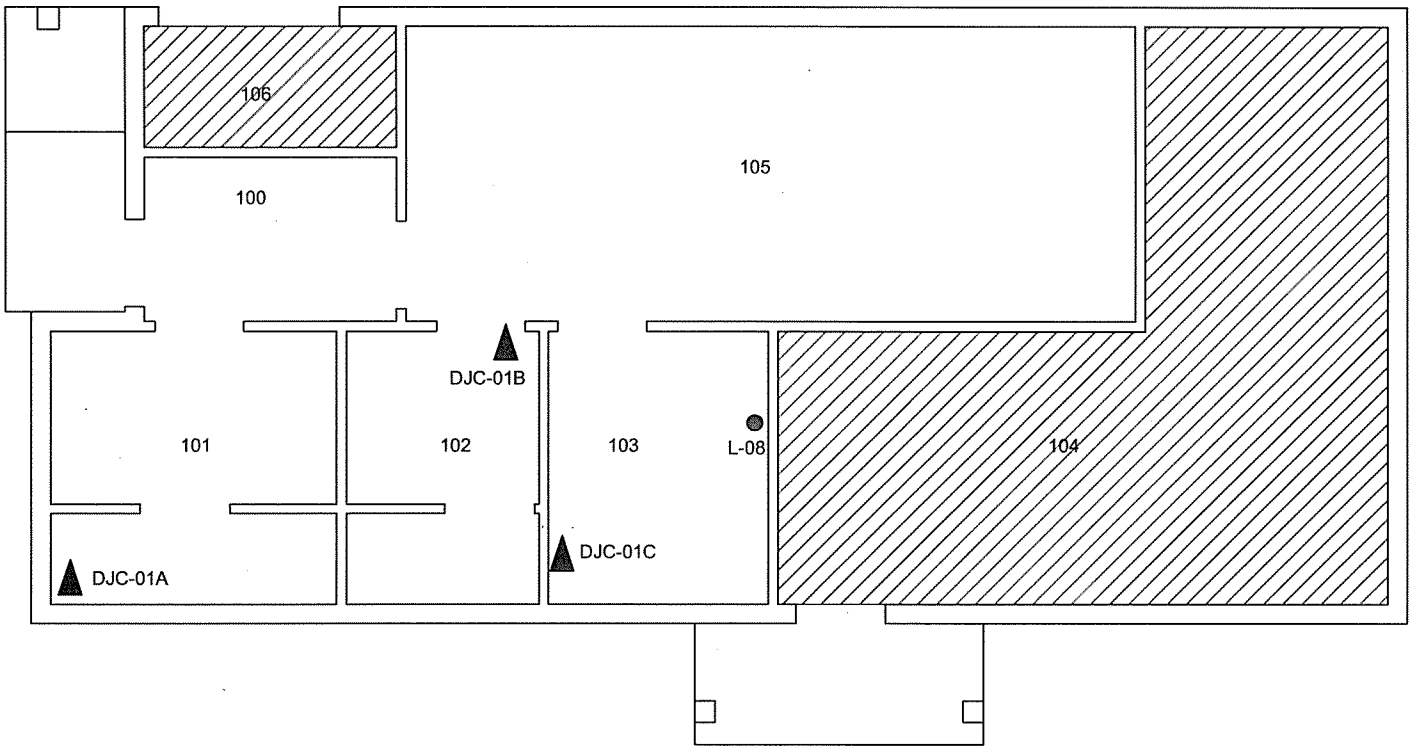
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigeration was observed.

T.7 SILICA

Silica is presumed to be present in ceramic tiles, drywall, cement, and concrete materials observed.

T.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



WORK RELEASE BUILDING

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- ACCESS NOT PROVIDED

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 212, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/31
Dwn. By:	CD SL2016030387 VM/DM
App'd By:	TW

Dwg. No.: T1

Stantec

EMSL Canada Inc.

4506 Dawson Street Burnaby, BC V5C 4C1
Phone/Fax: 604-757-3158 / (604) 757-4731
http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691600131
Customer ID: 55JACQ30L
Customer PO:
Project ID:

Attn: Amanda Bell
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 2/16/2016
Analyzed: 2/23/2016

Proj: 123220504.200.1

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DJC-01A ***Lab Sample ID:*** **691600131-0017**

Sample Description: Work Release - Bathroom (101)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01B ***Lab Sample ID:*** **691600131-0018**

Sample Description: Work Release - Bathroom (102)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Client Sample ID: DJC-01C ***Lab Sample ID:*** **691600131-0019**

Sample Description: Work Release - Laundry Room (103)/Drywall Joint Compound, Applied to Drywall Walls & Ceilings

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/23/2016	White	0%	100%	None Detected	

Analyst(s):

Alice Feng PLM (2)
Kathleen Cruz PLM (1)

Reviewed and approved by:

Alice Feng, Laboratory Manager
or Other Approved Signatory

None Detected = <0.5%. 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. Burnaby, BC

Initial report from: 02/23/201613:52:10

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 Or	551601653
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 WORK RELEASE**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-08	*551601653-0001*		2/18/2016	<150 ppm
	Site: LAUNDRY ROOM (103) Desc: PURPLE Insufficient sample to reach reporting limit.			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:00:35

APPENDIX U
FINDINGS AND RECOMMENDATIONS—PUMPHOUSE

Appendix U FINDINGS AND RECOMMENDATIONS—PUMPHOUSE

The Pumphouse was reportedly constructed prior to 1990. It is located outside the main gates and consists of one level. The typical structural components and finishes associated with this building consist of concrete floor and walls, and a metal ceiling.

Only the following areas (subject areas) and materials were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Concrete wall finishes

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings are attached to this Appendix.

U.1 ASBESTOS

No suspected ACMs were identified during the assessment.

U.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing

With respect to paint, a paint chip sample was obtained from the predominant suspected LCP applications within the subject areas. A summary of the sample types, locations and analytical results is presented in Table U-1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table T-1 Suspected LCP Sample Collection and Analysis Summary Pumphouse, William Head Institution, Victoria, BC

Sample No.	Sample Colour	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
L-09	Light Green	Room 100, Concrete Walls	<120	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no LCPs were identified.

U.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 10 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

U.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 10 fluorescent light fixtures observed. Mercury may also be present in adhesives.

U.5 MOULD

No mould and/or moisture-impacted building materials were observed.

U.6 OZONE-DEPLETING SUBSTANCES

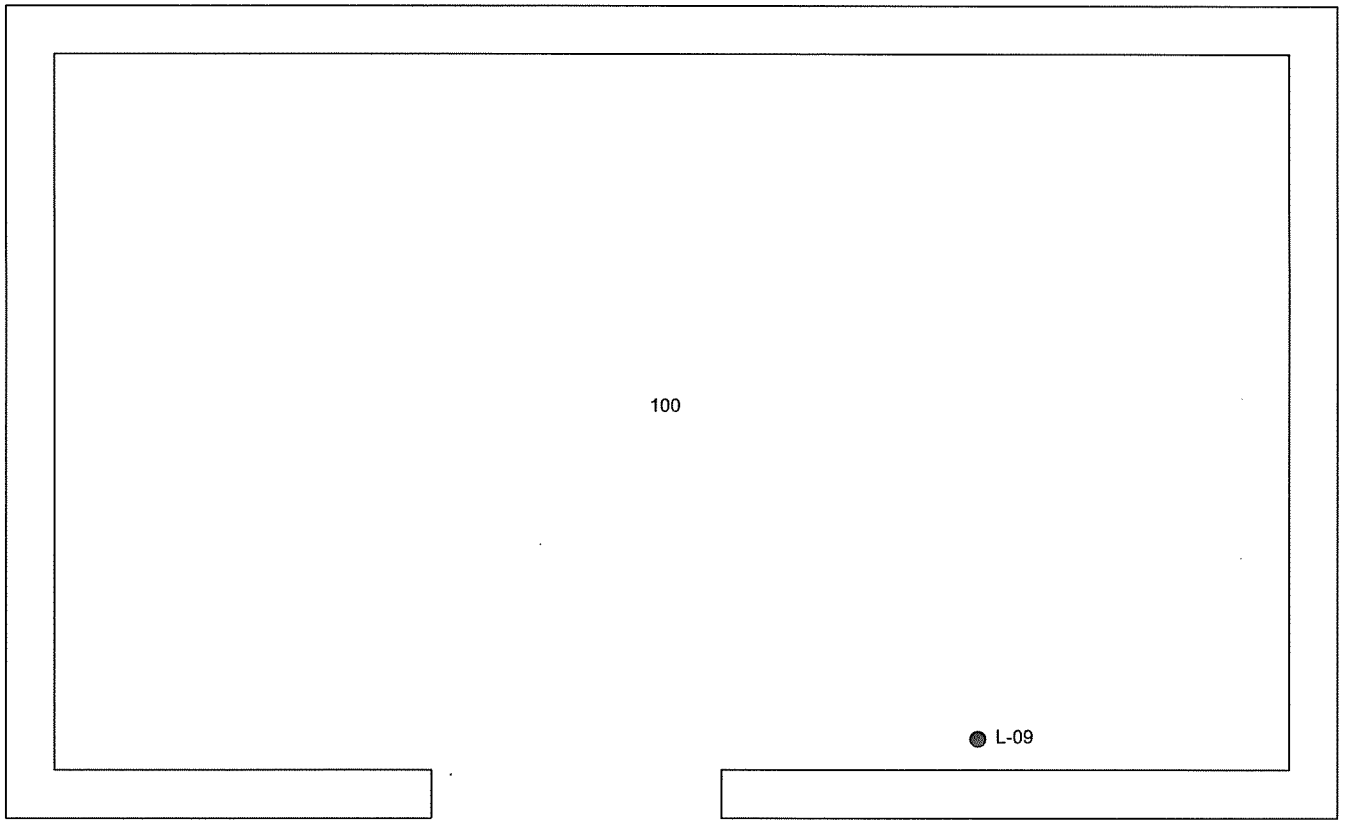
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

U.7 SILICA

Silica is presumed to be present in the cement and concrete materials observed.

U.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



PUMP HOUSE

LEGEND

● LEAD PAINT SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 110, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030133 PK/DM
App'd By:	TW

Dwg. No.: U1

Stantec

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 Or	551601654
CustomerID:	55JACQ30L
CustomerPO:	123220504.200.1
ProjectID:	

Attn: **Amanda Bell**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 02/17/16 10:11 AM
Collected:

Project: **123220504.200.1 PUMP HOUSE**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L-09	*551601654-0001*		2/18/2016	<120 ppm
	Site: LIGHT GREEN- ROOM 100 Insufficient sample to reach reporting limit.			

Lisa Podzyhun
or other approved signatory

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

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

Initial report from 02/24/2016 08:01:43

APPENDIX V
FINDINGS AND RECOMMENDATIONS—STORAGE

Appendix V FINDINGS AND RECOMMENDATIONS—STORAGE

The storage building was reportedly constructed prior to 1990 and consists of one level. The typical structural components and finishes associated with this building consist of concrete floor, metal interior and exterior walls, and a metal ceiling.

Only the following areas (subject areas) were assessed for this project, as it was communicated that these may be disturbed by planned renovations:

- Wall and ceiling finishes

The results of the assessment for each of the considered hazardous materials within the subject areas are provided in the following sub-sections.

Floor plan drawings are attached to this Appendix.

V.1 ASBESTOS

No suspected ACMs were identified during the assessment.

V.2 LEAD

Lead is expected to be present in the following:

- Lead-acid batteries used in emergency lighting
- Older electrical wiring materials and sheathing

No suspected LCPs were identified.

V.3 POLYCHLORINATED BIPHENYLS

Based on the construction date of the subject building, PCBs may be present in the fluorescent light ballasts of the approximately 10 light fixtures observed. As the ballasts were energized, they could not be inspected at the time of the assessment for health and safety reasons.

V.4 MERCURY

Mercury vapour is likely to be present in the light tubes within the approximately 10 fluorescent light fixtures observed. Mercury may also be present in adhesives.

V.5 MOULD

No mould and/or moisture-impacted building materials were observed.

V.6 OZONE-DEPLETING SUBSTANCES

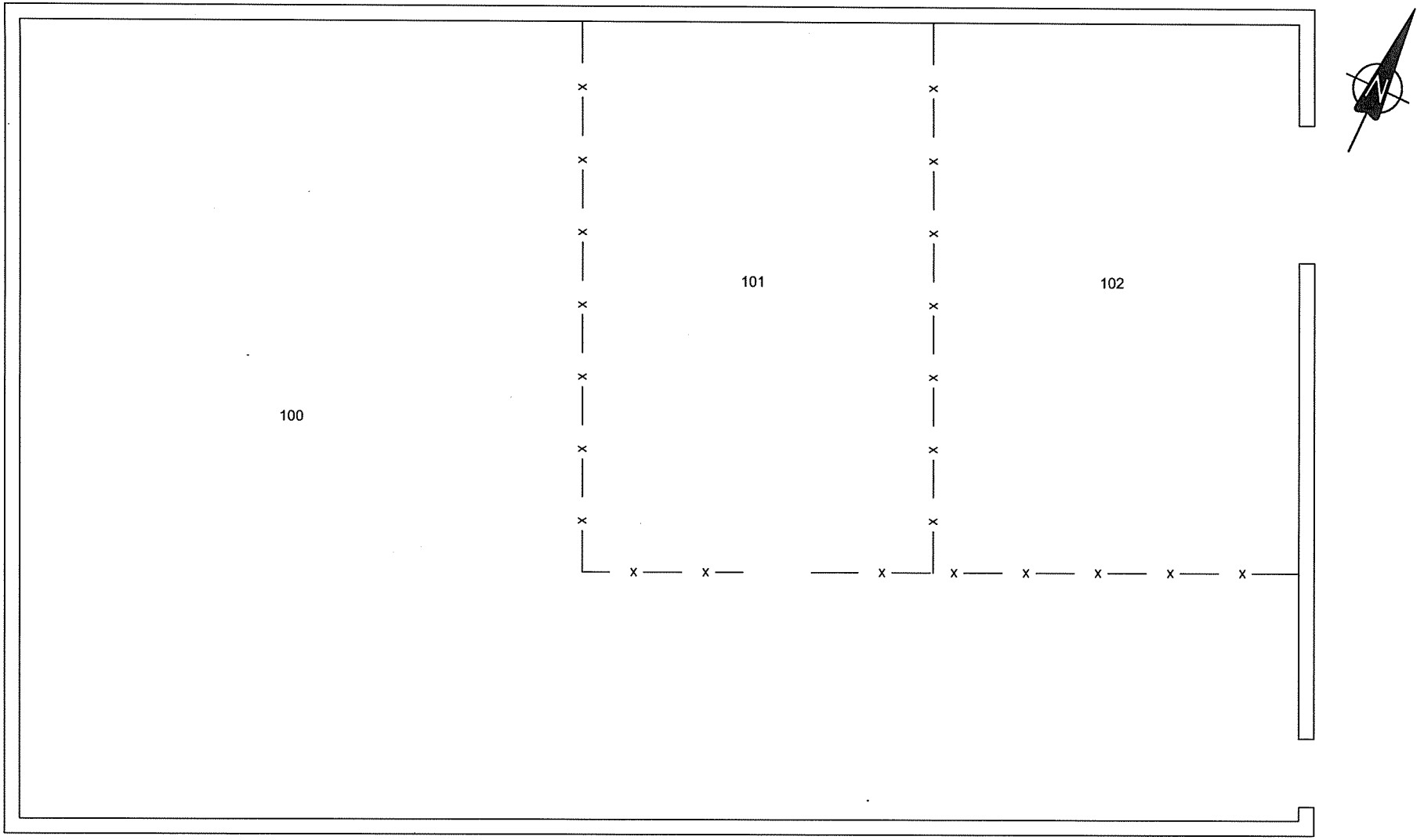
No building-related refrigeration or air conditioning equipment with suspected ODS-containing refrigerants was observed.

V.7 SILICA

Silica is presumed to be present in the concrete floor materials observed.

V.8 RECOMMENDATIONS

If identified hazardous building materials are to be impacted during the planned renovation project, action will be required in accordance with the material-by-material general recommendations provided in Section 5.0 of the main body of this report.



STORAGE BUILDING

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS

UNIT 206, WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220504
Scale:	N.T.S.
Date:	16/03/10
Dwn. By:	CD SL2016030134 PK/DM
App'd By:	TW

Dwg. No.: V1

Stantec

APPENDIX B

Partial Fire Alarm Inspection Report – March 2016

64 pages including cover page

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Yes - Tested correctly **No** - Did not test correctly **N/A** - Function or feature not provided on this Fire Alarm System

Building Name: WILLIAM HEAD INSTITUTE

Building Address: 6000 WILLIAM HEAD RD.
VICTORIA, , BC V9C 0B5

Building Number:

Contract Number: 224626-0012

Prop Number: 62-998-0213

System Manufacturer: EST & SIMPLEX

Model:

Customer PO#: 21807-16-2286959-0

A	System provides single-stage operation.	Yes ☑	No ☐	
B	System provides two-stage operation.	Yes ☐	No ☑	
C	The entire fire alarm system has been inspected and tested in accordance with CAN/ULC-S536, Inspection and Testing of Fire Alarm Systems.	Yes ☑	No ☐	
D	The fire alarm system documentation is on site and includes a description of the system.	Yes ☑	No ☐	N/A ☐
E	The fire alarm system is fully functional.	Yes ☑	No ☐	N/A ☐
F	The fire alarm system has deficiencies noted on the pages attached.	Yes ☑	No ☐	N/A ☐
G	Comments: Please see Notes where applicable.			
H	A copy of this report will be given to the following, who is the owner or owner's representative for this building: Mr. Chris Barrett	Yes ☑	No ☐	

This is to certify that the information contained in this Fire Alarm Preventative Maintenance Report is correct and complete.

BVB	Troy Life & Fire Safety Ltd.	(250) 475-1076
Printed Name of Primary or Supervising Technician Conducting the Test and Inspection	Company	Telephone
Signature of Primary or Supervising Technician Conducting the Test and Inspection	Identification Number of Primary or Supervising Technician Conducting the Test and Inspection	
Printed Name Technician Conducting the Test and Inspection	Company	Telephone
Signature of Technician Conducting the Test and Inspection	Identification Number Technician Conducting the Test and Inspection	

1	Do you have a city tie? If so, take the necessary steps to alert the Central Station / Fire Department. DO NOT USE the Fire Department emergency telephone number.		Yes
	Name of person contacted at the Central Station / Fire Department.		Gatehouse Security
	Time Out: 3:30 Time In: 8:30	Date: Feb.22-26, 2016	
	Time Out: _____ Time In: _____	Date: _____	
	Time Out: _____ Time In: _____	Date: _____	

2	Do you have auxiliary functions that can impair building functions, such as elevator capture, fan shutdown, door holders, etc?	Yes ☑	No ☐	N/A ☐
	Can these be disabled and tested by groups?	Yes ☑	No ☐	N/A ☐
3	Have building occupants been made aware of the fire alarm testing?	Yes ☑	No ☐	N/A ☐
4	Has a pre-determined time been established for testing and signalling devices?	Yes ☑	No ☐	N/A ☐
5	Have provisions been made for acquiring access to the secured areas of the building?	Yes ☑	No ☐	N/A ☐
6	Has an alternative plan been established to alert building occupants and the local fire department?	Yes ☑	No ☐	N/A ☐

E2.1 CONTROL UNIT OR TRANSPONDER TEST

Control unit or transponder location:	Monitoring Panel at Gatehouse. All slave panels at various building electrical rooms.
Control unit or transponder identification:	

A	Power 'ON' visual indicator operates.	Yes ☑	No ☐	N/A ☐
B	Common visual trouble signal operates.	Yes ☑	No ☐	N/A ☐
C	Common audible trouble signal operates.	Yes ☑	No ☐	N/A ☐
D	Trouble signal silence switch operates.	Yes ☑	No ☐	N/A ☐
E	Main power supply failure trouble signal operates.	Yes ☑	No ☐	N/A ☐
F	Ground fault tested on positive and negative initiates trouble signal.	Yes ☑	No ☐	N/A ☐
G	Alert signal operates.	Yes ☐	No ☐	N/A ☑
H	Alarm signal operates.	Yes ☑	No ☐	N/A ☐
I	Automatic transfer from alert signal to alarm signal operates.	Yes ☐	No ☐	N/A ☑
J	Manual transfer from alert signal to alarm signal operates.	Yes ☐	No ☐	N/A ☑
K	Automatic transfer from alert signal to alarm signal cancel (acknowledge) feature operates on a two-stage system.	Yes ☐	No ☐	N/A ☑
L	Alarm signal silence inhibit function operates.	Yes ☐	No ☐	N/A ☑
M	Alarm signal manual silence operates.	Yes ☑	No ☐	N/A ☐
N	Alarm signal silence visual indication operates.	Yes ☑	No ☐	N/A ☐
O	Alarm signal, when silenced, automatically reinitiates upon subsequent alarm.	Yes ☑	No ☐	N/A ☐
P	Alarm signal silence automatic cut-out timer.	Time: n/a		

Q	Audible and visual alert signals and alarm signals programmed and operate per design and specification; or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	Yes ☑	No ☐	N/A ☐
R	Input circuit, alarm and supervisory operation, including audible and visual indication operates.	Yes ☑	No ☐	N/A ☐
S	Input circuit supervision fault causes a trouble indication.	Yes ☑	No ☐	N/A ☐
T	Output circuit alarm indicators operate.	Yes ☑	No ☐	N/A ☐
U	Output circuit supervision fault causes a trouble indication.	Yes ☑	No ☐	N/A ☐
V	Visual indicator test (lamp test).	Yes ☑	No ☐	N/A ☐
W	Coded signal sequences operate not less than the required number of times and the correct alarm signal operates thereafter.	Yes ☐	No ☐	N/A ☑
X	Coded signal sequences are not interrupted by subsequent alarms.	Yes ☐	No ☐	N/A ☑
Y	Ancillary device by-pass results in a trouble signal.	Yes ☑	No ☐	N/A ☐
Z	Input circuit to output circuit operation, including ancillary device circuits, for correct program operation, as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	Yes ☑	No ☐	N/A ☐
AA	Fire alarm system reset operates.	Yes ☑	No ☐	N/A ☐
BB	Main power supply to emergency power supply transfer operates.	Yes ☑	No ☐	N/A ☐
CC	Status change confirmation (smoke detectors only) verified. [Refer Subsection 5.7.4.3, Status Change Confirmation (Alarm Verification Feature)].	Yes ☐	No ☐	N/A ☑
DD	Receipt of the alarm transmission to the fire signal receiving centre.	Yes ☑	No ☐	N/A ☐
EE	Receipt of the supervisory transmission to the fire signal receiving centre.	Yes ☑	No ☐	N/A ☐
FF	Receipt of the trouble transmission to the fire signal receiving centre.	Yes ☑	No ☐	N/A ☐
GG	Record the name and telephone number of the fire signal receiving centre.	Name: Gatehouse Security		
		Telephone:		
HH	Operation of the fire signal and receiving centre disconnect means results in a specific trouble indication at the control unit or transponder and transmits a trouble signal to the fire signal receiving cetnre.	Yes ☑	No ☐	N/A ☐

E2.2 VOICE COMMUNICATION TEST

A	Power 'ON' indicator operates.	Yes ☐	No ☐	N/A ☑
B	Common visual trouble signal operates.	Yes ☐	No ☐	N/A ☑
C	Common audible trouble signal operates.	Yes ☐	No ☐	N/A ☑
D	Trouble signal silence switch operates.	Yes ☐	No ☐	N/A ☑
E	All-call voice paging, including visual indicator, operates.	Yes ☐	No ☐	N/A ☑
F	Output circuits for selective voice paging, including visual indication, operates.	Yes ☐	No ☐	N/A ☑
G	Output circuits for selective voice paging trouble operation, including visual indication, operates.	Yes ☐	No ☐	N/A ☑
H	Microphone, including press to talk switch, operates.	Yes ☐	No ☐	N/A ☑
I	Operation of voice paging does not interfere with initial inhibit time of alert signal or alarm signal.	Yes ☐	No ☐	N/A ☑

J	All-call voice paging operates (on emergency power supply).	Yes ☐	No ☐	N/A ☑
K	Upon failure of one amplifier, system automatically transfers to backup amplifier(s).	Yes ☐	No ☐	N/A ☑
L	Circuits for emergency telephone call-in operation, including audible and visual indication, operates.	Yes ☐	No ☐	N/A ☑
M	Circuits for emergency telephones for operation, including two-way voice communication, operates.	Yes ☐	No ☐	N/A ☑
N	Circuits for emergency telephone trouble operation, including visual indication, operates.	Yes ☐	No ☐	N/A ☑
O	Emergency telephone verbal communication operates.	Yes ☐	No ☐	N/A ☑
P	Emergency telephone operable or in-use tone at handset operates.	Yes ☐	No ☐	N/A ☑

E2.3 CONTROL UNIT OR TRANSPONDER INSPECTION

Control unit or transponder location:	Various building electrical rooms and entrance lobbies.
Control unit or transponder identification:	

A	Input circuit designations correctly identified in relation to connected field devices.	Yes ☑	No ☐	N/A ☐
B	Output circuit designations correctly identified in relation to connected field devices.	Yes ☑	No ☐	N/A ☐
C	Correct designations for common control functions and indicators.	Yes ☑	No ☐	N/A ☐
D	Plug-in components and modules securely in place.	Yes ☑	No ☐	N/A ☐
E	Plug-in cables securely in place.	Yes ☑	No ☐	N/A ☐
F	Record the date, revision and version of firmware and software program.	Date:		
		Rev:	Ver:	
G	Clean and free of dust and dirt.	Yes ☑	No ☐	N/A ☐
H	Fuses in accordance with manufacturer's specification.	Yes ☑	No ☐	N/A ☐
I	Control unit or transponder lock functional.	Yes ☑	No ☐	N/A ☐
J	Termination points from wiring to field devices secure.	Yes ☑	No ☐	N/A ☐

E2.4 POWER SUPPLY INSPECTION

Control unit or transponder location:	Various building electrical rooms and entrance lobbies.
Control unit or transponder identification:	

A	Fused in accordance with the manufacturer's marked rating of the system.	Yes ☑	No ☐	N/A ☐
B	Adequate to meet the requirements of the system.	Yes ☑	No ☐	N/A ☐
C	Breaker properly labelled and locked.	Yes ☑	No ☐	N/A ☐

E2.5 EMERGENCY POWER SUPPLY TEST AND INSPECTION

Control unit or transponder location:	See Project Notes / Remarks Sheet for Battery Test Results
Control unit or transponder identification:	

A	Correct battery type as recommended by manufacturer.	Yes ☐	No ☐	N/A ☐
B	Correct battery rating as determined by battery calculations based on full system load.	Yes ☐	No ☐	N/A ☐
C	Battery voltage with main power supply 'ON'.	_____ V dc		
D	Battery voltage and current with main power supply 'OFF' and fire alarm system in supervisory condition.	Voltage: _____ V dc Current: _____ A		
E	Battery voltage and current with main power supply 'OFF' and fire alarm system in full load alarm condition.	Voltage: _____ V dc Current: _____ A		
F	Charging current.	_____ A		
G	Physical damage.	Yes ☐	No ☐	N/A ☐
H	Terminals cleaned and lubricated.	Yes ☐	No ☐	N/A ☐
I	Terminals clamped tightly	Yes ☐	No ☐	N/A ☐
J	Correct electrolyte level.	Yes ☐	No ☐	N/A ☐
K	Specific gravity of electrolyte is within manufacturer's specifications.	Yes ☐	No ☐	N/A ☐
L	Electrolyte leakage.	Yes ☐	No ☐	N/A ☐
M	Adequate ventilation.	Yes ☐	No ☐	N/A ☐
N	Battery manufacturer's date code or in-service date.	Date:		
O	Disconnection causes trouble signal.	Yes ☐	No ☐	N/A ☐
P	Indicate type of battery tests performed: Test Pass?			
	(i) Required supervisory load for 24 h followed by the required full load operation; or	Yes ☐	No ☑	
	(ii) A silent test by using the load resistor method may be used for the full duration test (Refer to Appendix F1, Silent Test); or	Yes ☐	No ☑	
	(iii) Silent accelerated test. (Refer to Appendix F2, Silent Accelerated Test); or	Yes ☐	No ☑	
	(iv) A battery capacity meter test. (Refer to Appendix F3, Battery Capacity Meter Test); or	Yes ☐	No ☑	
	(v) In lieu of the above battery tests, replace the battery with a new set having a current date code, amp-hour capacity and type as recommended by the manufacturer.	Yes ☐	No ☐	
Q	Record calculated battery capacity (Refer to Appendix F4.1-C).	_____ A•h		
R	Record battery terminal voltage after completion of tests.	_____ V dc		
S	Battery voltage not less than 85% of its rating after the tests.	Yes ☐	No ☐	N/A ☐
T	Generator provides power to the AC circuit serving the fire alarm system.	Yes ☐	No ☐	N/A ☐
U	Trouble condition at the emergency generator shall result in an audible common trouble signal and a visual indication at the required annunciator.	Yes ☐	No ☐	N/A ☐

E2.6 ANNUNCIATOR AND REMOTE TROUBLE SIGNAL UNIT TEST AND INSPECTION

Annunciator or remote trouble signal unit location:	Various building entrances where applicable
Annunciator or remote trouble signal unit identification:	

A	Power 'on' indicator operates.	Yes ☐	No ☐	N/A ☑

B	Individual alarm, and supervisory input zones are clearly indicated and separately designated.	Yes ☑	No ☐	N/A ☐
C	Individual alarm and supervisory zone designation labels are properly identified.	Yes ☑	No ☐	N/A ☐
D	Common trouble signal operates.	Yes ☑	No ☐	N/A ☐
E	Visual indicator test (lamp test) operates.	Yes ☐	No ☐	N/A ☑
F	Input wiring from control unit or transponder is supervised.	Yes ☑	No ☐	N/A ☐
G	Alarm signal silence visual indicator operates.	Yes ☐	No ☐	N/A ☑
H	Switches for ancillary functions operate as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	Yes ☐	No ☐	N/A ☑
I	Other ancillary function visual indicators operate.	Yes ☐	No ☐	N/A ☑
J	Manual activation of alarm signal and indication operates.	Yes ☑	No ☐	N/A ☐
K	Displays are visible in installed location operates.	Yes ☑	No ☐	N/A ☐
L	Operates on emergency power.	Yes ☑	No ☐	N/A ☐

E2.7 ANNUNCIATORS OR SEQUENTIAL DISPLAYS

Annunciator or sequential display location:	Various building entrances where applicable
Annunciator or sequential display identification:	

A	Power 'on' indicator operates.	Yes ☑	No ☐	N/A ☐
B	Individual alarm and supervisory zone indication operates.	Yes ☑	No ☐	N/A ☐
	Exception: Operation of each individual alarm and supervisory zone indication gives the identical indication, or lights the identical indicators at the other annunciator(s) and sequential display(s). Specify Method of confirmation: _____	Yes ☑	No ☐	N/A ☐
	Minimum of one alarm zone and one supervisory zone tested per annunciator or sequential display to confirm operation.	Yes ☑	No ☐	N/A ☐
C	Individual alarm and supervisory zone designation labels are properly identified.	Yes ☑	No ☐	N/A ☐
D	Common trouble signal operates.	Yes ☑	No ☐	N/A ☐
E	Visual indicator tests (lamp test) operates.	Yes ☑	No ☐	N/A ☐
F	Input wiring from control unit or transponder is supervised.	Yes ☑	No ☐	N/A ☐
G	Alarm signal silence visual indicator operates.	Yes ☑	No ☐	N/A ☐
H	Switches from ancillary functions operate as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	Yes ☐	No ☐	N/A ☑
I	Other ancillary functions visual indicators operate.	Yes ☐	No ☐	N/A ☑
J	Manual activation of alarm signal and indication operates.	Yes ☑	No ☐	N/A ☐
K	Displays are visible in installed location.	Yes ☑	No ☐	N/A ☐

E2.8 REMOTE TROUBLE SIGNAL UNIT TEST AND INSPECTION

Remote trouble signal unit location:	

Remote trouble signal unit identification:	

A	Input wiring from control unit or transponder is supervised.	Yes ☐	No ☐	N/A ☑
B	Visual trouble signal operates.	Yes ☐	No ☐	N/A ☑
C	Audible trouble signal operates.	Yes ☐	No ☐	N/A ☑
D	Audible trouble signal silence operates.	Yes ☐	No ☐	N/A ☑

E2.9 PRINTER TEST

Printer location:	
Printer Identification:	

A	Operates as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	Yes ☐	No ☐	N/A ☑
B	Zone of each alarm initiating device is correctly printed.	Yes ☐	No ☐	N/A ☑
C	Rated voltage is present.	Yes ☐	No ☐	N/A ☑

E2.10 DATA COMMUNICATION LINK TEST

Control unit or transponder location:	
Control unit or transponder identification:	
Data communication link identification:	

A	Confirm that a trouble signal is received at the control unit or transponder under an open loop fault for each data communication link (DCL).	Yes ☑	No ☐	N/A ☐
B	Where fault isolation modules are installed in data communication links serving field devices, wiring shall be shorted on the isolated side, annunciation of the fault confirmed, and then a field device on the source side shall be operated, and activation confirmed at the control unit or transponder.	Yes ☐	No ☐	N/A ☑
C	Where fault isolation in data communication links is provided between control units or transponders and between transponders, introduce a short circuit fault and confirm annunciation of the fault and operation outside the shorted section between each pair of:			
	(i) Control unit to control unit	Yes ☐	No ☐	N/A ☐
	(ii) Control unit to transponder	Yes ☐	No ☐	N/A ☐
	(iii) Transponder to transponder	Yes ☐	No ☐	N/A ☐

E2.11 ANCILLARY DEVICE CIRCUIT TEST

RECORD SPECIFIC TYPE OF ANCILLARY CIRCUIT	OPERATION OF ANCILLARY CIRCUIT CONFIRMED		
	Yes ☐	No ☐	N/A ☑
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐

	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐
	Yes ☐	No ☐	N/A ☐

VICTORIA - #3-3318 Oak Street
Victoria, BC V8X 1R1
(250) 475-1076

E3.1 FIELD DEVICE TESTING· LEGEND AND NOTES

DEVICE	DESCRIPTION	TYPE	MODEL NO.
M	Manual Pull Station	single stage	EST & Simplex
RHT	Heat Detector, Restorable	135* R. of R.	281 / CR135
HT	Heat Detector, Non-restorable	194* FT	284 /CF135
S	Smoke Detector	ION / PHOTO	EST & Simplex
Sensitivity Test Method or Test Equipment:			
Manufacturer Sensitivity Range:			
RI	Remote Indicator Unit		
DS	Duct Smoke detector	ION	6260C
	Other Type of Detector		
SFD	Supporting Field Device (Monitor)		
FS	Sprinkler Flow Switch		
SS	Sprinkler Supervisory device		
	Other Supervisory Devices (low Pressure, low Water, low Temperature, Power loss, etc.)		
EM	Fault Isolation Module		
B	Bell	coil	439D/333D/6100
H	Horn		
HS	Horn Strobe		
V	Visible Signal Device		
SP	Cone Type Speaker		
HSP	Horn Type Speaker		
AD	Ancillary Device		
ET	Emergency Telephone		
EOL	End-of-Line Resistor		
BATT	Battery		
SIL	Signal Silence Switch		

COMMENTS

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
BUILDING 104 - GATE HOUSE:															
CONTROL ROOM		EST1-2Z6 PNL.													
MAIN FLOOR MANUAL:															
VEHICLE EXIT	M			1				✓	✓						
PEDESTRIAN FRONT EXIT	M			1				✓	✓						
PEDESTRIAN REAR EXIT	M			1				✓	✓						
TRAINING ROOM EXIT	M			1				✓	✓						
STAIRWELL EXIT	M			1				✓	✓						
OUTSIDE MECH. ROOM EXIT	M			1				✓	✓						
MAIN FLOOR SMOKE:															
CONTROL ROOM	S			2				✓	✓						
CONTROL RM. COMPUTER RM.	S			2				✓	✓						
COMPUTER RM. FLOORSPACE	S			2				✓	✓						
#120 " RM. FLOORSPACE	S			2				✓	✓						
Room #120 - above shelving	S			2				✓	✓						
STRIP SEARCH ROOM #116:	S			3				✓	✓						
STAIRWELL:															
TOP OF STAIRS	S			4				✓	✓						
SPRINKLER FLOW:															
O/S MECH. ROOM	F.S.			5											

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E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
BUILDING 104 CONT'D...															
SPRINKLER VALVES:															
O/S MECH. ROOM	SSx2			S1											
SIGNAL CIRCUIT:															
MAIN LOBBY	BELL							✓							
TRAINING ROOM	BELL							✓							
2ND FLOOR	BELL							✓							
BUILDING 106 - ADMINISTRATION:															
ELECTRICAL ROOM		6500 PANEL													
BASEMENT:															
TEL. ROOM	RHT			1				✓	✓						
ELECTRICAL ROOM	RHT			1				✓	✓						
VAULT ROOM (A & D AREA)	RHT			1				✓	✓						
A & D CHANGE ROOM 114	RHT			1				✓	✓						
A & D CHANGE-STORAGE RM.127	RHT			1				✓	✓						
A & D OFFICE	RHT	(x2)		1				✓	✓						
A & D INMATE STORAGE	S			1				✓	✓						
A & D INMATE STORAGE	RHT			1				✓	✓						
HALL O/S INMATE STORAGE	RHT			1				✓	✓						
A & D ENTRANCE	RHT			1				✓	✓						
A & D ENTRANCE FOYER	RHT			1				✓	✓						

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E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
BUILDING 106 BSMT. CONT'D...															
DINING AREA WEST	RHT			1				✓	✓						
DINING AREA CENTRE	RHT			1				✓	✓						
DINING AREA EAST	RHT			1				✓	✓						
DINING AREA EXIT	M			1				✓	✓						
" " WOMENS WRM.106	RHT			1				✓	✓						
" " MENS WRM.107	RHT			1				✓	✓						
" " HANDICAP WRM.	RHT			1				✓	✓						
DINING AREA OFFICE	RHT			1				✓	✓						
CANTEEN - NORTH	RHT			1				✓	✓						
CANTEEN - SOUTH	RHT			1				✓	✓						
HALL O/S ELECTRICAL ROOM	RHT			1				✓	✓						
JANITORS ROOM	RHT			1				✓	✓						
" " HALLWAY	RHT			1				✓	✓						
HALLWAY EXIT	M			1				✓	✓						
BOILER ROOM	HT-R			1				✓	✓						Fixed Temp.
LUNCHROOM 111	RHT			1				✓	✓						
COMPUTER RM. 130	RHT	282C	197*	1				✓	✓						
STORAGE ROOM 121	RHT			1				✓	✓						
MAIN FLOOR:															
OFFICE HALLWAY	RHT			2				✓	✓						
HALLWAY EXIT	M			2				✓	✓						
OFFICE - ROOM 205	RHT			2				✓	✓						
ACCT./FINANCE DEPT. - ROOM 220	RHT			2				✓	✓						
ACCT. CHIEF OFFICE - ROOM 206	RHT			2				✓	✓						
MGR. OF OPERATIONS - ROOM 214	RHT			2				✓	✓						
OFFICE HALLWAY	RHT			2				✓	✓						

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Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
LADIES WRM. -RM.216 -NORTH				2				✓	✓						
LADIES WRM. - RM. 216- SOUTH	RHT			2				✓	✓						
MENS WRM. - RM 217- NORTH	RHT			2				✓	✓						
MEN'S WRM. 217- SOUTH	RHT			2				✓	✓						

BLDG. 106 MAIN FLR. CONT'D...

JANITORS ROOM - ROOM 219	RHT			2				✓	✓						
OFFICE - ROOM 215	RHT			2				✓	✓						
CHIEF ASST. OFFICE - ROOM 213	RHT			2				✓	✓						
HALL MECH. ROOM 218	RHT			2				✓	✓						
BOARD ROOM - ROOM 211	RHT	(x2)		2				✓	✓						
RECEPTION AREA	RHT			2				✓	✓						
FILE STORAGE ROOM	S			2				✓	✓						
MAIN EXIT	M			2				✓	✓						
MAIN EXIT FOYER	RHT			2				✓	✓						
ASS'T TO DEP. WARDEN - ROOM 209	RHT			2				✓	✓						

BUILDING 106 MAIN FL./ CONT'D...

DEP. WARDEN OFFICE- ROOM 208	RHT			2				✓	✓						
ADMIN. OFFICER OFFICE- ROOM 207	RHT			2				✓	✓						
WARDEN OFFICE - ROOM 201	RHT			2				✓	✓						
OFFICE - ROOM 202	RHT			2				✓	✓						
ADMIN. OFFICER - ROOM 203	RHT			2				✓	✓						
HANDICAP W'RM.	RHT			2				✓	✓						
ASST. WARDEN - ROOM 204	RHT			2				✓	✓						

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BUILDING 106 MAIN FL./ CONT'D...															
STAIRWELL:				3											
TOP OF STAIRS	S			3				✓	✓						
STAIRWELL EXIT	M			3				✓	✓						
BASEMENT DUCT SMOKE DET.	DSx2	in Mech. Room		4				✓	✓						
SIGNAL CIRCUIT:															
RECEPTION AREA	BELL							✓							
MAIN FL. HALL	BELL							✓							
BASEMENT HALL	BELL							✓							
BSMT. ENTRANCE TO A&D	BELL							✓							
DINING ROOM	BELL							✓							
BLDNG 109 - HOSPITAL/DISASSOCIATION:															
CONTROL ROOM		6500 PANEL													
GENERAL ALARM:				1											
BUILDING PULL STNS.	M			1				✓	✓						
CONTROL ROOM PULL STNS.:				2											
CONTROL ROOM	M			2				✓	✓						

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BLDNG 109 - HOSPITAL/DISASSOCIATION: CONT

HOSPITAL PULL STNS.:				3				✓	✓						
NORTH HALLWAY EXIT	M			3				✓	✓						
MAIN EXIT	M			3				✓	✓						
NURSES STATION	M			3				✓	✓						
SOUTH HALLWAY EXIT	M			3				✓	✓						
DISASSOCIATION SMOKE DET.:				4											
DISASSOCIATION AREA	Sx6			4				✓	✓						
PENTHOUSE PULL STNS.:				5											
PENTHOUSE MECH. RM. EXIT	M			5				✓	✓						
DUCT SMOKE DETECTORS:				6											
PENTHOUSE MECH. RM.	DSx8			6				✓	✓						
HOSPITAL SMOKE DETECTORS:				7											
HOSPITAL ROOM 201	S			7				✓	✓						
HOSPITAL ROOM 206	S			7				✓	✓						
HOSPITAL ROOM 207	S			7				✓	✓						
HOSPITAL ROOM 209	S			7				✓	✓						

SIGNAL CCT. #1:

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E2.3 FIRE ALARM DEVICE REPORT

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HOSPITAL BELLS	Bx3							✓							
DISASSOCIATION BELLS	Bx2							✓							
PENTHOUSE BELLS	B							✓							

BUILDING 109 CONT'D...

SIGNAL CCT. #2:

CONTROL ROOM CHIME	C	339D						✓							
PENTHOUSE CHIME	C	"						✓							
NURSES STATION CHIME	C	"						✓							

BUILDING 30 - STORES:

MAIN ENTRANCE RECEPTION		6500 PANEL													
EAST STORES / WEST STORES	Bx2							✓							

ZONE 1 - STORES BUILDING:

MAIN RECEPTION EXIT	M	270SPO		1				✓	✓						
MAIN STORES EXIT	M	"		1				✓	✓						

ZONE 2 - FLAMMABLE STORAGE:

OUTSIDE STORAGE ROOM	HT	(EXP)		2											FIXED TEMP
O/S STORAGE RM. EXIT	M	(EXP)		2				✓	✓						

ZONE 3 - SPRINKLER FLOW:

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E2.3 FIRE ALARM DEVICE REPORT

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REAR SPKLR./MECH. RM.	F.S.			3											

BUILDING 206 - STORAGE SHED:

INSIDE SHED		FIRESHIELD													
SHED AREA	HTx2														FIXED TEMP - FT
SHED EXIT EAST	M							✓	✓						
SHED	B							✓							
SHED EXIT WEST	M							✓	✓						

BUILDING #29 - CHAPEL:

MAIN ENTRANCE		FIRESHIELD													
BASEMENT	HTx2														FIXED TEMP
CHAPEL ALTER	RHT							✓	✓						
CHAPEL	RHT							✓	✓						
CHAPEL EXIT	M							✓	✓						
MENS W'RM.	RHT							✓	✓						
MENS W'RM FOYER	RHT							✓	✓						
WOMENS W'RM.	RHT							✓	✓						
WOMENS W'RM. FOYER	RHT							✓	✓						
MAIN EXIT	M							✓	✓						
CHAPEL FOYER	RHT							✓	✓						
CHAPEL FOYER OFFICE	RHT							✓	✓						
2ND FLOOR AREA	RHT							✓	✓						
2ND FLOOR OFFICE	RHT														

VICTORIA - #3-3318 Oak Street
Victoria, BC V8X 1R1
(250) 475-1076

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SIGNAL CCT.:															
CHAPEL	BELL							✓							
BUILDING 200 - HOBBY/CRAFTS:															
MAIN ENTRANCE		6601 PANEL													
BUILDING 200 - CONT															
ROOM 115	RHT							✓	✓						
ENTRANCE HALL	RHT							✓	✓						
MAIN EXIT	M							✓	✓						
CARVING ROOM 112	RHT							✓	✓						
WASHROOM 116	RHT							✓	✓						
ROOM 104 EAST	RHT							✓	✓						
ROOM 104 WEST	RHT							✓	✓						
ROOM 104 EXIT	M							✓	✓						
STORAGE ROOM 107	RHT							✓	✓						
JANITORS ROOM 106	RHT							✓	✓						
OFFICE #105	RHT							✓	✓						
ROOM 103	RHT							✓	✓						
HALLWAY BY 107	RHT							✓	✓						
HALLWAY BY 113	RHT							✓	✓						
ROOM 108 - NORTH	RHT							✓							
ROOM 108 - SOUTH	RHT							✓							

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ROOM 109	RHT							✓	✓						
ROOM 113	RHT							✓	✓						
OUTSIDE ELEC. ROOM	S							✓	✓						
OUTSIDE H.W.T.ROOM	HT														FIXED TEMP

SIGNAL CCT.:

ROOM 104	BELL							✓							
HALLWAY	BELL							✓							

BUILDING 103- THEATRE/GYM:

BASEMENT TEL. ROOM		6500 PANEL													

BSMT. MECH.RM. HV-1	DSx2			1				✓	✓						
BSMT. MECH. RM. HV-2	DSx2			1				✓	✓						
HALLWAY	RHT			2				✓	✓						
HALLWAY EXIT	M			2				✓	✓						
TEL. ROOM	RHT			2				✓	✓						
STORAGE ROOM	RHT			2				✓	✓						
HALL EXIT O/S MAIN ELEC. ROOM	M			2				✓	✓						
" " " "	RHT			2				✓	✓						
MAIN ELECTRICAL ROOM	RHT	(x4)		2				✓	✓						
HIGH VOLTAGE VAULT	RHT			2				✓	✓						
BOILER ROOM	HT	(x6)		2											FIXED TEMP

VICTORIA - #3-3318 Oak Street
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E2.3 FIRE ALARM DEVICE REPORT

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ZONE 3 - MAIN FLOOR:															
EMPLOY. OFFICE #112	RHT			3				✓	✓						
PHOTOCOPY ROOM #110	RHT			3				✓	✓						
MGR. PROGRAM OFFICE #109	RHT			3				✓	✓						
OFFICE#114	RHT			3				✓	✓						
HALL O/S OFFICE 114	RHT			3				✓	✓						
WORK RELEASE #111	RHT			3				✓	✓						
PROGRAM DEL'Y #115	RHT			3				✓	✓						
CLASSROOM #129	RHT			3				✓	✓						
CLASSROOM #128	RHT			3				✓	✓						

BUILDING 103 - CONT

ZONE 3 - CONT

HALL O/S CLASSROOM	RHT			3				✓	✓						
MENS W'RM.	RHT			3				✓	✓						
HALL O/S MENS W'RM.	RHT			3				✓	✓						
HALL EXIT AT MENS RM.	M			3				✓	✓						
HALL O/S JANITORS CLOSET 126	RHT			3				✓	✓						
JANITORS CLOSET 126	RHT			3				✓	✓						
STAFF W'RM. 125	RHT			3				✓	✓						
CLASSROOM #107	RHT			3				✓	✓						
HALL BY #107	RHT			3				✓	✓						
GYM HALL	RHT			3				✓	✓						
GYM HALL EXIT	M			3				✓	✓						
GYM HALL JANITORS ROOM	RHT			3				✓	✓						
MENS WRM 120 AT ENTRY	RHT			3				✓	✓						

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MENS WRM. 120 OVER STALL	RHT			3										✓	
WOMENS WRM 103	RHT			3										✓	
REC. STORAGE ROOM	RHT			3				✓	✓						
HALL O/S GYM	RHT			3				✓	✓						
HALL TO REC. DEPT.	RHT			3				✓	✓						
CLASSROOM #123	RHT			3				✓	✓						
HALL BY STAFF WRM. 125	RHT			3				✓	✓						
HANDICAP WRM. 119	RHT			3				✓	✓						
HALL BY 106	RHT			3				✓	✓						

BUILDING 103 - CONT

REC. OFFICE #122	RHT			3				✓	✓						
STATIONARY SUPPLY STORAGE #106	RHT			3				✓	✓						
MULTIPURPOSE ROOM #117	RHT			3				✓	✓						
GYM NORTH	RHT			3				✓	✓						
GYM CENTRE	RHT			3				✓	✓						
GYM SOUTH	RHT			3				✓	✓						
GYM OFFICE	RHT			3				✓	✓						
STAGE	RHT			3				✓	✓						
GYM ENTRANCE LOBBY	RHT			3				✓	✓						

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BUILDING 103 BELLS:															
NORTH GYM @ STAGE	BELL							✓							
SOUTH GYM	BELL							✓							
GYM ENTRANCE LOBBY	BELL							✓							
MULTIPURPOSE ROOM	BELL							✓							
HALL TO REC. DEPT.	BELL							✓							
HALL O/S LIVING SKILLS	BELL							✓							
BASEMENT HALL	BELL							✓							
BUILDING 101- KITCHEN:															
MAIN ELECTRICAL ROOM		6500 PANEL													
ZONE 2 - BASEMENT:															
FOODS STORAGE RECEIVING EXIT	M			2				✓	✓						
FOODS STORAGE	RHT	(x4)		2				✓	✓						
DRY FOODS STORES	RHT	(x3)		2				✓	✓						
MAIN ELECTRICAL ROOM	RHT			2				✓	✓						
HALLWAY	RHT			2				✓	✓						
HALL BY DUMBWAITER	RHT			2				✓	✓						

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DRY FOOD STORAGE	RHT			2				✓	✓						
HALL BY EXIT STAIR	RHT			2				✓	✓						
STAIR EXIT	M			2				✓	✓						
BOILER ROOM	HT	(x2)		2											FIXED TEMP

ZONE 1- BASEMENT EAST:

MECHANICAL ROOM	RHT			1				✓	✓						
MECH. ROOM EXIT	M			1				✓	✓						
CRAWLSPACE	RHT	(x3)		1				✓	✓						

ZONE 3- MAIN FLOOR:

KITCHEN LOADING BAY EXIT	M			3				✓	✓						
KITCHEN LOADING BAY	RHT			3				✓	✓						

BUILDING 101 - CONT

JANITORS ROOM	RHT			3				✓	✓						
N.W. WRM.FOYER	RHT			3				✓	✓						
ENTRANCE MENS ROOM	RHT			3				✓	✓						
ENTRANCE FOYER STAFF WRM.	RHT			3				✓	✓						
WEST FOYER EXIT	M			3				✓	✓						
STAFF MEETING ROOM	RHT			3				✓	✓						

CLASSROOM #119	RHT			3				✓	✓						

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CLASSROOM #119	M			3				✓	✓						
CLASSROOM OFFICE #115	RHT			3				✓	✓						
CLASSROOM OFFICE #115	M			3				✓	✓						
DINING ROOM	RHT	(x2)		3				✓	✓						
DINING ROOM EXIT	M			3				✓	✓						
S. SMOKING ROOM(off dining room)	RHT	(x2)		3				✓	✓						
KITCHEN STORAGE ROOM	RHT			3				✓	✓						
STAFF EAT/AREA	RHT			3				✓	✓						
KITCHEN WASHROOM	RHT			3				✓	✓						
DRY FOOD STORAGE #106	RHT			3				✓	✓						
KITCHEN EXIT	M			3				✓	✓						
KITCHEN	HT	(x6)		3											FIXED TEMP
DISHWASHING AREA	HT	(x2)		3											FIXED TEMP
FOOD PREPERATION AREA	HT			3											FIXED TEMP
POT SCRUB AREA	HT			3											FIXED TEMP

BUILDING 101 CONT

1ST AID ROOM	RHT			3				✓	✓						
COOK'S OFFICE #107	RHT			3				✓	✓						
LOCKER ROOM #124	RHT			3				✓	✓						
ATTIC:				4											FIXED TEMP
ATTIC	RHT	(x12)		4				✓	✓						
ATTIC	HT			4											

DUMBWAITER:				5											
PIT	RHT			5				✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOP OF SHAFT				5											
KITCHEN HOOD EXT'R.:				6											
CO2 SYSTEM															TESTED BY OTHERS

BELL CIRCUITS:

BASEMENT FOOD STORAGE	BELL							✓							
BASEMENT HALL BY STAIRS	BELL							✓							
KITCHEN	BELL							✓							
DINING ROOM	BELL							✓							
N. CLASSROOM	BELL							✓							

BUILDING 102 - LIBRARY:

MAIN ELEC. ROOM		FIRESHIELD													

ZONE 1 - UPPER FLOOR:

HALLWAY E. EXIT	M							✓	✓						
HALLWAY	RHT	(x8)						✓	✓						
HALLWAY W. EXIT	M							✓	✓						
JANITORS ROOM	S							✓	✓						
WASHROOM	RHT							✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
ZONE 2 - GROUND FLOOR:															
LIBRARY EXIT	M							✓	✓						
LIBRARY OFFICE	RHT							✓	✓						
LIBRARY OFFICE STORAGE	RHT							✓	✓						
LAN DOOR AREA	RHT	(x2)						✓	✓						
LIBRARY	RHT	(x6)						✓	✓						
LIBRARY REAR EXIT	M							✓	✓						
LIBRARY REAR EXIT STORAGE	RHT							✓	✓						
LIBRARY WASHROOM	RHT							✓	✓						
BELL CIRCUIT:															
UPPER FLOOR HALL	BELL							✓							
LIBRARY	BELL							✓							
MAINTENANCE AREA-															
BUILDING B- MAINT. OFFICE:		FIRESHIELD													
CHIEF MAINT. OFFICE	RHT							✓	✓						
WASHROOM	RHT							✓	✓						
COFFEE AREA	RHT							✓	✓						
RECEPTION AREA	RHT							✓	✓						
RECEPTION AREA EXIT	M							✓	✓						
HALL TO OFFICE	RHT							✓	✓						
OFFICE	RHT	282C	197*					✓	✓						HIGH TEMP

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
OFFICE	RHT							✓	✓						
ATTIC	RHT	(x2)						✓	✓						

BELL CIRCUIT:

WASHROOM HALL	BELL							✓							

BUILDING D - PAINT SHOP:

SHOP - EST1-2Z1 PANEL

WASHROOM	RHT							✓	✓						
OFFICE	RHT													✓	
PAINT SHOP	RHT							✓	✓						
PAINT SHOP	HT														FIXED TEMP
PAINT SHOP EXIT	M							✓	✓						
ATTIC	RHT							✓	✓						
OUTSIDE MECH.RM.	HT														FIXED TEMP
PAINT SHOP	BELL							✓							

MAINTENANCE SHOPS CONT'D...

BUILDING 4 - PLUMBING SHOP:

SHOP OFFICE		1527 PANEL													

SHOP EXIT	M							✓	✓						
SHOP	RHT							✓	✓						
WASHROOM	RHT							✓	✓						
OFFICE	RHT							✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
ATTIC	RHT	(x3)						✓	✓						
BOILER ROOM	HT														FIXED TEMP
SHOP	BELL							✓							

BUILDING 3- MAINTENANCE-

METAL SHOP - FS-1 PANEL

GARAGE SECTION:

GARAGE EXIT	M							✓	✓						
GARAGE	RHT	(x3)						✓	✓						
GARAGE OFFICE	RHT							✓	✓						
GARAGE TOOL STORAGE	RHT							✓	✓						
GARAGE TOP OF STAIRS	RHT							✓	✓						
TOP OF STAIR EXIT	M							✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
WASHROOM	RHT							✓	✓						
JANITORS ROOM	RHT							✓	✓						
O/S FURNACE ROOM	HT	(x2)													FIXED TEMP
GARAGE	BELL							✓							

ELECTRICAL SHOP:

STAIR EXIT	M							✓	✓						
ELEC. SHOP WASHROOM	RHT							✓	✓						
ELEC. SHOP OFFICE	RHT							✓	✓						
ELEC. SHOP TOOL STORAGE	RHT							✓	✓						
MAIN ELECTRICAL SHOP	RHT	(x2)						✓	✓						
ELECTRICAL SHOP	BELL							✓							

CARPENTRY SHOP:

CARPENTRY SHOP WASHROOM	RHT							✓	✓						
CARPENTRY SHOP	RHT	(x2)						✓	✓						
" SHOP OFFICE	RHT							✓	✓						
" " TOOL STORAGE	RHT							✓	✓						
WOOD STORAGE	RHT							✓	✓						
WOOD TRIM STORAGE	RHT							✓	✓						
NAIL STORAGE	RHT							✓	✓						
CARPENTRY SHOP	BELL							✓							

ATTIC :

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
CENTRE ATTIC AREA	RHT	(x6)						✓	✓						
ATTIC OVER WOOD STG.	RHT	(x3)						✓	✓						2
ATTIC OVER CARPENTRY SHOP	RHT							✓	✓						
ATTIC OVER GARAGE	RHT	(x4)						✓	✓						3
METAL SHOP:															
METAL SHOP WASHROOM	RHT							✓	✓						
SHOP OFFICE	RHT							✓	✓						
METAL SHOP	RHT	(x3)						✓	✓						
METAL SHOP EAST EXIT	M							✓	✓						
METAL SHOP NORTH EXIT	M							✓	✓						
METAL SHOP	BELL							✓							
BUILDING #1 - PROGRAMS:	TORN DOWN	2015													
BUILDING 105- CLASSROOMS:															
HALLWAY		6500 PANEL													
STUDY AREA:				1											
TUTORIAL CLASSROOM AREA	RHT	(x7)						✓	✓						
CLASSROOM EXITS	Mx2							✓	✓						
CARPENTRY SHOP:				2											
CARPENTRY SHOP	Sx2							✓	✓						
CARPENTRY SHOP EXITS	Mx2							✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
ELECTRICAL SHOP:															
ELECTRICAL SHOP	Sx2							✓	✓						
SHOP EXITS	Mx2							✓	✓						
CLASSROOM	RHT							✓	✓						
HALL TO CLASSROOM	RHT							✓	✓						
UPPER STORAGE ROOM	RHT							✓	✓						
LOWER STORAGE ROOM	RHT							✓	✓						
NORTH WING CLASSROOMS/OFFICES:				4											
INSTRUCTORS OFFICE	RHT							✓	✓						
HALL EXIT	M							✓	✓						
STUDY CAROL	RHT							✓	✓						
COMPUTER LAB	RHT							✓	✓						
HALL	RHT	(x2)						✓	✓						
HALL EXITS	Mx2							✓	✓						
OFFICE	RHT							✓	✓						
BUILDING 105 CONT'D...															
STAFF WASHROOM	RHT							✓	✓						
STAFF W'RM. HALL	RHT							✓	✓						
HALL STORAGE ROOM	RHT							✓	✓						
MAIN WASHROOM	RHT							✓	✓						
MECHANICAL ROOM	RHT	(x2)						✓	✓						
ELECTRICAL ROOM	RHT							✓	✓						
MECHANICAL ROOM EXIT	M							✓	✓						
ZONE 6 - WELDING SHOP:															
SHOP	RHT	(x2)						✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
SHOP	HT														FIXED TEMP
SHOP EXITS	Mx2							✓	✓						

BELL CIRCUITS:

TUTORIAL CLASS AREA	BELL							✓							
CARPENTRY SHOP	BELL							✓							
ELECTRICAL SHOP	BELL							✓							
ELEC.SHOP CLASSROOM	BELL							✓							
N. MECH. ROOM	BELL							✓							
N. HALL	BELL							✓							
N. COMPUTER LAB	BELL							✓							

BUILDING 208- GREENHOUSE:

OFFICE = 6602 PANEL

OFFICE	RHT							✓	✓						
COFFEE AREA	RHT							✓	✓						
" " EXIT	M							✓	✓						
WASHROOM	RHT							✓	✓						
EQUIPMENT STORAGE	RHT	(x2)						✓	✓						
CHEMICAL STORAGE	RHT							✓	✓						
GREENHOUSE EXITS	Mx2							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
EQUIP. STORAGE EXIT	M							✓	✓						
O/S FLAMMABLE STORAGE	RHT	EXP.PROOF													

BELL CIRCUIT:

GREENHOUSE	BELL	(x2)						✓							
COFFEE AREA	BELL							✓							
EQUIPMENT STORAGE	BELL							✓							

BUILDING 213- STAFF FITNESS CENTRE:

MAIN FOYER-		EST1-2Z1 PANEL													
MAIN FOYER EXIT	M							✓	✓						
FITNESS CENTRE	HT	(x2)													FIXED TEMP
FITNESS CENTRE EXIT	M							✓	✓						
S.W. STORAGE ROOM	HT														FIXED TEMP
MENS WASHROOM	HT														REPLACED 2008
WOMENS WASHROOM	HT														FIXED TEMP
MECHANICAL ROOM	HT														FIXED TEMP

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM EXIT 105	M							✓	✓						
STORAGE ROOM 104	M							✓	✓						

BELL CIRCUIT:

FITNESS CENTRE	BELL							✓							
S.W. STORAGE ROOM 104	BELL							✓							

BUILDING 108 - LAUNDRY:

FRONT LOBBY		1527 PANEL													

FRONT N. LOBBY	RHT							✓	✓						
N. LOBBY EXIT	M							✓	✓						
SOAP STORAGE ROOM 114	RHT							✓	✓						
MATTRESS STORAGE ROOM	RHT							✓	✓						
HALLWAY	RHT							✓	✓						
DISPENSE AREA	RHT							✓	✓						
OFFICE #112	RHT							✓	✓						

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Fire Alarm System Test & Inspection Report

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
OFFICE WASHROOM #106	RHT							✓	✓						
OFFICE STORAGE #104	RHT							✓	✓						
BARBER SHOP #102	RHT							✓	✓						
MAIN LAUNDRY #101	RHT	(x5)						✓	✓						
LAUNDRY EXIT #101	M							✓	✓						
JANITORS CLOSET	RHT							✓	✓						
MECHANICAL ROOM	RHT							✓	✓						
MECHANICAL ROOM -WEST	HT														recommend replacement
MECHANICAL ROOM - EAST	RHT							✓	✓						
CLOTHING LOCKER STORAGE	RHT	(x3)						✓	✓						
STORAGE ROOM #111	RHT							✓	✓						
WASHROOM #107	RHT							✓	✓						

BELL CIRCUIT:

LAUNDRY ROOM	BELL														
HALLWAY	BELL														

Private Family Visit House #1:

N.STORAGE ROOM		SIMPLEX PNL.													
HALLWAY	S							✓	✓						
DINING ROOM	BELL							✓							

P.F.V. #2:

LAUNDRY ROOM		FIRESHIELD													
LAUNDRY ROOM	S							✓	✓						
LIVING ROOM	RHT							✓	✓						
BEDROOM	S							✓	✓						

Troy Life & Fire Safety Ltd.

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
NORTH EXIT	M							✓	✓						
ENTRANCE AREA	BELL							✓							
BEDROOM	V							✓							
LIVING ROOM	V							✓							

BLDG.-INMATE WGHT TRAINNG FAC.

ELECTRICAL ROOM		EST1-2Z6													

ZONE 1 - PULL STATIONS:

N. MECH. ROOM EXIT	M							✓	✓						
WEIGHT ROOM EXITS	Mx2							✓	✓						

ZONE 2 - DEVICES:

N.W. STORAGE ROOM	RHT							✓	✓						
CANTEEN	RHT							✓	✓						
JANITORS ROOM	RHT							✓	✓						

VICTORIA - #3-3318 Oak Street
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Fire Alarm System Test & Inspection Report

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Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH/ELEC. ROOM	HT														FIXED TEMP
MENS WASHROOM	RHT							✓	✓						
WOMENS WASHROOM	RHT							✓	✓						
WEIGHT ROOM	RHT							✓	✓						

BELL CIRCUIT:

WEIGHT ROOM	BELL							✓							

NEIGHBOURHOOD BUILDINGS

NEIGHBOURHOOD "A":

TEL.ROOM- SIMPLEX	4100	PANEL													

COMMONS BLOCK:

MAIN LOUNGE EXITS	Mx2							✓	✓						
MAIN LOUNGE	Sx2							✓	✓						
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
LOUNGE	BELL							✓							

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 1:															
COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
MECH. ROOM	F.S	FLOW SW.						✓	✓						
MECH. ROOM	S.Sx3	TAMPER S						✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD A CONT'D...

TOWNHOUSE 2:															
COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
NEIGHBOURHOOD A CONT'D...															
TOWNHOUSE 3:															
COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD A CONT'D...

TOWNHOUSE 4:

COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

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Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.							✓	✓						
MECH. ROOM	S.S.x3							✓	✓						

TOWNHOUSE 5:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD A CONT'D...

TOWNHOUSE 6:

COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

VICTORIA - #3-3318 Oak Street
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(250) 475-1076

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
TOWNHOUSE 7:															
COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
ROOM 1 & ROOM 2	Vx2	STROBE						✓	✓						

NEIGHBOURHOOD A CONT'D...

TOWNHOUSE 8:

COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
ROOM 1 & ROOM 2	Vx2	STROBE						✓	✓						

NEIGHBOURHOOD "B":

TEL. ROOM- SIMPLEX		PANEL 4100													

COMMONS BLOCK:

LOUNGE	Sx2							✓	✓						
LOUNGE EXITS	M							✓	✓						
LOUNGE	BELL							✓							

TOWNHOUSE 1:

COMMON AREA	S							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

NEIGHBOURHOOD B CONT'D...

TOWNHOUSE 2:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 3:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓							
ROOM 1	S							✓							
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

NEIGHBOURHOOD B CONT'D...

TOWNHOUSE 4:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 5:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

NEIGHBOURHOOD B CONT'D...

TOWNHOUSE 6:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 7:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD B CONT'D...

TOWNHOUSE 8:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
ROOM 1	S							✓	✓						
ROOM 2	S							✓	✓						
ROOM 3	S							✓	✓						
ROOM 4	S							✓	✓						
ROOM 5	S							✓	✓						
MECH. ROOM	F.S.	FLOW SW.						✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD "C":

TEL. ROOM -		SIMPLEX PANEL													

COMMONS BLOCK:

MAIN LOUNGE	Sx2							✓	✓						
MAIN LOUNGE EXITS	Mx2							✓	✓						
LOUNGE	BELL							✓							

TOWNHOUSE 1:

COMMON AREA	S							✓	✓						

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							

NEIGHBOURHOOD C - CONT'D...

TOWNHOUSE 2:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

TOWNHOUSE 3:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD C - CONT'D...

TOWNHOUSE 4:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
TOWNHOUSE 5:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD C - CONT'D...

TOWNHOUSE 6:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

TOWNHOUSE 7:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD C - CONT'D...

TOWNHOUSE 8:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

NEIGHBOURHOOD "E"

TEL. RM.-SIMPLEX 4100		PANEL													

COMMONS BLOCK:

MAIN LOUNGE	Sx2							✓	✓						
MAIN LOUNGE EXITS	Mx2							✓	✓						
LOUNGE	BELL							✓							

TOWNHOUSE 1:

COMMON AREA	S							✓	✓						

VICTORIA - #3-3318 Oak Street
Victoria, BC V8X 1R1
(250) 475-1076

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
MECH. ROOM	F.S	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
UPPER HALL	BELL							✓							

TOWNHOUSE 2:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD E-CONT'D...

TOWNHOUSE 3:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
UPPER HALL	BELL							✓							

TOWNHOUSE 4:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							
MECH,. ROOM	F.S.							✓	✓						
MECH. ROOM	S.S.x3							✓	✓						

NEIGHBOURHOOD E- CONT'D...

TOWNHOUSE 5:

COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

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Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 6:															
COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

NEIGHBOURHOOD E- CONT'D...

TOWNHOUSE 7:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							

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(250) 475-1076

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

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Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
TOWNHOUSE 8:															
COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						
NEIGHBOURHOOD "F" -															
TEL. ROOM- SIMPLEX 4100		PANEL													
COMMONS BLOCK:															
MAIN LOUNGE	Sx2							✓	✓						
MAIN LOUNGE EXITS	Mx2							✓	✓						
LOUNGE	BELL							✓							
TOWNHOUSE 1:															
COMMON AREA	S							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER HALL	BELL							✓							

NEIGHBOURHOOD F- CONT'D...

TOWNHOUSE 2:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓							
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

TOWNHOUSE 3:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD F- CONT'D...

TOWNHOUSE 4:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

TOWNHOUSE 5:

COMMON AREA	S							✓	✓						
UPPER FL. HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD F- CONT'D...

TOWNHOUSE 6:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

TOWNHOUSE 7:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

NEIGHBOURHOOD F- CONT'D...

TOWNHOUSE 8:

COMMON AREA	S							✓	✓						
UPPER HALL	S							✓	✓						
BEDROOM 1	S							✓	✓						
BEDROOM 2	S							✓	✓						
BEDROOM 3	S							✓	✓						
BEDROOM 4	S							✓	✓						
BEDROOM 5	S							✓	✓						
UPPER FL. HALL	BELL							✓							

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
MECH. ROOM	F.S.	FLOW SW.						✓	✓						
MECH. ROOM	S.S.x3	TAMPERS						✓	✓						

BUILDINGS OUTSIDE

OF MAIN GATE -

GARDEN/MAINT. SHOP BLDG 212:

HALLWAY - EST1-2Z1		PANEL													

FACP HALL/ROOM	RHT							✓	✓						
HALL/ROOM EXIT	M							✓	✓						
WASHROOM 103	RHT							✓	✓						
SHOWER ROOM	RHT							✓	✓						
JANITORS ROOM	RHT							✓	✓						
LOCKER ROOM 105	RHT							✓	✓						
OUTSIDE BOILER CLOSET	HT														FIXED TEMP - FT
BOILER CLOSET EXIT	M							✓	✓						
GARAGE 104	RHT	(x2)						✓	✓						
GARAGE EXIT	M							✓							
LOCKER ROOM	BELL							✓							

POWER STATION -

SOUTH OUTSIDE WALL-	1527	PANEL													

POWER STATION	RHT							✓	✓						BLDG. 110
POWER STATION EXIT	M							✓	✓						
GENERATOR BUILDING	RHT							✓	✓						BLDG. 115a
GEN. BLDG. EXIT	M							✓	✓						

Troy Life & Fire Safety Ltd.

Fire Alarm System Test & Inspection Report

Job Name: WILLIAM HEAD INSTITUTE

Inst - Correctly Installed **Smk** - Smoke Sensitivity **Miss** - Missing **Alm** - Alarm Operation Confirmed
Ann - Annunciation Indication **Sup** - Supervisory Circuit Confirmed **Dec** - Decibel Level
FS - Sprinkler Flow Delay **Grd** - Ground **Serv** - Requires Service

E2.3 FIRE ALARM DEVICE REPORT

Location Description	Device	Model	Address	Zone / Circuit #	Inst	Smk	Miss	Alm	Ann	Sup	Dec	FS	Grd	Serv	Remarks
POWER STATION	BELL							✓							

FIRE ALARM DEFICIENCIES

Def ID	Desc	Device	Model	Address	Deficiency
0	MENS WRM. 120 OVER STALL	RHT			
1	WOMENS WRM 103	RHT			
2	OFFICE	RHT			

PROJECT NOTES

February 2016
RE: ANNUAL FIRE ALARM TEST - PANEL BATTERY VOLTAGES
VOLTAGES SHOWN ARE WITH A/C POWER ON AND UNDER LOAD CONDITION FOR VOLTAGES AND AMP HOUR RATINGS. NOTE: ALL NEW BATTERIES SUPPLIED BY WHI ELEC. SHOP

BUILDING 104 - (12V7A Batteries x2) Power On = 26.0v, Under Load: Right Battery =12.8v @ 7.0A, Left Battery = 12.8v @7.4A.
BUILDING 115A - GEN. BLDG. -(12v9A Batteries x 2) Power On = 28.6v. Under Load: Right Battery= 13.2V @ 11A, Left Battery = 13.2 @11A.
BUILDING 106 - ADMIN. BLDG. - (12v7A Batteries x 2) Power On = 26.9. Under Load: Right Battery= 12.8v @ 4.1A, Left Battery = 12.8v @ 4.2A.
BUILDING 109 - HOSPITAL- (12V7A Batteries x2) Power On= 25.7v. Under Load: Right Battery= 12.7v @6A, Left Battery= 12.8v @ 6.8A.
BUILDING 30 - STORES- (12v7A Batteries x2) Power On= 27.2v. Under Load: Right Battery= 12.7v @6.2A, Left Battery= 12.8v @5.8A.
BUILDING 206 -STG. SHED- (12v5A Batteries x2) Power On=27.1v. Under Load: Right Battery= 12.7v @ 3.3A, Left Battery = 12.6v @ 2.7A.
BUILDING 29 -CHAPEL- (12V5A Batteries x2) Power On= 26.5v. Under Load: Right Battery=12.5v @2.5A, Left Battery=

12.6v @ 2.7A. ***NEED REPLACEMENT***
BUILDING 200 -HOBBIES- (12V5A Batteries x2) Power On = 26v. Under Load: Right Battery= 12.6v @3.7A, Left Battery= 12.6v @ 3.7A.
BUILDING 103 -THEATRE/GYM- (12V9A Batteries x2) Power On= 27.1v. Under Load: Right Battery= 13v @ 12A, Left Battery = 13v @ 12A.
BUILDING 101 -KITCHEN/CAF.- (12v9A Batteries x2) Power On=27.1v. Under Load: Right Battery= 13v@ 12A, Left Battery = 13v @ 12A.
BUILDING 102 -LIBRARY- (12v5A Batteries x2) Power On = 26.1v. Under Load: Right Battery =12.7v @ 4.1A, Left Battery = 12.7v @ 4.6A
BLDG. B - MAINT.- (12v5A Batteries x2) Power On = 26.2v. Under Load: Right Battery = 12.6v @ 4A, Left Battery = 12.6v @ 4A.
BLDG. D - PAINT - (12v5A Batteries x2) Power On = 26.1v Under Load: Right Battery= 12.8v @2.5A, Left Battery = 12.7v @ 2.4A ***NEED REPLACEMENT***
BLDG. 4 - PLUMB.- (12v9A Batteries x2) Power On= 27.7v Under Load: Right Battery= 13.1v @12A, Left Battery = 13v @12A.
BLDG. 3 - SHOPS- (12v5A Batteries x2) Power On = 27.3v Under Load: Right Battery - 12.8v @ 4.1A, Left = 12.7v @4A.
BLDG. 1 - PROGRAMS - BUILDING DEMOLISHED
BUILDING 105 -TRADES/STUDY- NEW BATTERIES INSTALLED at time of inspection.
BUILDING 208 - GREENHOUSE- (12v 9A Batteries x2) Power On= 26v Under Load: Right Battery= 12.8 @11A Left = 12.8v @12A
BUILDING 213- STAFF FITNESS- (12V5A Batteries x2) Power On = 26.9v Under Load: Right Battery = 12v @ 2.5A (FAILED), Left= 12v @ 5A ***NEED REPLACEMENT***
BUILDING 108- LAUNDRY- (12V9A Batteries x2) Power On= 27.9v Under Load: Right Battery = 13.1v@ 11A, Left Battery = 13.1v @ 11A.
P.F.V. 1 - (12v7.2A Batteries x2) Power On = 27.7v Under Load: Right Battery = 13.2 @ 2.5A (FAILED), Left = 13.2v @ 3.7A ***NEED REPLACEMENT***
P.F.V. 2 - (12V5A Batteries x2) Power On = 26v Under Load: Right Battery = 12.7v @ 4.2A, Left =12.7v @ 4.1A
INMATE WEIGHT FACILITY -(12v5A Batteries x2) Power On = 25.4v Under Load: Right Battery = 12.3 @ 4.1A, Left = 12.1 @ 4.2A
NEIGHBOURHOOD A BLDG -(12v18A Batteries x2) Power On= 27.9v. Under Load: Right Battery=13.4v 24A Left = 13.4v 24A
NEIGHBOURHOOD B BLDG -(12v18A Batteries x2) Power On=27,6v. Under Load: Right Battery=13.4v 21A Left = 13.5v 21A
NEIGHBOURHOOD C BLDG -(12v18A Batteries x2) Power On= 27.6v. Under Load: Right Battery= 13.4v 20A, Left= 13.3v 15A
NEIGHBOURHOOD E BLDG -(12v18A Batteries x2) Power On= 27.9v. Under Load: Right Battery= 13.5v 24A Left= 13.5v 24A
NIEGHBOURHOOD F BLDG -(12v18A Batteries x2) Power On= 27.7v. Under Load: Right Battery= 13.4v 17A Left = 13.5v 23A
BUILDING 212 - GARDEN/MAINT. SHOP - (12v5A Batteries x 2) Power On - 25.5v. Under Load: Right Battery = 12.5v @4.4A, Left Battery = 12.3v @ 3.3A.
BUILDING 214 - NATIVE CENTRE- (12v5A Batteries x2) Power On= 27.1v Under Load: Right Battery=12.6v @ 4.1A, Left = 12.4v @4A
BUILDING 104 - MONITORING PANEL (SIMPLEX) - RIGHT CABINET= 12v18A Batteries x2. Under Load: Right Battery=13v@12A, Left = 13V@12A. ***NEED REPLACEMENT***
BUILDING 104 - DOOR ALARM PANEL (SIMPLEX)- LEFT CABINET = 12v18A Batteries x2. Under Load: Right Battery =13.1v@12A Left= 13.1v@11A ***NEED REPLACEMENT***
BUILDING 103 -BSMT. COMM. RM. PANEL (SIMPLEX) = 12v17ABatteries x2. BATTERIES FLAT UNDER LOAD ***NEED REPLACEMENT***

NOTES / DEFICIENCIES:

1) HEAT DETECTORS NEEDING REPLACEMENT ARE IN THE FOLLOWING LOCATIONS:
BUILDING 101- S.E.Dining Room / Cafeteria
BUILDING ``D`` - PAINT SHOP - Office .
BUILDING 103 - Mens Washroom 120 above toilet stall. BUILDING 103- Womens Washroom 103

2) BUILDINGS 29, D, 213, PFV# 1, 103 BSMT. COM. RM. and 104 main panel BATTERIES NEED REPLACEMENT AS LISTED ABOVE. These are: 6 - 12v5A, 2- 12v7.2A, 6- 12v18A.

NOTE: ABOVE DEFICIENCIES TO BE RECTIFIED AND SUPPPLIED BY W.H.I. ELECTRICAL DEPT. UNLESS ADVISED.

APPENDIX C

PST Certificate of Exemption

2 pages including cover page

BRITISH COLUMBIA | Ministry of Finance

CERTIFICATE OF EXEMPTION
CONTRACTOR

under the *Provincial Sales Tax Act*

Responsibilities for Sellers and Eligible Contractors:

Sellers – this certificate allows you to collect the information and declaration required under the *Provincial Sales Tax Act* (the Act) in order to provide a PST exemption to your customer.

If you do not receive a completed and signed certificate or the required information and declaration before the sale, you must charge and collect PST. Failure to do so may result in an assessment, penalty and interest.

Eligible Contractors – you are responsible for ensuring that you meet all the requirements for the exemption under the Act. If you complete the certificate but you do not qualify for the exemption, you are responsible for paying the PST.

General Instructions:

- Refer to **Page 2** for detailed instructions.

Freedom of Information and Protection of Privacy Act (FOIPPA)
The personal information on this form is collected for the purpose of administering the *Provincial Sales Tax Act* under the authority of both this Act and section 26 of the FOIPPA. Questions about the collection or use of this information can be directed to the Manager, Program Services, PO Box 9442 Stn Prov Govt, Victoria, BC V8W 9V4. (Telephone: toll-free at 1 877 388-4440)

PART A – CERTIFICATION OF ELIGIBLE PERSON (*see Page 2*)

NAME OF CORPORATION, ASSOCIATION, PARTNERS, INDIAN BAND OR INDIVIDUAL	MAILING ADDRESS (*including postal code*)
Public Works Gov. Canada	219 - 800 Burrard Street Vancouver, B.C. V6Z 0B9

I certify that I have entered into a contract with the eligible contractor named below for the supply and installation of affixed machinery or improvements to real property and if I were to purchase the tangible personal property identified below I would be exempt from PST because (*check (✓) one and complete the appropriate section*):

1. ☐ I am eligible for the **Production Machinery and Equipment** (PM&E) exemption under the Act.

2. ☐ I am a **status Indian** or authorized representative of an Indian band and the items being purchased would be exempt from PST under section 87 of the *Indian Act* (Canada). If you are representating an Indian band, attach written authorization from an official of the band that you are authorized to act on behalf of the Indian band.

	BAND NAME	STATUS CARD NUMBER
Indian and Indian Bands		
Indian Bands Only	NAME OF REPRESENTATIVE	

3. ☐ I am a **qualifying aquaculturist** under the Act.	AQUACULTURE LICENCE NUMBER	
4. ☐ I am a **qualifying farmer** under the Act.	PROPERTY TAX FOLIO NUMBER / ADDRESS OF FARM	
5. ☐ I am eligible for a PST exemption under the **Consular Tax Exemption Regulation**.	DIPLOMATIC / CONSULAR IDENTITY CARD NUMBER	EXPIRY DATE YYYY / MM / DD

I certify that the Government of Canada has entered into a contract with the eligible contractor named below for the supply and installation of affixed machinery or improvements to real property.

6. ☑ I am an **authorized representative of the Government of Canada.**	PST NUMBER: PST-1000-5001

By signing this form, I certify that the above information is correct.

FULL LEGAL NAME OF INDIVIDUAL SIGNING FORM	SIGNATURE	DATE SIGNED YYYY / MM / DD
Patrick Truong	X Patrick Truong	2015/12/15

PART B – CERTIFICATION OF ELIGIBLE CONTRACTOR (*see Page 2*)

FULL LEGAL NAME	MAILING ADDRESS (*including postal code*)

Description of all items of tangible personal property (goods) being purchased (*if you require more space, attach an additional document*):

I certify that the tangible personal property (TPP) identified above is being acquired to fulfill a contract for the supply and installation of affixed machinery or improvements to real property that meets the requirements of (*check (✓) one*):

7. ☐ **Customer is the eligible person identified in Part A:** the contract is with the eligible person identified in Part A, or	ELIGIBLE CONTRACTOR'S PST NUMBER

8. ☐ **Customer pays the PST:** you have a written agreement with your customer that they will pay PST on the TPP described above and the agreement sets out the purchase price of the TPP. You must be registered for PST before supplying this TPP to your customer. You may only use this certificate in advance of receiving your PST number.

By signing this form, I certify to the best of my knowledge that the above information and any attached information is correct. I acknowledge that if I make a false statement to avoid paying tax, the *Provincial Sales Tax Act* charges a fine of up to $10,000 and/or imprisonment up to two years, in addition to a penalty of 25% of the tax due and an assessment for the tax that should have been paid.

FULL LEGAL NAME OF INDIVIDUAL SIGNING FORM	SIGNATURE	DATE SIGNED YYYY / MM / DD
	X	