Public Works and Government Services Canada

Requisition No. EZ899-180370

DRAWINGS & SPECIFICATIONS
for

CSC William Head Institution Window Replacement
- **Building 29 (Chapel)**

PWGSC Project No.: R.082505.001

APPROVED BY:

Regional Manager, AES — Date: May 1/2017.

Construction Safety Coordinator — Date: Apr 7.01.04.

TENDER:

Project Manager — Date: May 1, 2017

Real Property Services Branch, Professional and Technical Services, Pacific Region
Room 219 - 800 Burrard Street, Vancouver, B.C. V6Z 0B9

CONSULTANTS – SEAL & SIGNATURE

Discipline	Seal / Signature / Date
Building Envelope	

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY OF WORK

.1 Work covered by Contract Documents:

.1 This Contract covers the following work at the William Head Institution, Metchosin, BC.

.1 Installation of new thermally broken 3" aluminum casement/awning/fixed window designed for low and mid-rise construction.

.2 Work to be performed under this Contract includes, but not limited to, the following items covered further in the Contract documents:

.1 Provide a detailed work plan including a project schedule and phasing. This detailed work plan shall be submitted to the Departmental Representative for review to verify that there will be no interruption of service.

.2 Do not start work until all essential equipment is delivered to the site and the work can proceed without delays.

.3 Provide as-built drawings and closeout submittals.

.3 Contractor's Use of Premises:

.1 Contractor has limited use of site for work of this contract until Substantial Completion:

.1 Contractor use of premises for storage and access, as approved by the Departmental representative.

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

.2 Vehicular access through the Sally Port will be restricted during the inmate "count" at breakfast, lunch and dinner hours. Confirm times with Departmental Representative. Delays may occur when entering and exiting the Institution with vehicles due to security situations and heavy traffic.

Note: All buildings to be operational during work of this contract.

1.2 WORK RESTRICTIONS

.1 Notify Departmental Representative of intended interruption of power, communication and water services and provide schedule of interruption times.

.2 Where Work involves breaking into or connecting to existing services, give departmental Representative 48 hours of notice for necessary interruption of services throughout course of work. Keep duration of interruptions to a minimum. Coordinate interruptions with local authority having jurisdiction and local residences and businesses affected by the disruption.

.3 Provide for access by pedestrian and vehicular traffic on and around site where work is in progress.

.4 Construct barriers in accordance with Section Temporary Barriers and Enclosures.

.5 Security Requirements: refer to Section 01 14 10 - Security Requirements.

.6 Hours of work:

.1 Perform work during normal working hours of the Institution 0730 to 1600, Monday through Friday except holidays.

.2 When it is necessary, arrange in advance with Departmental Representative to work outside of normal working hours.

1.3 CONSTRUCTION WORK SCHEDULE

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within 9 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 of essence of this contract.

.3 Submittal:

.1 Submit to Departmental Representative within 10 working days of Award of Contract, a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of construction progress.

.2 Identify each trade or operation.

.3 Show dates for delivery of items requiring long lead time.

.4 Departmental Representative will review schedule and return one copy.

.5 Re-submit two (2) copies of finalized schedule to Departmental Representative within five (5) working days after return of reviewed preliminary copy.

.4 Project Scheduling Reporting:

.1 Update Project Schedule on bi-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 bi-weekly 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. Only PWGSC paper work is acceptable.

1.4 SUBMITTAL PROCEDURES

.1 Administrative:

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

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

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

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

.5 Review submittal 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. Submittal not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

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

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

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

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

10 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 Samples:

.1 Submit samples in sizes and quantities specified.

.2 Where colour is criterion, submit full range of colours.

.3 Submit all samples as soon as possible after the contract is awarded, to facilitate production of complete colour scheme by the Departmental Representative.

.5 Mock-ups:

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in location as specified in specific Section.

.3 Prepare mock-ups for Departmental Representative' review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups 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.

.5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

.6 Progress Photographs:

.1 Provide construction photographs in accordance with procedures and submission requirements specified in this clause.

.2 Progress Photographs:

.1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression.

.2 Number of viewpoints: four (4), locations of viewpoints directed by Departmental Representative.

.3 Frequency: monthly, submitted on disk with monthly progress statement, sent via e-mail or as directed by Departmental Representative.

.4 Identify photos by location, date and sequential numbering system.

.3 Final Photographs:

.1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression. Where photos are e-mailed compression can be increased.

.2 Number of viewpoints:

.1 Each side of building for a total of 4.

.2 Interior of rooms and finishes for a total of 8.

.3 Locations of viewpoints determined by Departmental Representative.

.3 Submit final photographs in digital format on CD, before final acceptance of building.

.4 Label disks and identify with name and project number of project. Indicate exposure dates and viewpoints of each photo and photo number.

.7 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 bond copies (hard copy) as directed by Departmental Representative.

.8 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 submittal is not relieved by Departmental Representative's review of submittal.

.6 Responsibility for deviations in submittal from requirements of Contract documents is not relieved by Departmental Representative's review of submittal, unless Departmental Representative gives written acceptance of specified deviations.

.7 Notify Departmental Representative, in writing at time of submission, of deviations in submittal 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.

1.5 HEALTH AND SAFETY

.1 Specified in Section 01 35 33.

1.6 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 Provide temporary drainage and pumping as necessary to keep excavations and site free from water during excavation and grading activities.

.5 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.

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

.7 Under no circumstances dispose of rubbish or waste materials on adjoining property.

1.7 REGULATORY REQUIREMENTS

.1 References and Codes:

.1 Perform Work in accordance with National Building Code of Canada (NBCC2010), Nation Energy Code of Canada for Buildings (NECB2011), and where applicable British Columbia Building Code (BCBC2012) including all amendments up to bid 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.

1.8 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 of inspection and test reports to Departmental Representative.

.5 Tests and Mix Designs:

.1 Furnish test results and mix designs as may be requested.

.6 Mock-ups:

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in locations acceptable to Departmental Representative and as specified in specific Section.

.3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups 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.

.5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.

.6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

.7 Mill Tests:

.1 Submit mill test certificates as requested and as required of specification Sections.

.8 Equipment and Systems:

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

.2 Refer to specific Section for definitive requirements.

1.9 TEMPORARY UTILITIES

.1 Installation and Removal:

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

.2 Dewatering:

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

.3 Water Supply:

.1 Arrange, pay for and maintain temporary water supply in accordance with local authority, governing regulations and ordinances.

.2 Permanent water supply system installed under this contract may be used for construction requirements provided that guarantees are not affected thereby. Replace damaged components.

.4 Temporary Power and Light:

.1 Arrange, pay for and maintain temporary electric power supply in accordance with local power authority governing regulations and ordinances.

.2 Electrical power and lighting installed under this contract may be used for construction purposes at no extra cost, provided that guarantees are not affected thereby and electrical components used for temporary power are replaced when damaged.

.3 Replace lighting bulbs/tubes and clean reflectors and lenses used for more than three months.

.5 Temporary Communication Facilities:

.1 Provide and pay for temporary telephone and fax hook up, line(s) necessary for own use.

.6 Fire Protection:

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

1.10 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 WorkSafeBC regulations and Section 01 35 33.

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

.3 Hoisting:

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists to be operated by qualified operator.

.4 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.

.5 Construction Parking:

.1 Make good damage to existing roads used for access to project site.

.2 Build and maintain temporary access where required and provide snow removal during period of Work.

.3 Park vehicles outside perimeter fence in designated parking areas.

.6 Contractor's Site Office and enclosure:

.1 Provide office of size to accommodate site meetings and Contractor's operations.

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

.3 Provide temporary fenced area to enclose site and operations.

.7 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.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

.8 Sanitary Facilities:

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures. Permanent facilities may be used on approval of Departmental Representative.

1.11 TEMPORARY BARRIERS AND ENCLOSURES

.1 Hoarding:

.1 Erect temporary site enclosure using new 1.8 m high temporary construction fencing. Provide lockable truck gate. Maintain fence in good repair.

.2 Enclosure of Structure:

.1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed. Design enclosures to withstand wind pressure. Provide lockable entry as required for moving personnel equipment and materials.

.2 Provide temporary enclosures to secure building from entry of unauthorized personnel during construction period.

.3 Guardrails and Excavations:

.1 Provide secure, rigid guard rails and barricades around deep excavations, open edges of floors and roofs etc.

.2 Provide as required by governing authorities.

.4 Access to Site:

.1 Maintain immediate local access roads in clean condition used during work of this contract.

.5 Protection for Off-Site and CSC Property:

.1 Protect surrounding CSC property from damage during performance of Work.

.2 Be responsible for damage incurred.

.6 Protection of Building Finishes:

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.12 COMMON PRODUCT REQUIREMENTS

.1 Reference Standards:

.1 If there is 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 packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative .

.9 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 Concealment:

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

.9 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 neither to damage nor to put at risk any portion of Work.

.10 Location of Fixtures:

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

.3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

.11 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.

.12 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.

.13 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.

.14 Existing Utilities:

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.

.2 Before commencing work, establish location and extent of service lines in areas of work and notify Departmental Representative of findings.

.3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.5 Record locations of maintained, capped and re-routed services lines.

.15 Contractors Options for Selection of Products:

.1 Products specified by **"Prescriptive" specifications**: select any product meeting or exceeding specifications.

.2 Products specified under "**Acceptable Products**" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.

.3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

.4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with “Instructions to Bidders".

.5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements.

.16 Substitution after award of Contract:

.1 No substitutions are permitted without prior written approval of the Departmental Representative.

.2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.

.3 Proposals will be considered by the Departmental Representative if:

.1 products selected by tenderer from those specified are not available;

.2 delivery date of products selected from those specified would unduly delay completion of Contract, or

.3 alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.

.4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.

.5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

1.13 EXAMINATION AND PREPARATION

.1 Existing Services:

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

.2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

.2 Location of Equipment and Fixtures:

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems 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.

1.14 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 purpose made saw or core drill. Pneumatic or impact tools not allowed on brittle materials 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.

1.15 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 Clear snow and ice from access to building.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Provide and use clearly marked separate bins for recycling. Refer to-Construction/Demolition Waste Management And Disposal.

.6 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.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 and clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.6 Clean lighting reflectors, lenses, and other lighting surfaces.

.7 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.8 Wax, seal, vacuum clean, shampoo or prepare floor finishes, as recommended by manufacturer.

.9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.10 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.11 Remove dirt and other disfiguration from exterior surfaces.

.12 Sweep and wash clean paved areas.

.13 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.

.14 Clean roofs, downspouts, and drainage systems.

.15 Remove snow and ice from access to building.

1.16 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.

.1 Separate non-salvageable materials from salvaged items.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

.3 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.

1.17 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 Substantial 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 Fire alarm verification report per CAN/ULC-S537, confirmation of proper installation of fire alarm panel to CAN/ULC-S527 signed off by the fire alarm technician and confirmation of fire alarm emergency power capacity. 24-hour battery test as described in CAN/ULC-S537, signed off by fire alarm technician.

.5 Confirmation of emergency power lighting, operating on emergency power for the required amount of time as dictated by NBCC, signed off by technician.

.6 Certificates required by Authority Having Jurisdictions for fire protection systems.

.7 Certificates required by Authority Having Jurisdictions for seismic restraints.

.8 Operation of systems have been demonstrated to Departments personnel.

.9 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 re-inspection.

1.18 CLOSEOUT SUBMITTAL

.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. At completion supply:

.1 Four (4) sets of CD's in AutoCad file format (version: 2007) with all as-built information on the diskettes.

.2 Four (4) sets of as-built plotted reproducible drawings.

.3 Four (4) sets of printed as-built drawings.

.4 Submit one copy of check plots to Departmental Representative prior to final printing of as-built drawings.

.5 Departmental Representative will supply copies of the original AutoCad files.

.6 Retain original logo and title block on the as-built drawings. Contractor may place on the upper right-hand title block area a small company logo, the text "AS-BUILT" and the date.

.2 Costs for transferring as-built information from marked up working set of drawings to electronic format using ACAD and plotting service is included in the Contract.

.2 Maintenance manual:

.1 On completion of project submit to Departmental Representative four (4) CD R/ disk copies and four (4) paper copies (in loose leaf type binder) of Operations and Maintenance Manual, made up as follows:

.1 Provide maintenance manual on CDs using pdf, or other approved format for descriptive writing, page size images and page size drawings. 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 disk "Operation and Maintenance Data", 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.

.7 Refer to Mechanical and Electrical Divisions for specific details for Mechanical and Electrical data.

.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 18.2.

.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.

1.19 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.

1.20 GENERAL COMMISSIONING

.1 Commission installed systems prior to Demonstration and Training.

END OF SECTION

PART 1 GENERAL

1.1 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.

1.2 Purpose

.1 "Contraband" means:

.1 an intoxicant, including alcoholic beverages, drugs and narcotics

.2 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,

.3 an explosive or a bomb or a component thereof,

.4 currency over any applicable prescribed limit, $25.00, and

.5 any item not described in previous paragraphs .1 to .4 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.

.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.

1.3 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' 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.

1.4 Construction Employees

.1 Submit CPIC form and scanned copy of government issued ID for each employee to the Departmental Representative.

.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.

1.5 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.

1.6 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.

1.7 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.

1.8 Telephones

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

.2 The Director will ensure that approved telephones, facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.

.3 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.

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

1.9 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.

1.10 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.

1.11 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 cartridge-driven 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.

1.12 Keys

.1 Security Hardware Keys.

.1 Arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).

.2 The SMO will provide a receipt to the Contractor for security hardware keys.

.3 Provide a copy of the receipt to the Departmental Representative.

.2 Other Keys

.1 Use standard construction cylinders for locks for his use during the construction period.

.2 Issue instructions to employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.

.3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:

.1 Prepare an operational keying schedule

.2 Accept the operational keys and cylinders directly from the lock manufacturer.

.3 Arrange for removal and return of the construction cores and install the operational core in all locks.

.4 Upon putting operational security keys into use, the PWGSC construction escort will obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the PWGSC construction escort.

1.13 Security Hardware

.1 Turn over all removed security hardware to the Director of the Institution for disposal or for safekeeping until required for re-installation.

1.14 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.

1.15 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.

1.16 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.

1.17 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.

1.18 Access and Removal from Institution Property

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

1.19 Movement Vehicles

.1 Construction vehicles are not to leave the Institution until an inmate count is completed. Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:

.1 AM: 0745 hrs. to 1100 hrs.

.2 PM: 1300hrs. to 1530 hrs.

.2 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.

.3 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.

.4 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.

.5 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. Arrange with Director for parking of contractor=s vehicles at minimum security Institutions.

.6 Private vehicles of construction employees will not be allowed within the security wall or fence of medium or maximum security institutions without the authorization of the Director.

.7 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.

1.20 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.

.3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the Institution cafeteria and dining room.

1.21 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.

1.22 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.

1.23 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.

1.24 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

PSPC Update on Asbestos Use

Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit use of asbestos-containing material. Further information can be found at http:/www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html

PART 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 National Fire Code of Canada:

.1 FCC No. 301, Standard for Construction Operations (as amended).

.2 FCC No. 302, Standard for Welding and Cutting (as amended).

.3 Part 5 – Hazardous Processes and Operations & Division B (as required).

.5 National Building Code of Canada (NBCC 2005):

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

.6 American National Standards Institute (ANSI):

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

.7 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 Section 01 01 50 General Requirements

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 effected 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 10 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, Territorial 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 (Registered Occupational Hygienist, Certified Industrial Specified Hygienist) 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 site specific 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.

.2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

1.9 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 provisions 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.

1.10 Work Permits

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

1.11 Filing of Notice

.1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.

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

1.12 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.

1.13 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.

.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.

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

1.14 Hazardous Products

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labeling 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.

1.15 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.

1.16 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.

1.17 Overloading

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

1.18 Falsework

.1 Design and construct falsework in accordance with CSA S269.1.

1.19 Scaffolding

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 Code of Practice for Access Scaffold and BC Occupational Health and Safety Regulations.

1.20 Confined Spaces

.1 Carry out work in confined spaces in compliance with Provincial regulations.

1.21 Power-Actuated Devices

.1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

1.22 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.

1.23 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.

1.24 Fire Protection and Alarm System

.1 Do not obstruct, shut-off or leave inactive at the end of a working day or shift, the fire protection and alarm systems.

.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, and Departmental Representatives, resulting from false alarms.

1.25 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.

1.26 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. Must be posted in a non-inmate access are and locked up when not being used.

.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.

1.27 Meetings

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

1.28 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 non-compliance 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 Description of Work

.1 Includes general requirements for commissioning facilities and facility systems.

.2 Refer to sections of Mechanical, Electrical and Communications disciplines.

1.2 Definitions

.1 Acronyms:

AFD - Alternate Forms of Delivery, service provider.

BMM - Building Management Manual.

Cx - Commissioning.

EMCS - Energy Monitoring and Control Systems.

O&M - Operation and Maintenance.

PI - Product Information.

PV - Performance Verification.

TAB - Testing, Adjusting and Balancing.

.2 Cx - a required program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.

1.3 Quality Assurance

.1 Testing organization: current member in good standing of AABC certified to perform specified services.

.2 Comply with applicable procedures and standards of the certification sponsoring association.

.3 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

1.4 References

.1 Associated Air Balance Council (AABC): National Standards for Field Measurement and Instrumentation, Total Systems Balance, Air Distribution-Hydronics Systems.

1.5 Submittals

.1 Prior to start of Work, submit name of organization proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.

.1 Submit documentation to confirm organization compliance with quality assurance provision.

.2 Submit 3 preliminary specimen copies of each of report forms proposed for use.

.3 Ten (10) days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.

.4 Submit reports of testing, adjusting and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

1.6 Procedures

.1 Comply with procedural standards of certifying association under whose standard services will be performed.

.2 Notify Departmental Representative 3 days prior to beginning of operations.

.3 Accurately record data for each step.

.4 Report to Departmental Representative any deficiencies or defects noted during performance of services.

1.7 Contractor's Responsibilities

.1 Prepare each system for testing and balancing.

.2 Cooperate with testing organization and provide access to equipment and systems.

.3 Provide personnel and operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.

.4 Notify testing organization 7 days prior to time project will be ready for testing, adjusting, and balancing.

.5 Commission cost to be borne by Contractor.

1.8 Preparation

.1 Provide instruments required for testing, adjusting, and balancing operations.

.2 Make instruments available to Departmental Representative to facilitate spot checks during testing.

.3 Retain possession of instruments and remove at completion of services.

.4 Verify systems installation is complete and in continuous operation.

.5 Verify lighting is turned on when lighting is included in cooling load.

.6 Verify equipment such as computers, laboratory and electronic equipment are in full operation.

1.9 Final Reports

.1 Organization having managerial responsibility shall make reports.

.2 Ensure each form bears signature of recorder, and that of supervisor of reporting organization.

.3 Identify each instrument used, and latest date of calibration of each.

1.10 Completion of Commissioning

.1 Upon completion of Cx leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx deliverables have been submitted and accepted by Departmental Representative.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

.1 The work in this section includes but is not limited to:

.1 Removal and disposal of existing roof system related sealants.

.2 Removal and recycling of corroded sheet metal roof components, all exposed fasteners and flexible flashings as indicated on the drawings.

1.2 REFERENCES

.1 CSA-S350 "Code of Practice for Safety in Demolition of Structures".

.2 National Building Code of Canada 2010 (NBCC 2010)

.3 National Energy Code of Canada for Buildings 2011 (NECB 2011)

.4 Canadian Environmental Assessment Act (CEAA) 2012, c.37

.5 Canadian Environmental Protection Act (CEPA) 1999, c. 33

.6 Transportation of Dangerous Good Act (TDGA) 1992, c. 34

1.3 EXISTING CONDITIONS

.1 Take over structures to be demolished based on their condition on the date that tender is accepted.

.2 Items to be salvaged are to be carefully protected.

.3 If hazardous material is encountered in the course of demolition work, stop work, take preventative measures, and notify the Departmental Representative immediately. Do not proceed until written instructions have been received from the Departmental Representative.

.4 Unidentified hazardous material removal is additional work and will be paid either as an extra to the Contract Price in accordance with the General Conditions, or removed under a separate contract by the Departmental Representative.

.5 Verify site conditions prior to commencing the Work. Investigate site and building to determine removal work, processing and storage logistics required. Inspect work areas to verify extent and location of items designated for removal and disposal, or to remain. Locate and protect building systems, and preserve active systems.

1.4 DEMOLITION DRAWINGS

.1 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of disassembly work and supporting structures.

.2 Submissions to bear stamp of qualified professional engineer registered in Province of British Columbia.

1.5 PROTECTION

.1 Provide bracing and shoring as required to prevent movement, settlement or damage to the adjacent buildings and/or the adjacent parts of the existing buildings which are to remain.

.2 Take all precautions to support affected structures and equipment. In the event that the safety of any structure appears to be endangered, cease operations and immediately notify the Departmental Representative.

.3 Prevent debris from blocking drainage system or from work activities affecting mechanical and electrical systems which must remain in operation. Provide Departmental Representative with sufficient notice should systems be affected or must cease operation or be de-energized.

.4 Post adequate warnings and barricades around the holes caused by demolition or removal of materials.

.5 Make good all damages caused by demolition.

.6 The existing building will be occupied and operational be the Institution during work of this Contract. Maintain building access around the protected work areas.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 WORK

.1 Undertake an onsite Waste Audit and develop a Waste Reduction Work plan to indicate required actions for diverting solid waste from landfills for reuse and recycling.

.2 Dispose of demolished materials, except where noted otherwise, in accordance with authorities having jurisdiction.

3.2 SAFETY CODE

.1 Unless otherwise specified, carry out demolition work in accordance with Section 01001 - General Requirements and CSA-S350 “Code of Practice for Safety in Demolition of Structures”.

.2 Comply with WCB Industrial Health and Safety regulations and Canada Labour Code of Canada Occupational Safety and Health Regulations.

3.3 PREPARATION

.1 Disconnect and re-route electrical and telephone service lines in accordance with authorities having jurisdiction as indicated on the drawings. Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.

.2 Disconnect and cap designated mechanical services in accordance with authorities having jurisdiction. If disconnection of wire and/or gas line is required, the disconnected is to be made by qualified tradesman.

.3 Do not disrupt active or energized utilities intended to remain undisturbed.

.4 Notify the Departmental Representative when deteriorated materials are encountered in existing construction.

3.4 DEMOLITION

.1 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.

.2 Where directed by the Departmental Representative, remove the existing materials and replace with new matching materials.

.3 At end of each day's work, leave work site in a safe condition so that no part is in danger of toppling or falling. Protect the interior areas not to be demolished from exterior elements at all times. Clean up and remove debris and materials not being reinstalled.

3.5 REMOVAL FROM SITE

.1 Dispose of removed material & equipment not reusable or salvageable, to approved disposable facilities in according to applicable provincial regulations.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 01 50 – General Instructions

.2 Section 01 35 33 – Health and Safety Requirements

1.2 REFERENCES

.1 Reports:

.1 Stantec Report for Project No. 123220729.202 entitled "Pre-Renovation Hazardous Building Materials Assessment, William Head Institution Chapel (29), Exterior Door/Window Replacement, 6000 William Head Road, Victoria, BC", dated December 16, 2016 (further referred to herein as the Assessment Report) – attached in the Appendix of the Project Specifications.

.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.

.4 Hazardous Building Material: component of a building or structure that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when altered, disturbed or removed during maintenance, renovation or demolition.

.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

.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)

.3 "Lead-Containing Paints and Coatings; Preventing Exposure in the Construction Industry" (2011)

.6 British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data for hazardous materials to be used by the Contractor to complete the Work:

.1 Submit manufacturer's instructions, printed product literature and data sheets, and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS in accordance with Section 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/Demolition Waste Management:

.1 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating percentage of construction/demolition 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 hazardous materials to be used by the Contractor to complete the Work in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver hazardous materials to be used by the Contractor 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 to be used by the Contractor to complete the Work 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.

Part 2 Products

2.1 MATERIALS

.1 Description:

.1 Bring on site only quantities of 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.

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

.2 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of hazardous materials that will be impacted by the Work of this contract, and such that appropriate plans and budgets can be included in their overall bids and work plans.

.3 The listing below is a summary of the identified hazardous building material categories and associated removal and disposal regulations, guidelines and/or standards.

.1 Asbestos-Containing Materials (ACMs)

.1 The following ACMs may require disturbance during the Work.

.1 Window pane caulking applied to perimeter windows.

.2 Insulation material inside fire-rated doors (presumed to be present and presumed to be ACM). If fire-rated doors require removal, Contractor is to arrange and pay for assessment of insulation (if any).

.2 Actions that will disturb identified ACMs are to be conducted in accordance with the requirements of the 2012 WorkSafe BC publication "Safe Work Practices for Handling Asbestos", by appropriately trained personnel.

.3 Waste transportation to be conducted in accordance with BC Reg. 63/88 and the Federal Transportation of Dangerous Goods Regulation.

.4 Waste disposal to be conducted in accordance with BC Reg. 63/88.

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

.2 Lead and Lead-Containing Paints (LCPs)

.1 The following LCPs may require disturbance during the Work.

.1 Brown coloured paint on exterior trim (noted to be in poor condition – flaking, bubbling and peeling).

.2 Brown coloured paint on interior trim.

.2 Actions that will disturb lead-containing materials (including paints and materials coated with LCPs, as well as clean-up of paint chip debris) 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).

.3 As part of the work, Contractor is to clean-up LCP debris created by their activities as well as any LCP debris that may be present (pre-existing) on the ground or surrounding area within 1 m of the walls beneath windows.

.4 Waste transportation to be conducted in accordance with BC Reg. 63/88 and the Federal Transportation of Dangerous Goods Regulation.

.5 Waste disposal to be conducted in accordance with BC Reg. 63/88.

.3 Silica

.1 The following silica-containing materials may be disturbed during the Work.

.1 Concrete.

.2 Masonry block walls.

.2 When silica-containing materials are to be disturbed and/or removed (e.g. sanding brick or masonry block), 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 (Cristobalite and Quartz – each 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, use of water or dust suppressing agents to prevent dust emissions

.3 Providing workers with facilities to properly wash prior to exiting the work area.

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 01 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 01 50 – General Instructions.

.3 Waste Management: separate waste materials for reuse and recycling.

.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 DESCRIPTION

.1 The work in this section includes but is not limited to:

1. Installation of non-vapour permeable SA membrane at wall openings, penetrations and flashing.

1.2 REFERENCES

.1 ASTM D 5034 - Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
.2 ASTM E 96/E 96M - Test Methods for Water Vapor Transmission of Materials.
.3 ASTM E398 Standard Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement.
.4 ASTM E 2178 - Standard Test Method for Air Permeance of Building Materials.
.5 ASTM E 2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
.6 ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
.7 ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 QUALIFICATIONS

.1 The Contractor shall have successfully completed similar work over a period of not less than five years and when required shall submit supporting documentation.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications: Only competent, qualified tradesmen experienced with membrane installation shall execute the work of this section.

.1 The Foreman and one other member of the crew must have attended an application seminar provided by the membrane manufacturer.

.2 Confirm that surfaces to which membrane is to be applied are in a condition suitable for this application.

.3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 No work to be carried out under conditions of rain or snow.

.2 Before commencing work, Contractor to ensure that forecasted meteorological conditions shall permit work to be carried out without interruption during the course of the day.

.3 Do not install membrane when temperature remains below +5°C.

.4 Install membrane on dry substrates, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into membrane system.

.5 If water penetrates through the assembly due to inadequate protection, Contractor to cut and inspect damages, remove, replace and re-install all materials at his own cost, to eliminate water in the assembly.

.6 The membrane must be watertight at the end of each shift.

1.6 MANUFACTURER'S REPRESENTATIVE

.1 At the request of the Departmental Representative, the Manufacturer's representative is to visit the site and report in writing to the Departmental Representative the observations noted.

PART 2 PRODUCTS

2.1 SELF ADHESIVE MEMBRANE

.1 Self-Adhered membranes for window sill pan flashings shall be an SBS modified bitumen, self-adhering sheet membrane which is integrally laminated to a polyethylene film. Membrane shall have the following physical properties:

1. Membrane Thicknesses: 1.0 mm (0.040 inches; 40 mils).
2. Low temperature flexibility: -30°C to ASTM D146.
3. Elongations: 200% minimum to ASTM D412-modifed.
4. Minimum Puncture Resistances: 40lbf to ASTM E154.
5. Lap Peel Strengths 4378.4 N/m (25 lbF/in) width to ASTM D903 180° bend.
6. Auxiliary tested component of ASTM E 2357 for Air Leakage of Air Barrier Assemblies.

.2 Self-adhering membrane for all window jambs, headers, door openings, inside and outside corners, and other transitions shall be a self-adhering reinforced modified polyolefin tri-laminate sheet air barrier membrane for wall construction, specifically designed to be water resistant and vapour permeable. Membrane shall have the following physical:

1. Air leakage: <0.02L/s/m2 @ 75Pa [<0.004 CFM/ft2 @ 1.57 lbs/ft2] when tested in accordance with ASTM E 2178.
2. Water Vapour Permeance: 1914 ng/Pa.m².s (33 perms) to ASTM E96, Method B.
3. Resistance to Water Penetration: Pass ICC-ES AC 38.
4. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84: Flame Spread Rating of 5 and Smoke Development Classification of 125.
5. Basis Weight: Minimum 80 g/m2, when tested in accordance with TAPPI Test Method T-410.
6. Cyclic and Elongation: Pass at 100 cycles, -29°C. (-20°F) per ICC-ES AC 48.
7. Average Dry Breaking Force: 245N MD, and 214N CD per ASTM D 5034.

.3 Primer and sealant: as recommended by Membrane Manufacturer.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

.1 Prepare all surfaces in strict accordance with Manufacturer's written instructions.

.2 Clean all surfaces to receive membrane of all debris and oils.

3.2 INSTALLATION

.1 Install membrane in accordance with Manufacturer's instructions.

.2 Install Primer to all substrates where membrane is to be applied in strict accordance with Manufacturer's written instructions.

.3 Roll out sheets. Minimize wrinkles and bubbles

.4 Remove release paper layer. Roll out on substrate with a mechanical roller to ensure complete adhesion to the substrate.

.5 Lap sides and ends of membrane to adjacent materials in a shingled fashion with minimum 50mm in accordance with Manufacturer's instructions and project details.

.6 Seal items protruding or penetrating through the membrane using sealant approved by Manufacturer.

.7 Seal membrane seams with sealant as directed by Manufacturer's recommendations or as directed by Departmental Representative. As a minimum, seal top edge of membrane where not lapped by other flashing or waterproofing.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

.1 The work in this section includes but is not limited to the fabrication and installation of:

.1 Metal flashings as indicated on the drawings.

1.2 REFERENCES

.1 CSSBI-S8 “Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products”.

.2 ASTM-A924/A924M “Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process”.

.3 ASTM-B32 “Standard Specification for Solder Metal”.

.4 ASTM-B69 “Standard Specification for Rolled Zinc”.

.5 ASTM-B370 Standard Specification for Copper Sheet and Strip for Building Construction

.6 ASTM-D822 “Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings”

.7 CSA-B111 “Wire Nails, Spikes and Staples”.

.8 CAN/CGSB-93.1M “Sheet Aluminum Alloy, Prefinished, Residential”

.9 CAN/CGSB-1.171 “Inorganic Zinc Coating”.

.10 ASTM-A653/A653M “Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”.

.11 Aluminum Association Designation System for Aluminum Finishes.

.12 Aluminum Association Aluminum Sheet Metal Work in Building Construction.

.13 CSSBI-20M “Standard for Sheet Steel Cladding for Architectural Industrial and Commercial Building Application”.

.14 Roofing Practices Manual, Roofing Contractors Association of British Columbia (RCABC).

.15 National Building Code of Canada 2010 (NBCC 2010)

.16 National Energy Code of Canada for Buildings 2011 (NECB 2011)

1.3 SUBMITTALS

.1 Submit 200mm length samples of each type of sheet metal flashing, colour, finish and profile specified as well as samples of all related accessories and fasteners in accordance with Section 01 01 50 - General Requirements.

1.4 MOCK-UPS

.1 Prepare mock-up of each type of profile specified in accordance with Section 01 01 50 - General Requirements as part of the actual wall. The sample shall contain trim, stops and closures. The mock-up shall be a minimum of 300mm in length.

PART 2 PRODUCTS

2.1 SHEET METAL COMPONENTS

.1 Zinc coated steel sheet: Quality to ASTM-A924/A924M "Standard Specification for General Requirements for Steel Sheet, Metallic Coated by Hot-Dip Process", 24 gauge thickness with Z275 designation zinc coating.

.2 Aluminum-Zinc alloy coated steel sheet: Quality to ASTM-A924/A924M "Standard Specification for General Requirements for Steel Sheet, Metallic Coated by Hot-Dip Process", 24 gauge thickness with AZM150 designation coating.

.3 Aluminum sheet: Quality to CAN/CGSB-93.1 "Sheet, Aluminum Alloy, Prefinished, Residential", 20 gauge thickness unless noted otherwise.

.4 Copper sheet: Quality to ASTM-B370 "Standard Specification for Copper Sheet and Strip for Building Construction", 0.56mm thick, H00 temper designation with minimum mass of 5.4 kg/m².

2.2 PRE-FINISHED SHEET STEEL COMPONENTS

.1 Pre-finished steel with factory applied 70% flouropolymer (Kynar or equal) based coating.

.1 Class F1S.

.2 Colour to be selected by Owner from Manufacturer's standard range.

.3 Specular gloss: 30 units +/- 5 in accordance with ASTM-D523 "Standard Test Method for Specular Gloss".

.4 Coating thickness: not less than 200 micrometres.

.5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 "Standard Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open Flame Carbon-Arc Exposure Apparatus" as follows:

.1 Outdoor exposure period 5000 hours.

.2 Humidity resistance exposure period 5000 hours.

2.3 ACCESSORIES

.1 Isolation coating: Alkali resistant bituminous paint.

.2 Pop-rivets: Of same material as sheet metal, of length and thickness suitable for metal flashing application.

.3 Fasteners: Of same material as sheet metal, to CSA-B111 "Wire Nails, Spikes and Staples", ring thread flat head roofing nails of length and thickness suitable for metal flashing application. Covered fasteners to be hot dipped galvanized or equal; exposed fasteners to be stainless steel Type 316.

.4 Washers: Of same material as sheet metal, 1mm thick with rubber packings.

.5 Solder: To ASTM-B32 "Standard Specification for Solder Metal".

.6 Flux: Rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.

.7 Touch-up paint: As recommended by prefinished material Manufacturer.

2.4 GENERAL FABRICATION

.1 Fabricate metal flashings and other sheet metal work s indicated on drawings.

.2 Form pieces in 3.04 M maximum lengths. Make allowance for expansion at joints.

.3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.4 Hem exposed edges on underside 12mm.

.5 Mechanically fasten minimum 75mm flanges where cap flashings intersect walls.

2.5 METAL FLASHING

.6 Form all flashing and copings from 24 gauge pre-finished steel to profiles as indicated on drawings.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

.1 Install sheet metal work in accordance with Aluminum Sheet Metal Work in Building Construction as detailed.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal. Secure in place and lap joints 100mm.

3.2 FLASHING

.1 Connect flashing joints with S-locks or standing seams.

.2 Install sealant at all joints not installed over a self-adhesive membrane counter flashing.

.3 Lock end joints and caulk with sealant.

.4 Provide flashing with soldered or continuously folded end-dams. Folded end-dams must be done in a fashion to eliminate pin hole penetrations after fold.

.5 Provide folded end-dams at window/door head and sill flashing terminations.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

.1 The work in this section includes but is not limited to:

.1 Installation of sealant on all aspects of the project and as indicated in the drawings.

1.2 REFERENCES

.1 CAN/CGSB-19.24 “Multi-component, Chemical Curing Sealing Compound”.

.2 CAN/CGSB-19.18, “Sealing Compound, One-Component, Silicone Base, Solvent Cure”.

.3 Manufacturer’s installation instructions.

.4 ASTM Specification C1184 for structural silicone sealants

.5 National Building Code of Canada 2010 (NBCC 2010)

1.3 SAMPLES

.1 Submit samples of each type of material and color in accordance with Section 010150 – General Instructions.

1.4 MOCK-UP

.1 Construct mock-up in accordance with Section 010150 - General Instructions to show location, size, shape and depth of joints complete with back-up material, primer and sealant.

1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Construct mock-up in accordance with Section 010150 - General Instructions to show location, size, shape and depth of joints complete with back-up material, primer and sealant.

.2 Conform to all Manufacturer's recommendations regarding installation, temperature, relative humidity, substrate moisture content for application and curing, and other special conditions governing use.

1.6 COMPATABILITY

.1 Compatibility between components is essential. When required, provide written declaration from Manufacturer to the Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

.2 Contractor to confirm compatibility of sealant with adjacent materials prior to application.

1.7 MANUFACTURER’S REPRENTATIVE

.1 At the request of the Departmental Representative, the Manufacturer’s representative will visit the site and provide in writing to the Departmental Representative a report of their observations noted.

.2 Contractor to permit and facilitate access to site, at all times, for above mentioned Manufacturer's representative.

PART 2 PRODUCTS

2.1 SEALANT MATERIAL QUALIFICATION

.1 Sealant acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with the installation of primers, the proper primers are to be used.

2.2 SEALANT MATERIALS

.1 Sealant Type 1: Silicone, one part, non-sag.

.1 Comply with ASTM C 920, Type S, Grade NS, Class 50 and ASTM C 1184.

.2 Movement capability: +/- 50%.

.3 Non-staining testing per ASTM C 1248.

.2 Sealant Type 2: Silicone, single component, neutral cure for high temperature application. Acceptable material:

.1 Comply with ASTM E814, ASTM E84, ASTM E1966 and CAN4-S115M.

.1 Movement capability: minimum +/- 30%.

.3 Primers: As recommended by each sealant Manufacturer

.4 Backing Material: Pre-formed compressible and non-compressible, polyethylene, urethane, neoprene or vinyl foam.

.1 Extruded closed cell foam backer rod.

.2 Size: oversize 30 to 50%.

.5 Bond Breaker Tape: Polyethylene bond breaker tape which will not bond to sealant or bond breaker as recommended by the sealant manufacturer (in writing, if requested by the Departmental Representative).

2.3 SEALANT SELECTION

.1 Exterior sealant joints with joint widths greater than ¾": Sealant Type 1.

.2 Exterior sealant joints with joint widths less than ¾": Sealant Type 1.

.3 Sealant joints at locations where high temperature sealant application is required: Sealant Type 2.

2.4 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant Manufacturer.

PART 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 substances including dust, rust, oil, grease, and other matters which may impair the work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, 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 recommendations.

3.2 PRIMING

.1 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 BACKUP MATERIAL

.1 Install bond breaker where required in accordance with Manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.4 MIXING

.1 Mix materials in strict accordance with sealant Manufacturer's instructions.

3.5 APPLICATION

.1 Sealant Application.

.1 Apply sealant in accordance with Manufacturer's written instructions respecting maximum and minimum joint dimensions.

.2 Mask edges of joint to provide neat joint.

.3 Apply sealant using gun with proper nozzle size.

.4 Apply by pushing the sealant ahead of the application nozzle using adequate pressure to fill the entire joint.

.5 Apply sealant in continuous beads.

.6 Use sufficient pressure to fill voids and joints completely.

.7 Form surface of sealant joint with a smooth and full bead of sealant. It is to be free from ridges, wrinkles, sags, air pockets and embedded impurities.

.8 Tool exposed surfaces before skinning begins to give proper concave shape.

.9 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

.1 Allow sealant to cure in accordance with sealant Manufacturer's instructions.

.2 Do not cover up sealant 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.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

.1 The work in this section includes but is not limited to:

.1 Supply and install new aluminum window complete with frames, insulated spandrels, anchors, brackets, hardware and other related components at the locations identified on the drawings.

.2 Supply and install internal reinforcements as required to suit the spans of the windows and doors.

.3 Prepare the window openings with waterproofing details and flashing as indicated on the drawings.

.2 The window supplier will be responsible for the design of the window system and the design of the secondary structure system to transfer all loads to the primary structure.

1.2 REFERENCES

.1 ASTM-E283 “Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors under Specified Pressure Differential across the Specimen”.

.2 ASTM-E330 “Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference”.

.3 ASTM-E331 “Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference”

.4 ASTM-E783 “Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors”.

.5 ASTM-E1105 “Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference”.

.6 CSA-A440 “Windows, including A440.1 - User Selection Guide to A440, A440.2 - Energy Performance Evaluation of Windows and Other Penetration Systems, A440.3 - User Guide to A440.2, and A440.4 - Window and Door Installation”.

.7 Glazing Recommendations for Sealed Insulating Units by Insulating Glass Manufacturers of Canada.

.8 AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specifications for Windows, Doors and Skylights”

.9 National Building Code of Canada 2010.

.10 Glazing Recommendations for Sealed Insulating Units by Insulating Glass Manufacturers of Canada.

.11 CSA A440S1 “Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specifications for Windows, Doors and Skylights”.

.12 ANSI/NFRC 100-2014, ANSI/NFRC 200-2014 & ANSI/NFRC 300-2014.

1.3 PERFORMANCE REQUIREMENTS

.1 Limit mullion deflection to L/175.

.2 Window supplier to verify maximum deflection on minimum 2 window panels selected by the Departmental Representative.

.3 Allow for deflection of building structure. Aluminum window frames with deflection channel and seismic compensation channel shall be designed, fabricated and installed to withstand slab edge vertical differential deflections of maximum 19mm and seismic inter-story lateral drift movements of Delta S +/- 95.25mm without significant damage to the fenestration system or Delta M +/- 44.45mm with significant damage expected but framing to be designed to remain anchored to the structure.

.4 Fixed Windows shall meet the following performance criteria:

.1 AAMA / WDMA / CSA 101 / I.S.2 / A440-8/11 North American Fenestration Standards (NAFS), be labeled with the AAMA, CSA, or WDMA label, these include:

.1 Windows Performance Class – LC 30

.2 .Water Resistance: No water leakage as defined in AAMA/WDMA referenced test methods at a water test pressure equaling that indicated, when tested according to AAMA/WDMA/ CSA-101/I.S.2/ NAFS, Water Resistance Test:

.1 Windows – 500 Pa

.3 Thermal performance to comply fully with BC Energy Efficiency Act as follows:

.1 Maximum U-value: 2.0 W / (m²K).

.4 Condensation Resistance as follows:

.1 I-60 as calculated using AAMA/WDMA/CSA/ 101/I.S.2/ A440-08 (NAFS).

.5 Glass performances to comply fully with Insulating Glass Manufacturer's Alliance (IGMA) as follows:

.1 SHGC max value: 0.4

1.4 SUBMITTALS

.1 Submit all documentation and samples in accordance with Section 01001 - General Requirements.

.2 Submit test reports to confirm that the window and door systems comply with the performance requirements.

.3 Submit thermal modeling test results confirming overall effective U-value and SHGC meets project requirements.

.4 Submit letter from glazing contractor confirming that all products will be supplied and installed according to the descriptive and performance requirements of this specification. Identify any specified requirements that are in error or cannot legitimately be met, and

provide alternatives which meet the intent of the specifications for the Departmental Representative to approve.

.5 Submit shop drawings under seal of a Professional Engineer registered in British Columbia. The shop drawings must meet the following criteria:

.1 Show scaled elevations, sections, dimension, and quantity of units. Indicate rough opening requirements and maximum tolerances of adjacent construction.

.2 Provide full size details of all perimeter and interface conditions. Show relationship to other work, including attachment of flashing, air barrier, moisture barrier, and locations of sealant joints. Show extrusion profiles and engagement of glass and infill materials. Indicate drainage paths for glazing cavities.

.3 Show method of structural reinforcement and attachment to building, including provisions for thermal movement and building movement. Identify all structural fasteners.

.4 Schedule glass types and sealed unit makeup. Identify glass types, thickness, finishes, edge seal and location of isolation coatings. Indicate calculated design loads for glazing units.

.6 Submit Schedule B-1 "Assurance of Professional Design and Commitment for Field Review" and Schedule B-2 "Summary of Design and Field Review Requirements" in accordance with the appropriate codes together with shop drawings.

.7 Submit Schedule C-B "Assurance of Professional Field Review and Compliance" promptly on completion of work.

.8 Submit samples of materials requested (i.e., frame sections, glass and glazing material, fasteners and hardware). The samples are to be submitted without additional cost to Owner.

.9 Submit maintenance data for incorporation into the project's maintenance manual. The maintenance data include:

.5 Data for maintenance and cleaning of finishes.

.6 Data for cleaning of glass.

.7 Data for maintenance of door and window operating hardware.

.8 Submit all warranties promptly on completion of work.

1.5 SAMPLES

.1 Submit samples of each type of material and color in accordance with Section 010150 – General Instructions.

1.6 MOCK-UP

.1 Provide and install sample of window as a mock-up for Owners and Departmental Representatives review and acceptance prior to delivery of remaining windows. Window type and location to be selected by the Departmental Representative.

.2 Sample installation shall be in accordance with project requirements and may be included as part of the completed work if accepted by Departmental Representative.

.3 Sample unit shall consist of a typical unit including, but not limited to specified mullions, glazing, glazing tints, surface finishes and all hardware.

.4 Mock-up location shall include all surrounding building envelope components including, but not limited to interior finishes, vapour retarder, framing, moisture barrier, sealants, strapping, flashings, trims and cladding. Plywood can be temporarily utilized for the mock-up in lieu of cladding finishes. Mock ups to be completed for both the window assembly and door assemblies.

.5 Window manufacturer shall review, verify and provide written acceptance to verify compliance for installation and warranty.

.6 Mock up shall be tested in accordance with CSA A440 standards to confirm performance requirements.

1.7 QUALITY ASSURANCE

.1 Manufacturer and Installation Contractor to be a member in good standing of the Glazing Contractors Association of British Columbia, and have a minimum of five years documented experience. Contractors to provide documentation of previous experience as requested.

.2 Confirm that surfaces to which the materials are to be applied are in a condition suitable for this application.

.3 Unless otherwise specified, comply with Manufacturer's latest printed instructions for materials and installation methods.

.4 Notify Departmental Representative in writing of any conflict between these specifications and Manufacturer's instructions. Departmental Representative will designate which document is to be followed.

1.8 FIELD TESTING

.1 Field Testing to be completed by Departmental Representative to verify compliance with specified water penetration performance requirements. (Minimum 500 Pa) using ASTM-E11105 "Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference".

.2 Water penetration performance testing shall be completed on the mock-up. Testing shall include the window and surrounding building envelope components.

.3 Upon passing the mock-up test, the Contractor will be permitted to install the remaining windows for the project.

.4 3 separate tests will be completed by the Departmental Representative. Location of field test to be randomly selected by Departmental Representative. Testing shall include the windows, spandrel panels, and surrounding building envelope components.

.5 The Contractor is to assist Departmental Representative to perform field tests of water penetration. Assistance includes:

.1 Arranging access to the units

.2 Supplying water to an adequate pressure and flow

.3 Assisting in assembling pressure chambers as directed by the Departmental Representative

.4 Setting up and dismantling rain-rack

.5 Operating test equipment (blower and water) during the test

.6 Where test or reviews reveal work not in accordance with contract requirements, contractor shall pay cost of re-testing and verifications. All tests and re-tests shall be completed by the Departmental Representative.

1.9 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Glaze with sealant or tapes only when glazing surfaces are at temperatures recommended by the tape or sealant Manufacturer, and when glazing surfaces are free of moisture.

.2 Ensure the moisture content and temperature of substrate conforms to the Manufacturer's minimum requirements before proceeding with waterproofing details at window and door openings.

1.10 COMPATABILITY

.1 Compatibility between components of system and adjacent materials is essential. Where required, provide a written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

.1 Separator for dissimilar metals to prevent galvanic reaction.

1.11 MANUFACTURER'S REPRENTATIVE

.1 At the request of the Departmental Representative, the Manufacturer's representative will visit the site and provide in writing to the Departmental Representative a report of their observations noted.

.2 Contractor to permit and facilitate access to site, at all times, for above mentioned Manufacturer's representative.

1.12 PRODUCT DELIVERY STORAGE AND HANDLING

.1 Deliver, handle and store units in accordance with manufacturer's directions.

.2 Store units vertically, in a clean, dry, secured and protected area with a positive bottom support at right angles to the plane of glass.

.3 Store units blocked off the ground in an approved manner to prevent warping, twisting, undue strain on assembly or physical abuse and damage.

.4 Refer to testing sections for required testing prior to delivery of windows on site.

1.13 WARRANTY

.1 Warranties for windows shall be as follows:

.1 2-year parts and labour warranty.

.2 5-year water penetration.

.3 10-year sealed unit warranty.

.2 All on-site modifications to window assemblies are to be in accordance shall have written approval from Manufacturer and shall not compromise specified warranties.

PART 2 PRODUCTS

2.1 WINDOW MATERIALS

.1 All materials to meet minimum design and material specification of CSA-A440 and CAN/CGSB-82.1.

.2 Glass: In accordance with CAN/CGSB-12.20 “Structural Design of Glass for Buildings”.

.3 Frame member and intermediate bars are extruded from aluminum sections of 6063 alloy, T5 temper with a minimum thickness of 1.6mm. Fastener shall be stainless steel of sufficient size and quantity to perform their intended function.

.4 Fastener: In accordance with Manufacturer requirements and compatible with adjacent materials. All exposed fasteners to be stainless steel within drainage path. Should meet minimum 2000hrs salt spray test (e.g. DT2000).

.5 Gaskets: Exterior and interior gaskets as required by manufacturer.

.6 Weathering and glazing gaskets shall be extruded santoprene

.7 Setting Block: Silicone block material to be compatible with edge sealant for sealed units with 80 Shore A durometer hardness.

.8 Glazing bead shall be extruded aluminum.

.9 Thermal break shall be Polyamide.

2.2 SYSTEM DESCRIPTION

.1 Provide rainscreen extrusions designed to control water that penetrates past the exterior glazing seal. Provide raised legs to form drainage gutters and support glass above the level of draining water. All functions, overlaps and joints must allow water to flow freely. All materials are to be in installed in a shingled fashion without water ponding over any sealed joints.

.2 Provide an effective air barrier at the face of the system.

.3 Provide continuous air barrier around the perimeter of the frame.

.4 Provide thermal break between interior and exterior extruded aluminum framing sections.

.5 Provide drainage of window to the exterior or the exterior wall rainscreen.

.6 Any moisture in the window is to be wept to the exterior without compromising the air barrier of the system. The Departmental Representative must approve the sizes and locations of the drainage path as designed in the shop drawings.

2.3 FABRICATION

.1 Assemble windows to ensure neat, weather-tight construction free from defects affecting appearance or performance.

.2 Fabricate units square and true with a maximum tolerance of +/- 3 mm for units with a diagonal measurement under 1800 mm and +/- 6 mm for larger units.

.3 Fabricate and assemble framing to replicate details of tested assemblies.

.4 Do not bridge thermal barriers with flashing or other conductive materials.

.5 Conceal fasteners whenever possible.

.6 Pre-formed gaskets to be continuous and in one piece, cut oversize materials to allow for shrinkage and install with tightly fitted corners.

.7 Brace frames to maintain squareness and rigidity during shipment and installation.

2.4 ALUMINUM FINISH

.1 Aluminum Frame:

.1 In accordance with CSA-A440 and CAN/CGSB-82.1, including appendices.

.2 Extruded aluminum alloy 6063, T5 temper.

.2 Coating Finish:

.1 Spray-applied protective coating that contains 70% Fluoropolymer in the total formulation and meets the requirements of AAMA-2605 “Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels”.

.3 All exposed surfaces to be free of visible defects and scratches.

2.5 VISION GLASS PANELS

.1 Glass to be designed in accordance with Glazing Recommendations for Sealed Insulating Units by Insulating Glass Manufacturers of Canada and to include:

.1 Aluminum windows shall be double glazed, double seal insulated glass unit, double glazed with tempered glass outside, laminated glass inside with an overall thickness of 23 mm.

PART 3 EXECUTION

3.1 PREPARATION OF WALL OPENING

.1 Prepare wall openings as indicted in the drawings.

3.2 INSTALLATION

.1 Install window in accordance with CSA-A440 and CAN/CGSB-82.1.

.2 Comply with reviewed shop drawings and Manufacturer’s instruction.

.3 Install window frames in prepared openings. Ensure the frames are level, square, true and in relation to established lines and grades shown on reviewed shop drawings.

.4 Secure work to allow for anticipated movements of the building structure and thermal movements within the framing system without failure of sealant joints or compromising the performance of the window and door system.

.5 Conceal all fasteners except where unavoidable for structural anchorage or installation of hardware.

.6 Set sill flashing level lengthwise with minimum 5% slope to the exterior. Sill flashing that allows water to pond will not be accepted. Both ends of the sill flashing are to be dammed.

.7 Ensure the building's air barrier and vapour barrier are effectively sealed to the frame.

.8 Install glass and glazing materials as scheduled on the reviewed shop drawings.

.9 Handle and install glass to prevent edge damage. Use rolling blocks to rotate large units. Do not install glass that shows sign of edge damage.

.10 Correctly install membrane flashing to ensure proper drainage of moisture. Provide a metal plate set in bed of sealant over frame where required to receive membrane flashing.

.11 Seal joints between framing and surrounding materials in accordance with Section 07900 - Sealant.

.12 Refer to Section 07527 for self-adhesive membrane, mastic and primer.

3.3 FLASHING INSTALLATION

.1 Provide custom metal flashing

.2 Install metal flashing in accordance with Section 07620 - Metal Flashing and Trim. The flashing is to be uniform, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location.

3.4 CLEANING AND ADJUSTMENT

.1 At completion of work, clean all glass and frames with soap or other approved cleaning agent.

.2 Remove all excess glazing or joint sealing materials from exposed surfaces. Clean and polish glass.

.3 Adjust all hardware, as required, for proper function.

END OF SECTION

APPENDIX A
PRE-RENOVATION HAZARDOUS BUILDING MATERIALS ASSESSMENT

Pre-Renovation Hazardous Building Materials Assessment
William Head Institution
Chapel (29)
Exterior Door/Window Replacement

6000 William Head Road,
Victoria, BC

Prepared for:
Public Works and Government Services Canada
Environmental Services, Pacific Region
401 – 1230 Government Street
Victoria, BC V8W 3X4

Prepared by:
Stantec Consulting Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6
Tel: (604) 436-3014
Fax: (604) 436-3752

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December 16, 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 pre-renovation hazardous building materials assessment of the chapel (29) at CSC William Head Institution, which is located at 6000 William Head Road, Victoria, BC (subject building).

The purpose of the assessment was to assess for the presence (or absence) and estimated extent of 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), as part of a planned exterior door and window replacement project.

The hazardous building materials considered during this assessment included asbestos-containing materials (ACMs), lead, including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mould and moisture affected building materials, mercury, ozone depleting substances (ODSs), and silica.

Based on Stantec's visual assessment and on the laboratory analyses performed on samples collected, as well as a review of previous reports, hazardous building materials that may be impacted by the planned exterior door and window replacement project were identified to be present.

A summary of our findings pertaining only to building materials expected to be impacted by the planned exterior door and window replacement project is presented below. Recommendations pertaining to the handling, removal, transportation and disposal of identified hazardous materials are provided in Section 6.0 of this report.

It should be noted that other hazardous building materials that are NOT expected to be impacted by the planned exterior door and window replacement project are present in the subject building, as indicated in previous reports and documents as outlined herein.

This summary is subject to the same restrictions and limitations as presented in Section 4.0 (Assessment Limitations) and Section 7.0 (Closure). The information provided is to be read in conjunction with the remainder of this report.

Summary of Findings
ACMs The following ACM that may be impacted by the planned exterior door and window replacement project was identified: • Window pane caulking applied to perimeter windows. • Insulation material inside fire-rated doors (presumed ACM) Where the above noted ACM was observed it was found to be in good condition.
Lead The following LCP that may be impacted by the planned exterior door and window replacement project was identified through this assessment: • Brown colored paint on exterior trim (poor condition) • Brown coloured paint on interior trim Unless otherwise noted above, these paints were observed to be in good condition.
Polychlorinated Biphenyls No suspected PCB-containing equipment was identified that may be impacted by the planned exterior door and window replacement project.
Mould and Moisture Impacted Materials No suspect mould and/or moisture impacted building materials were identified that may be impacted by the planned exterior door and window replacement project.
Mercury No suspected mercury-containing equipment was identified that may be impacted by the planned exterior door and window replacement project.
Ozone-Depleting Substances No equipment suspected of containing ODSs was identified that may be impacted by the planned exterior door and window replacement project
Silica Silica is expected to be present in concrete and masonry brick walls around window and door frames and may be impacted (drilling/breaking of concrete or brick units, grinding, sanding, etc.) by the planned exterior door and window replacement project.

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 pre-renovation hazardous building materials assessment of the chapel (29) at CSC William Head Institution, which is located at 6000 William Head Road, Victoria, BC (subject building).

The purpose of the assessment was to assess for the presence (or absence) and estimated extent of 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), as part of a planned exterior door and window replacement project.

The hazardous building materials considered during this assessment included asbestos-containing materials (ACMs), lead, including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mould and moisture affected building materials, mercury, ozone depleting substances (ODSs), and silica.

Site work was completed by Keith Irwin and Sean Brigden of Stantec on November 10, 2016 and December 14, 2016 respectively.

2.0 BACKGROUND

The subject building was reportedly constructed in 1912. This date of construction is consistent with those dates when hazardous building materials were commonly used and/or may be present including, but not limited to ACMs, LCPs, PCBs, mould, mercury, ODSs, and silica.

Stantec understands that an exterior door and window replacement project is planned for the subject building. As a measure of diligence in maintaining compliance with federal and provincial regulations pertaining to the identification of hazardous materials that may be impacted by the planned project prior to initiation of renovation activities, PWGSC commissioned this assessment.

2.1 DOCUMENTATION REVIEW

The following documentation was reviewed prior to undertaking the assessment:

- Stantec Report No. 123220504 entitled *Project-Specific Hazardous Building Materials Assessment, William Head Institution Fire Alarm Replacement*, dated April 12, 2016, prepared for Public Works Government Services Canada (Fire Alarm Assessment)
- 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 the Correctional Service of Canada (PGL Assessment)
- John MacRae and Associates Inc. Report entitled *Asbestos Containing Materials and Hazard Assessment Report*, dated October, 1999, prepared for the Correctional Service of Canada (JMA Assessment)

This documentation provided Stantec with an understanding of hazardous building materials that are anticipated to be present at the subject building.

According to the above-noted documents, the following hazardous building materials were previously identified:

- ACMs
  - 12"x12" tan floor tile with white and brown streaks located within the entrance room 107 (Fire Alarm Assessment)
  - ACM floor tile in room 101 and on the second floor under carpet (JMA assessment)
  - Black window pane caulking applied to windows at the entrance (Fire Alarm Assessment)
  - White duct tape concealed beneath grey duct tape on furnace ducting (Fire Alarm Assessment)
  - Heat shield inside round incandescent light fixture within the entrance room 107 (Fire Alarm Assessment) and in room 105 (JMA report)
  - Cement panel present behind heat registers in the crawlspace (JMA Assessment)
- Lead and LCPs (Fire Alarm Assessment)
  - Grey/orange coloured paint on the metal door to the basement
  - Brown coloured paint on the trim in the entrance (107)
  - Pipe and electrical solder, in bell fittings for cast iron drainage pipes, in electrical equipment (e.g., batteries for emergency lighting and signage)
  - Roof vent caps and pipe flashings
- Other hazardous building materials (Fire Alarm Assessment)
  - Silica in vinyl floor tiles, plaster, brick, mortar, cement, and concrete

With the exception of the following, the above-noted previously identified hazardous building materials would not require disturbance during the planned exterior door and window replacement project:

- Black window pane caulking applied to windows at the entrance (Fire Alarm Assessment)
- Grey/orange coloured paint on the metal door to the basement (Fire Alarm Assessment)
- Brown coloured paint on the trim in the entrance (107) (Fire Alarm Assessment)

In addition to the above "general" finding that required additional assessment to provide information specific to the planned exterior window and door replacement project, and as sampling of other suspected hazardous building materials specific to exterior doors and windows was excluded from the assessment work associated with the above-noted reports, this project-specific supplemental assessment was required.

3.0 SCOPE AND METHODOLOGY

Keith Irwin of Stantec conducted a visual assessment within the subject building on November 10, 2016. Sean Brigden of Stantec conducted a follow-up intrusive assessment for vermiculite in masonry walls on December 14, 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).

Materials that may be disturbed during renovation activities were visually examined to determine the suspected presence of ACMs, lead including LCPs, PCBs, mould, mercury, ODSs, 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.

3.1 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 building, 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, asbestos-containing material (ACM) means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

Based on these criteria, multiple samples were collected from each "homogenous application" of an observed suspected ACM (materials suspected to contain asbestos that are uniform in material type, colour, texture application and estimated installation date) that was expected to be disturbed by the planned exterior door and window replacement project, and submitted to EMSL Canada Inc. (EMSL) in Vancouver, BC for analysis of asbestos content using Polarized Light Microscopy (PLM) with dispersion staining, in accordance with the US Environmental Protection Agency (EPA) 600/R-93/116 Method *for the Determination of Asbestos in Bulk Building Materials*. The number of samples to be collected for each homogenous application of a suspected ACM was based on the recommendations provided in the WorkSafeBC publication *Safe Work Practices for Handling Asbestos* (2012), 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).

3.1.1 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 0.5% in one of the

samples within a set that was collected to represent a "homogenous application" of that material (or in any concentration, for vermiculite). 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.

3.1.2 Potential Asbestos-Containing Vermiculite Insulation

As part of the assessment, Stantec assessed for areas where vermiculite insulation, a potential ACM, would likely be present and require disturbance during the exterior door and window replacement project. This included making note of and assessing attic spaces, floor cavities and masonry or brick walls, which are typical areas where vermiculite is found. Where masonry or brick walls were observed, destructive assessment (drilling) was conducted to assess the cavity for the presence of vermiculite.

3.1.3 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.

3.2 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 percent 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".

Samples of suspected LCPs were collected from major paint applications on building elements expected to be disturbed during the planned exterior door and window replacement project, 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.

3.3 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 pertaining only to potential PCB-containing items expected to be disturbed during the planned exterior door and window replacement project.

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 visible labels of ballasts in several fixtures were inspected for comparison to the Environment Canada reference guide entitled *Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2*, dated August 1991 (PCB Guide).

3.4 MOULD AND MOISTURE IMPACTED MATERIALS

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 pertaining only to building materials expected to be disturbed during the planned exterior door and window replacement project. 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.

3.4.1 Mould Reference Guidelines

With respect to mould and/or moisture, the visual assessment procedures utilized and abatement scope of work developed 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)

3.5 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 pertaining only to potential mercury-containing items expected to be disturbed during the planned exterior door and window replacement project.

3.6 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 pertaining only to potential ODS-containing items expected to be disturbed during the planned exterior door and window replacement project.

3.7 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 pertaining only to potential silica-containing items expected to be disturbed during the planned exterior door and window replacement project.

4.0 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 accessible and accessed areas of the subject building pertaining only to building materials expected to be disturbed during the planned exterior door and window replacement project, and the results of analyses performed on the specific material sampled during the assessment. Analytical results reflect the sampled material at the specific sample locations.

This report has been prepared for the exclusive use of the PWGSC for the purpose of assessing general conditions of building materials expected to be disturbed during the planned exterior door and window replacement project. Any use that a third party makes of this report, or reliance on, or decisions to be made on it, are the responsibility of such third parties. Stantec 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 assessment was limited to the areas where renovations were planned as follows, based on our observations and information provided by on-site personnel as well as PWGSC representatives:

- The interior and exterior of perimeter doors and windows, and associated surrounding building materials that would presumable require disturbance

The limitations of this assessment pertaining to each of the considered hazardous materials are outlined in the following sub-sections.

4.1 ASBESTOS

Due to the limitations of sampling techniques, the asbestos content of some materials that may be disturbed during the planned exterior door and window replacement project could neither be confirmed nor denied. Suspected ACMs that were not sampled include, but are not limited to, the following:

- Materials within wall cavities
- Insulation materials inside fire doors

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.

4.2 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 building, and only pertaining to building materials expected to be disturbed during the planned exterior door and window replacement project. The presence of lead or lead-containing materials in inaccessible areas not assessed included, but was not limited to: wall cavities.

With respect to paint, samples of suspected LCPs were collected within the subject building 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.

4.3 POLYCHLORINATED BIPHENYLS

Conclusions and recommendations regarding the presence of potential PCB-containing items expected to be disturbed during the planned exterior door and window replacement project 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 building. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, within the subject building will not be commented on.

4.4 MOULD AND MOISTURE IMPACTED MATERIALS

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) was conducted in accessed portions of the subject building only, and only pertaining to building materials that are expected to be disturbed during the planned exterior door and window replacement project. 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 building 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 building or within the impacted area(s).

This assessment does not constitute a building envelope/building systems assessment, 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.

4.5 MERCURY

Visual assessment for the presence of mercury-containing equipment within the subject building was conducted in accessible areas only, and only pertaining to potential mercury-containing items expected to be disturbed during the planned exterior door and window replacement project. The presence of mercury or mercury-containing equipment in inaccessible areas includes, but is not limited to: wall cavities.

4.6 OZONE-DEPLETING SUBSTANCES

Visual assessment for the presence of ODSs within the subject building was conducted in accessible areas only, and only pertaining to potential ODS-containing items expected to be disturbed during the planned exterior door and window replacement project. The presence of ODS-containing equipment in inaccessible areas including, but not limited to, wall cavities was not assessed. In addition, portable equipment that may contain ODSs (refrigerators, drink coolers, etc.) was not considered as part of this assessment.

4.7 SILICA

Visual assessment for the presence of silica-containing materials within the subject building was conducted in accessible areas only, and only pertaining to potential silica-containing items expected to be disturbed during the planned exterior door and window replacement project. The presence of potential silica-containing materials in inaccessible areas including, but not limited to, wall cavities was not assessed.

5.0 RESULTS

Floor plans showing bulk sample locations associated with the current assessment along with locations of identified hazardous building materials that are expected to be impacted by the planned exterior door and window replacement project (where practical) are provided in Appendix A.

The results of the assessment for each of the considered hazardous materials are provided in the following sub-sections.

5.1 ASBESTOS

As part of the current assessment, Stantec identified and collected representative samples of various suspected ACMs that were expected to be impacted by the planned exterior door and window replacement project. The materials sampled by Stantec included the following:

- Window frame caulking
- Plaster
- Window pane caulking

Eighteen samples of the above-noted suspected ACMs were collected within the subject building and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in in Appendix B. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are included in Appendix C.

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of the results of suspected ACM samples collected during this assessment as well as a review of the information provided in the previous reports, the materials presented in Table 5-1, below were identified as ACMs within the subject building that are expected to be impacted by the planned exterior door and window replacement project.

Table 5-1 Summary of Identified ACMs—Exterior Door/Window Replacement Project Building 29—Chapel, CSC William Head Institution, Victoria, BC

Identified ACM Description		Photo
Window pane caulking applied to perimeter windows (previously identified, confirmed through current sampling).		
Condition	Good	
% Type	3.1% Chrysotile (Fire Alarm Assessment) 3.9–4.4% Chrysotile (current assessment)	
Friability	Non-friable	

5.1.1 Material Inside Fire Doors

ACM insulation was historically used inside fire rated doors. Destructive work required to sample materials inside doors was NOT conducted as part of this assessment. If fire rated doors are to be removed and disposed of as part of the project, and if records pertaining to the insulation type is not on-file or cannot be obtained, these items should be presumed to have ACM insulation and be handled as such, unless destructive assessment and analytical testing proves otherwise.

5.1.2 Assessment for Vermiculite Insulation

Various walls of the subject building were comprised of brick. Asbestos-contaminated vermiculite was historically used as insulating material in brick walls. Destructive testing was conducted by Stantec at the time of this assessment to assess wall cavities. No vermiculite insulation was observed within the subject building through observations or destructive testing.

5.2 LEAD

With respect to paint, two paint chip samples were obtained from the predominant suspected LCP applications that may be disturbed during the planned exterior door and window replacement project. A summary of the sample types, locations and analytical results is presented in Table 5-2, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is included in Appendix D.

Table 5-2 Suspected LCP Sample Collection and Analysis Summary
Exterior Door/Window Replacement Project
Building 29—Chapel
CSC William Head Institution, Victoria, BC

Sample No.	Sample Colour and Substrate	Sample Location	Lab Result (ppm)	Lead Containing (Yes/No)
29-P-01	Brown exterior wood trim	East exterior window frame	3,200	Yes
29-P-02	Brown interior wood trim	Washroom interior window frame	600	Yes

Based on our observations and on our interpretations of suspected LCP sample analytical results, the paint presented in Table 5-3, below was identified as an LCP that will require disturbance as part of the planned exterior door and window replacement project.

Table 5-3 Summary of Identified LCPs—Exterior Door/Window Replacement Project Building 29—Chapel, CSC William Head Institution, Victoria, BC

Identified LCP Description		Photo
Paint colour	Brown	
Substrate	Wood and concrete	
Location/approx. extent	Exterior trim	
Lead content	3,200 ppm	
Condition	Poor (flaking, peeling and bubbling)	
Paint colour	Brown	
Substrate	Wood	
Location/approx. extent	Interior trim	
Lead content	600 ppm	
Condition	Good	
Paint colour	Grey/orange (identified during the Fire Alarm Assessment)	
Substrate	Metal	
Location/approx. extent	Basement door	
Lead content	2,300 ppm	
Condition	Good – In general Localized areas where paint has worn away	

Table 5-3 Summary of Identified LCPs—Exterior Door/Window Replacement Project Building 29—Chapel, CSC William Head Institution, Victoria, BC

Identified LCP Description		Photo
Paint colour	Brown (identified during the Fire Alarm Assessment)	
Substrate	Wood	
Location/approx. extent	Entrance interior trim	
Lead content	970 ppm	
Condition	Good	

5.3 POLYCHLORINATED BIPHENYLS

No suspected PCB-containing equipment was identified that was expected to require disturbance as part of the planned exterior door and window replacement project.

5.4 MOULD AND MOISTURE IMPACTED MATERIALS

No suspect mould and/or moisture impacted building materials were identified that are expected to require disturbance as part of the planned exterior door and window replacement project.

5.5 MERCURY

No suspected mercury-containing equipment was identified that is expected to require disturbance as part of the planned exterior door and window replacement project.

5.6 OZONE-DEPLETING SUBSTANCES

No equipment suspected of containing ODSs was identified that is expected to require disturbance as part of the planned exterior door and window replacement project.

5.7 SILICA

Silica is expected to be present in concrete and masonry brick walls around window and door frames and may be impacted (drilling/breaking of concrete or brick units, grinding, sanding, etc.) by the planned exterior door and window replacement project.

6.0 RECOMMENDATIONS

The recommendations pertaining to the requirements for each of the hazardous materials included in this assessment are presented in the sub-sections below.

6.1 ASBESTOS

Based on the findings of our visual assessment, the results of laboratory analyses conducted as part of this assessment as well as our review of previous documentation as outlined herein, Stantec recommends the following with regards to meeting the requirements of the Canada Labour Code and BC Reg. 296/97 as they pertain managing asbestos during renovation projects:

- Identified ACMs that may be impacted by planned renovation activities should be removed and disposed of in accordance with the procedures outlined in the current version of the WorkSafeBC document entitled *Safe Work Practices for Handling Asbestos*, by a qualified asbestos abatement contractor, prior to the start of activities that may disturb them.
- If materials that are visually similar to identified ACMs are discovered within the subject building in locations not outlined in this report, these materials should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.
- If encountered during renovation activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.
- If fire rated doors are to be removed and disposed of as part of the project, destructive assessment of materials inside the doors (and potentially laboratory analysis of samples) should be conducted prior to disposal.
- 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).
- Identified ACMs in good condition that will not be impacted by the planned renovation activities can be managed in place, in accordance with the requirements set forth in the asbestos management plan (AMP) that has been developed and implemented for the subject facility.
- This report should be maintained on-file within the AMP for the subject facility.

6.2 LEAD

LCPs in poor condition should be addressed. This would include removal of loose/flaking paint from surfaces. Consideration should be given to re-painting surfaces where LCPs are delaminating, to mitigate the potential for additional delamination and distribution of LCP waste within the area.

For lead-containing materials, including LCPs that are to be impacted by the planned renovation activities, including paint chip debris that is created during the renovation process, ensure compliance with the following:

- Occupational exposure control requirements of the Canada Labour Code and BC OHS Reg., including the provisions of the Lead Guideline
- Disposal requirements of the British Columbia Hazardous Waste Regulation (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 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.

Lead-containing materials, including LCPs that will not be impacted by the planned renovation activities can be managed in place, where in good condition.

6.3 POLYCHLORINATED BIPHENYLS

As no suspected PCB-containing equipment was identified that is expected to require disturbance as part of the planned exterior door and window replacement project, no recommendations have been provided.

6.4 MOULD AND MOISTURE IMPACTED MATERIALS

As no mould and/or moisture impacted building materials were identified that are expected to require disturbance as part of the planned exterior door and window replacement project, no recommendations have been provided.

6.5 MERCURY

As no mercury-containing equipment was identified that is expected to require disturbance as part of the planned exterior door and window replacement project, no recommendations have been provided.

6.6 OZONE-DEPLETING SUBSTANCES

As no ODS-containing equipment was identified that is expected to require disturbance as part of the planned exterior door and window replacement project, no recommendations have been provided.

6.7 SILICA

Although silica-containing materials may be impacted in spot locations, these items are not expected to require significant or destructive disturbance as part of the planned exterior door and window replacement project. However, if project requirements change, and if silica-containing materials require significant disturbance (drilling/breaking of concrete or masonry units, grinding, sanding, etc.), 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

7.0 CLOSURE

This report has been prepared by Stantec for the sole benefit of the Public Works and Government Services Canada and Correctional Service 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 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 date 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 cannot warrant against

undiscovered environmental liabilities. It is possible that additional, concealed hazardous materials may become evident during renovation and/or demolition activities within the subject building.

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.

Regards,

STANTEC CONSULTING LTD.

Amanda Bell, B.Sc., EPt
Report Writer
Phone: (604) 412-3006
Amanda.Bell@stantec.com

Tiffany Waite, B.Sc.
Technical Reviewer
Phone: (250) 470-4498
Tiffany.Waite@stantec.com

This report was approved for transmittal by:

Sean Brigden, B.Sc., P.B.Dipl., CRSP
Senior Reviewer
Phone: (250) 389-2346
Sean.Brigden@stantec.com

AB/TW/SB/sf

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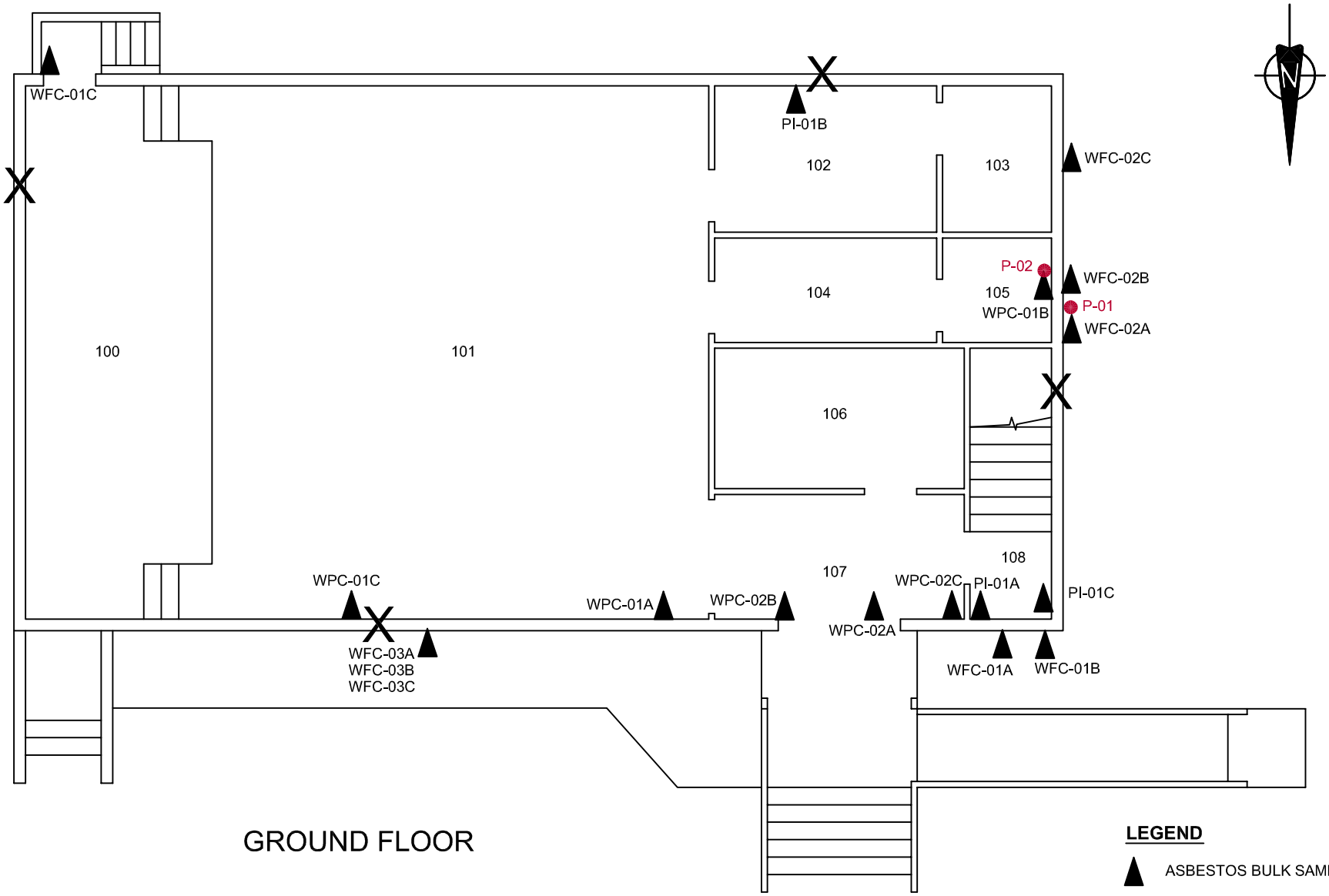
APPENDIX B
FLOOR PLANS



GROUND FLOOR

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- INSPECTION PORT FOR VERMICULITE

NOTES: 1. BLACK WINDOW PANE CAULKING 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

CHAPEL (29), WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, PACIFIC REGION

Project No.:	123220729
Scale:	N.T.S.
Date:	16/12/15
Dwn. By:	CD SL2016120125 PK/DM
App'd By:	TW

Dwg. No.: 1

Stantec

APPENDIX C
SUMMARY OF SUSPECTED ACM BULK SAMPLES

HAZARDOUS BUILDING MATERIALS ASSESSMENT

Summary of Suspected ACM Bulk Samples
December 2016

Sample Number	Material Description	Sample Location	Stop Positive (Yes/No)
29-WFC-01A	White exterior window and door frame caulking	Northwest window exterior	None Detected
29-WFC-01B	White window and door frame caulking	Northwest window exterior	None Detected
29-WFC-01C	White window and door frame caulking	Southeast door exterior	None Detected
29-WFC-02A	Brown exterior window frame caulking	West exterior windows	None Detected
29-WFC-02B	Brown exterior window frame caulking	West exterior windows	None Detected
29-WFC-02C	Brown exterior window frame caulking	West exterior windows	None Detected
29-WFC-03A	Brown exterior window frame caulking	North exterior windows	None Detected
29-WFC-03B	Brown exterior window frame caulking	North exterior windows	None Detected
29-WFC-03C	Brown exterior window frame caulking	North exterior windows	None Detected
29-PL-01A-skim coat	Plaster, skim coat	First floor stairwell	None Detected
29-PL-01A-rough coat	Plaster, rough coat	First floor stairwell	None Detected
29-PL-01B- skim coat	Plaster, skim coat	First floor kitchen	None Detected
29-PL-01B-rough coat	Plaster, rough coat	First floor kitchen	None Detected
29-PL-01C-skim coat	Plaster, skim coat	First floor stairwell	None Detected
29-PL-01C-rough coat	Plaster, rough coat	First floor stairwell	None Detected
29-WPC-01A	**Black window pane caulking throughout**	**Chapel interior**	**4.4% Chrysotile**
29-WPC-01B	**Black window pane caulking throughout**	**Washroom**	**Positive Stop (Not Analyzed)**
29-WPC-01C	**Black window pane caulking throughout**	**Chapel interior**	**Positive Stop (Not Analyzed)**
29-WPC-02A	**Black window pane caulking on entrance door windows**	**Main entrance interior**	**3.9% Chrysotile**
29-WPC-02B	**Black window pane caulking on entrance door windows**	**Main entrance interior**	**Positive Stop (Not Analyzed)**
29-WPC-02C	**Black window pane caulking on entrance door windows**	**Main entrance interior**	**Positive Stop (Not Analyzed)**

APPENDIX D
CERTIFICATE OF ANALYSIS—
SUSPECTED ACM SAMPLES

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 691601495
Customer ID: 55JACQ30L
Customer PO: 123220729
Project ID:

Attn: Keith Irwin
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 11/15/2016
Analyzed: 11/22/2016

Proj: 123220729

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: 29-WFC-01A **Lab Sample ID:** **691601495-0025**
Sample Description: NORTHWEST WINDOW EXTERIOR/WHITE EXTERIOR WINDOW AND DOOR FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-01B **Lab Sample ID:** **691601495-0026**
Sample Description: NORTHWEST WINDOW EXTERIOR/WHITE WINDOW AND DOOR FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-01C **Lab Sample ID:** **691601495-0027**
Sample Description: SOUTHEAST DOOR EXTERIOR/WHITE WINDOW AND DOOR FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Gray	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-02A **Lab Sample ID:** **691601495-0028**
Sample Description: WEST EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-02B **Lab Sample ID:** **691601495-0029**
Sample Description: WEST EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-02C **Lab Sample ID:** **691601495-0030**
Sample Description: WEST EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-03A **Lab Sample ID:** **691601495-0031**
Sample Description: NORTH EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

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http://www.EMSL.com / vancouverlab@EMSL.com

EMSL Canada Order 691601495
Customer ID: 55JACQ30L
Customer PO: 123220729
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: 29-WFC-03B **Lab Sample ID:** **691601495-0032**
Sample Description: NORTH EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: 29-WFC-03C **Lab Sample ID:** **691601495-0033**
Sample Description: NORTH EXTERIOR WINDOWS/BROWN EXTERIOR WINDOW FRAME CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Brown	0.0%	100%	None Detected	

Client Sample ID: 29-PL-01A-Skim Coat **Lab Sample ID:** **691601495-0034**
Sample Description: FIRST FLOOR STAIRWELL/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/21/2016	White	0%	100%	None Detected	

Client Sample ID: 29-PL-01A-Rough Coat **Lab Sample ID:** **691601495-0034A**
Sample Description: FIRST FLOOR STAIRWELL/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/21/2016	Gray	0%	100%	None Detected	

Client Sample ID: 29-PL-01B-Skim Coat **Lab Sample ID:** **691601495-0035**
Sample Description: FIRST FLOOR KITCHEN/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/21/2016	White	0%	100%	None Detected	

Client Sample ID: 29-PL-01B-Rough Coat **Lab Sample ID:** **691601495-0035A**
Sample Description: FIRST FLOOR KITCHEN/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/21/2016	Gray	0%	100%	None Detected	

Client Sample ID: 29-PL-01C-Skim Coat **Lab Sample ID:** **691601495-0036**
Sample Description: FIRST FLOOR STAIRWELL/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/22/2016	White	0%	100%	None Detected	

Client Sample ID: 29-PL-01C-Rough Coat **Lab Sample ID:** **691601495-0036A**
Sample Description: FIRST FLOOR STAIRWELL/PLASTER

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/22/2016	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 691601495
Customer ID: 55JACQ30L
Customer PO: 123220729
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: 29-WPC-01A ***Lab Sample ID:*** **691601495-0037**

Sample Description: CHAPEL INTERIOR/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Black	0.0%	95.6%	**4.4% Chrysotile**	

Client Sample ID: 29-WPC-01B ***Lab Sample ID:*** **691601495-0038**

Sample Description: WASHROOM/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/22/2016			Positive Stop (Not Analyzed)		

Client Sample ID: 29-WPC-01C ***Lab Sample ID:*** **691601495-0039**

Sample Description: CHAPEL INTERIOR/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	11/22/2016			Positive Stop (Not Analyzed)		

Client Sample ID: 29-WPC-02A ***Lab Sample ID:*** **691601495-0040**

Sample Description: MAIN ENTRANCE INTERIOR/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016	Black	0.0%	96.1%	**3.9% Chrysotile**	

Client Sample ID: 29-WPC-02B ***Lab Sample ID:*** **691601495-0041**

Sample Description: MAIN ENTRANCE INTERIOR/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016			Positive Stop (Not Analyzed)		

Client Sample ID: 29-WPC-02C ***Lab Sample ID:*** **691601495-0042**

Sample Description: MAIN ENTRANCE INTERIOR/BLACK WINDOW PANE CAULKING THROUGHOUT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	11/22/2016			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 691601495
Customer ID: 55JACQ30L
Customer PO: 123220729
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):

Romeo Samson	PLM (4) PLM Grav. Reduction (3)
Shorthri Kalikutty	PLM (2) PLM Grav. Reduction (8)

Reviewed and approved by:

Nicole Yeo, Laboratory Manager
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 11/22/201611:43:37

APPENDIX E
CERTIFICATE OF ANALYSIS—
SUSPECTED LCP SAMPLES

EMSL Canada Inc.
2756 Slough Street, Mississauga, ON L9T 5N4
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com torontolab@emsl.com

EMSL Canada Or	551612351
CustomerID:	55JACQ30L
CustomerPO:	123220729
ProjectID:	

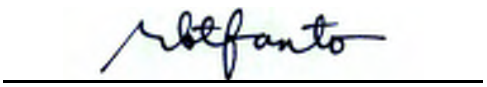
Attn: **Keith Irwin**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Received: 11/15/16 10:12 AM
Collected:

Project: **123220729 BUILDING 29 - CHAPEL**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
29-P-01	*551612351-0001*		11/18/2016	3200 ppm
	Site: EAST EXTERIOR WINDOW FRAME Desc: BROWN EXTERIOR TRIM			
29-P-02	*551612351-0002*		11/18/2016	600 ppm
	Site: WASHROOM INTERIOR WINDOW FRAME Desc: BROWN INTERIOR TRIM			



Rowena Fanto, Lead Supervisor
or other approved signatory

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

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

Initial report from 11/22/2016 08:11:29