Public Works and Government Services Canada

Requisition No. EZ899-220509

DRAWINGS & SPECIFICATIONS
For

Tofino Detachment Generator Power System Upgrade
400 Campbell Street
Tofino, BC

Project No. R.112600.001 May 7th, 2021

APPROVED BY:

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SEAL PAGE

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Discipline	**Seal / Signature / Date**
Electrical (Prime)	 2021-07-26

END OF SECTION

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GENERAL INSTRUCTIONS

1.1 CODES

.1 Perform work to CURRENT Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date.

1.2 DESCRIPTION OF WORK

.1 Work of this Contract comprises upgrade to an existing back up power system, and further identified as:

TOFINO DETACHMENT
GENERATOR POWER SYSTEM UPGRADE,
400 Campbell Street Tofino, BC.
PROJECT # R. R.112600.001

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

.1 Transfer of most existing normal power panels onto standby power distribution system.

.2 Increasing breaker and feeders sizes as indicated to panels.

.3 Installation and consolidation of certain loads to a new normal power panel to ensure existing generator is not overloaded.

.4 Power shutdowns are to be kept to a minimum. All power shutdowns to be arranged and to be performed as described in Section 01 14 00.

.5 All shutdowns shall be with prior agreement with departmental representative and RCMP.

.6 Removal and disposal of redundant feeders and raceways.

.7 Commissioning and testing of all equipment installed as part of this contract.

.8 Demonstration and training of personnel as directed by the Departmental Representative. Refer to Section 01 79 00 Demonstration and Training.

.9 Patch, repair and paint walls and ceiling surfaces.

.10 **Perform a complete short circuit, coordination and arc flash study and install updated Single Line and Arc Flash labels.**

.3 "Green" requirements:

.1 Use only environmentally responsible green materials/ products with no VOC emissions or minimum VOC emissions of indoor off-gassing contaminants for improved indoor air quality - subject of Departmental Representative's approval of submitted MSDS Product Data.

.2 Use materials/products containing highest percentage of recycled and recovered materials practicable - consistent with maintaining cost effective satisfactory levels of competition.

.3 Adhere to waste reduction requirement for reuse or recycling of waste materials, thus diverting materials from landfill.

.4 Perform all work in accordance with National Building Code of Canada (NBC) 2015, WorkSafeBC/Workers' Compensation Board (WCB) Regulations and these Contract Documents. Where there is a conflict between Contract Documents and referenced standards, the most stringent will be applied.

.5 Scope of work:

.1 Sequence demolition and construction sequence of events such that there is minimum downtime to building's electrical service or building is without generator power. All construction activity must take place first and set out work for switching to a new distribution, minimizing power shut down. All power switch over must take place after hours and on weekends.

.2 Provide constructions schedule for coordination between user group and departmental representative. Construction schedule shall be submitted prior to start of any work and no works is to proceed without prior written approval of departmental representative.

.3 Allow for minimum of 72 hours of notice prior to all electrical shutdowns. All electrical shutdowns to be after working hours or on weekend as directed by the departmental representative.

.4 Provide construction and demolition schedule prior to start of work. Schedule shall be accepted by the Departmental Representative before proceeding with the work. Continuously update the construction schedule for coordination between the user group and Departmental Representative.

.5 Patch, make good and paint all surfaces, including walls and pavement that has been affected by demolition scope.

.6 Refer to drawings for proposed order or work.

1.3 CONTRACT DOCUMENTS

.1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work.

.2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.

1.4 DIVISION OF SPECIFICATIONS

.1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.

.2 A division may consist of the work of more than 1 subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.

.3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.5 HOURS OF WORK

.1 Restrictive as follows:

.1 Work in the RCMP must be coordinated with local RCMP and PWGSC representation to allow for access. All work that does not impact building power shall be done during regular hours.

.2 All work impacting provision of power to the building and its users must be fully coordinated to the benefit of the building occupants. Contractor shall assume that all outages will be during weekends or evenings.

1.6 WORK SCHEDULE

.1 Do not change approved Schedule without notifying Departmental Representative.

.2 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

1.7 TIME TO COMPLETION

.1 Completion of this project shall be no later than 20 weeks from award of contract.

1.8 COST BREAKDOWN

.1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

.2 Provide a projection of project billing as proposed on a month by month basis accounting for expected delivery of equipment, project phasing and mobilisation.

1.9 CODES, BYLAWS, STANDARDS

.1 Perform work in accordance with the Canadian Electrical Code 2018, and other indicated Codes, Construction Standards and/or any other Code or Bylaw of local application.

.2 Comply with applicable local bylaws, rules and regulations enforced at the location concerned.

.3 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

.4 In any case of conflict or discrepancy, the most stringent requirements shall apply.

1.10 DOCUMENTS REQUIRED

.1 Maintain 1 copy each of the following at the job site:

.1 Contract drawings.

.2 Contract specifications.

.3 Addenda to Contract documents.

.4 Copy of approved work schedule.

.5 Reviewed/approved shop drawings.

.6 Change orders.

.7 Other modifications to Contract.

.8 Field test reports.

.9 Reviewed/approved samples.

.10 Manufacturers' installation and application instructions.

.11 One set of record drawings and specifications for "as-built" purposes.

.12 Canadian Electrical Code 2018.

.13 Current construction standards of workmanship listed in technical Sections.

.14 Contractor Safety Plan.

1.11 REGULATORY REQUIREMENTS

.1 Obtain and pay for - Electrical Permit, Certificates, Licenses and other permits required by regulatory municipal, provincial or federal authorities to complete the work.

.2 Provide inspection authorities with plans and information required for issue of acceptance certificates.

.3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.12 CONTRACTOR'S USE OF SITE

.1 Use of site:

.1 Shared with users and others for execution of work.

.2 Assume responsibility for assigned premises for performance of this work.

.3 Be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative such as moving contractors and furniture installers.

.2 Perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing.

.3 Do not unreasonably encumber site with material or equipment.

.4 A 1-hour site safety orientation to be completed by all workers. Personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

.5 Limit use of premises for Work, for storage and for access to allow for continuous occupancy of building.

.6 Co-ordinate use of premises under direction of the Departmental Representative.

.7 Assume full responsibility for protection and safekeeping of Products under this Contract.

.8 Do not use any other part of property unless approved in writing by the Departmental Representative.

.9 Store materials and equipment only where directed by the Departmental Representative. Obtain and pay for use of additional storage and work areas if required.

.10 Ensure access to assigned lay down or construction areas is maintained for fire and emergency access at all times.

.11 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.12 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work.

.13 Condition of existing work at completion of operations to be equal to or better than that which existed before new work started.

.14 Provide necessary protection and hoarding to prevent unauthorized entry into areas of work at all times by staff and public.

.15 Inform the Departmental Representative 3 working days prior to performing work inside the building. Entry into areas of work will be by authorized personnel only and must be delineated during execution of work.

.16 Adjacent portions of building and property will remain in use during Work.

.17 Co-operate with the Departmental Representative by scheduling operations to minimize conflict and to facilitate continuous use of building. Do not impede, restrict or obstruct use of building or adjacent portions of property.

.18 Do work in a manner that will minimize creation of noise that would disturb day-to-day operation of building and adjacent property.

.19 Locate stationary noise generating equipment as far away as practical from occupied parts of building, or where directed by the Departmental Representative.

.20 Co-ordinate with the Departmental Representative for necessary shutdown of services affecting occupied parts of building and adjacent property where serviced from building. Provide 72 hours of notice prior to shutdown. Minimize occurrences and durations of shutdowns.

.21 Co-ordinate with the Departmental Representative to ensure that construction activities do not compromise security of building and site.

.22 Ensure that construction activities do not compromise other active systems within the building and site.

1.13 EXAMINATION

.1 Examine site and be familiar and conversant with existing conditions likely to affect work.

.2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.14 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment and devices indicated or specified are to be considered as approximate.

.2 Locate equipment, devices 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 his approval for actual location.

.4 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative and/or as specified.

1.15 CUTTING AND PATCHING

.1 Cut existing surfaces as required to accommodate new work.

.2 Remove items so shown or specified.

.3 Do not cut, bore, or sleeve load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

.5 Patch and make good surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, colour, finish and texture.

.6 Making good is defined as matching construction and finishing materials and the adjacent surfaces such that there is no visible difference between existing and new surfaces when viewed from 1.5 metres in ambient light, and includes painting the whole surface to the next change in plane.

.7 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas used by public or government staff.

.8 Protect adjacent surfaces. Make good or replace damaged surfaces and equipment to satisfaction of the Departmental Representative, at no cost to Contract.

.9 Provide barricade warning tape to mark perimeter of work area, as directed by the Departmental Representative.

1.16 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as templates required to facilitate Departmental Representative's inspection of work.

1.17 ACCEPTANCE OF SUBSTRATES

.1 Each trade shall examine surfaces prepared by others and job conditions which may affect his work, and shall report defects to the Departmental Representative. Commencement of work shall imply acceptance of prepared work or substrate surfaces.

1.18 QUALITY OF WORK

.1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman.

.2 The workmanship, erection methods and procedures to meet minimum standards set out in the National Building Code of Canada 2015 and local Construction Standards.

.3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.19 WORKS COORDINATION

.1 Coordinate work of subtrades:

.1 Designate one person to be responsible for review of contract documents and shop drawings and managing coordination of Work.

.2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.

.1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.

.2 Develop coordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.

.1 Pay particularly close attention to overhead work above ceilings and within or near to building structural elements.

.2 Identify on coordination drawings, building elements, services lines, rough-in points and indicate location services entrance to site.

.3 Facilitate meeting and review coordination drawings. Ensure subcontractors agree and sign off on drawings.

.4 Publish minutes of each meeting.

.5 Plan and coordinate work in such a way to minimize quantity of service line offsets.

.6 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.

.3 Submit shop drawings and order of prefabricated equipment or rebuilt components only after coordination meeting for such items has taken place.

.4 Work cooperation:

.1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.

.2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed work.

.3 Ensure disputes between subcontractors are resolved.

.5 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate Work.

.6 Maintain efficient and continuous supervision.

1.20 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

.1 In accordance with Section 01 33 00, submit the requested shop drawings, product data, MSDS sheets and samples indicated in each of the technical Sections.

.2 Allow sufficient time for the following:

.1 Review of product data.

.2 Approval of shop drawings.

.3 Review of re-submission.

.4 Ordering of approved material and/or products - refer to Sections of Divisions 2 to 48.

1.21 SECURITY CLEARANCES

.1 Personnel employed on this project will be subject to security check. Obtain requisite clearances, as instructed, for each individual required to enter the premises.

.2 Personnel will be checked at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

.3 Contractor shall be fully responsible for securing the premises and its contents throughout the construction period.

1.22 PROJECT MEETINGS

.1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.23 TESTING AND INSPECTIONS

.1 The Contractor will appoint and pay for the services of the factory technical representative for the following:

.1 Inspection and testing required of ATS and generator for reconnected systems.

.2 Inspection and testing of load shedding contactor.

.3 Confirmation of function for all reconnected equipment

.2 Contractor shall furnish labour and facilities to:

.1 Notify Departmental Representative in advance of planned testing.

.3 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.

.4 Provide Departmental Representative with 2 copies of testing and commissioning reports as soon as they are available.

1.24 AS-BUILT DOCUMENTS

.1 The Departmental Representative will provide 2 sets of drawings, 2 sets of specifications, and 2 copies of the original AutoCAD files for "as-built" purposes.

.2 As work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings and shop drawings as changes occur.

1.25 CLEANING

.1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.

.2 **Ensure cleanup of the work areas each day after completion of work**.

.3 Clean interior building areas when ready to receive finish painting and continue cleaning on an as-needed basis until building is sufficiently completed or ready for occupancy.

.4 In preparation for interim and final inspections:

.1 Examine all sight-exposed interior and exterior surfaced and concealed spaces.

.2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces, including glass and other polished surfaces.

.5 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

1.26 DUST CONTROL

.1 Provide temporary dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.

.2 Protect furnishings within work area with polyethylene film during construction. Remove film during non- construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.

.3 Maintain and relocate protection until such work is complete.

1.27 ENVIRONMENTAL PROTECTION

.1 Prevent extraneous materials from contaminating air beyond construction area, by providing temporary enclosures during work.

.2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.

.3 Ensure proper disposal procedures in accordance with all applicable territorial regulations.

1.28 MAINTENANCE MATERIALS, SPECIAL TOOLS AND SPARE PARTS

.1 Specific requirements for maintenance materials, tools and spare parts are specified in individual technical sections of Divisions 02 to 48, where required.

1.29 ADDITIONAL DRAWINGS

.1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.

.2 Upon request, Departmental Representative may furnish up to a maximum of 10 sets of Contract documents for use by the Contractor at no additional cost. Should more than 10 sets of documents be required the Departmental Representative will provide them at additional cost.

1.30 BUILDING SMOKING ENVIRONMENT

.1 Smoking on the site is not permitted.

1.31 SYSTEM OF MEASUREMENT

.1 The metric system of measurement (SI) will be employed on this Contract.

1.32 FAMILIARIZATION WITH SITE

Before submitting tender, the contractor to review all the documents in detail prior to bid submittal and submit queries during tender as needed.

1.33 SUBMISSION OF TENDER

.1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and is fully conversant with all conditions.

1.34 CONSTRUCTION MONITORING

.1 Contractor is to send a brief description of the completed work complete with pictures at regular intervals during the construction to the Departmental Representative. The frequency of sending this information shall be discussed and agreed upon at the pre-construction meeting.

1.35 COVID-19

.1 Contractor shall follow COVID-19 procedures in accordance with Canadian Construction Association COVID-19 Standardized Protocols. Furthermore, Contractor will address PPE and hygiene issues as per Worksafe BC regulations, and Provincial guidelines. Cost associated and required with COVID-19 Protocols to be included in the proposed fee.

END OF SECTION

WORK RESTRICTIONS

Part 1 General

1.1 FACILITY OPERATIONS AND SECURITY PROCEDURES

.1 All construction staff shall become thoroughly familiar with and abide by all provisions and requirements of the facility, Safety and Security Procedures and Restrictions.

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

.2 Speed limits are posted on site. Failure to abide by site speed limits may result in removal of employee and vehicle from site.

1.2 FACILITY POWER AND MECHANICAL SERVICES SHUT-DOWN REQUIREMENTS

.1 All construction staff shall become thoroughly familiar with and abide by all provisions and requirements for the shut-down of power services and/or mechanical services to the facility.

.1 All power services and/or mechanical services (water, gas, drain, heat, ventilation and fire protection) shut-downs (building-wide or partial) shall be confirmed and coordinated with the users (e.g. RCMP detachment commander) at minimum 72 hours prior to the start of work.

.2 All building-wide power shut-downs must occur outside of regular working hours of the facility.

.3 At no time during regular working hours of the facility, the building will be without power. If a building-wide power shut-down needs to occur during regular working hours of the facility, the contractor shall provide a temporary generator to accommodate the entire facility for the duration of the work.

.4 If a building-wide mechanical services shut-down needs to occur during regular working hours of the facility, the contractor shall provide temporary heat and services to accommodate the entire facility for the duration of the work.

.5 Partial building shutdowns may occur during regular hours of the facility if the duration of the shutdown is less than 90 minutes. If the duration of the shutdown is more than 90 minutes, it shall be done as per item 2 above.

.6 RCMP at any time may cancel a pre-scheduled power and/or mechanical services shut-down due to operation situations that may arise. The Contractor shall always contact users (e.g. RCMP detachment commander) immediately before any shut-down and confirm if a pre-scheduled shut-down may proceed as planned.

1.3 SITE ACCESS REQUIREMENTS

.1 General

.1 To ensure that the security of the project construction and RCMP operation is maintained at all times.

.2 All personnel engaged in the execution of the work on the interior or exterior of an RCMP occupied building shall have at a minimum, the requisite RCMP Facility Access Level 3 (FA3) clearance in order to be allowed access to the site. Individuals who do not have RCMP FA3 clearance will not be allowed on site.

.3 Immediately upon contract award, Contractor shall prepare and submit all the requisite forms and documents for all the personnel engaged in the project and submit to RCMP to obtain RCMP FA3 clearance. Ensure all necessary forms and documents are completed as required by RCMP to prevent any delays in the review process.

.4 Once the required RCMP clearances are obtained, Contractor and his employees will have as much freedom of action and movement as is possible and as determined by RCMP to perform the Work

.5 It is the responsibility of the general contractor to ensure that the RCMP security requirements are met throughout the performance of the work.

.2 Restrictions

.1 A 72-hour notice is required for any access to security and high security zones within the premises to allow RCMP to arrange for a staff member to accompany the Contractor. Security and high security areas include Cell Block, Record Rooms, Exhibit Rooms, Special Project Rooms, IT Room, Comm. Room and Security Room.

.2 Entry to the RCMP Property will be refused to any person there may be reason to believe to be a security risk.

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

.4 RCMP site staff may request at any time that the contractor, his employees, sub-contractors and their employees not enter the site or leave the work site immediately due to a security situation occurring within the RCMP property. 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.

1.4 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant Federal, municipal, provincial and other regulations.

.2 Provide hoarding, and scaffolding plan for Departmental Representative to review 5 business days prior to installation.

1.5 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work, provide temporary means to maintain security as per Departmental Representatives direction.

.4 Closures: protect work temporarily until permanent enclosures are completed.

.5 Coordinate with Departmental Representative in scheduling operations to minimize conflict and to facilitate use of space.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to Facility operations, occupants, and normal use. Arrange with Departmental Representative to facilitate execution of work.

1.7 EXISTING SERVICES

.1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 3 working days of notice for necessary interruption of civil, mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.1 Optimize and plan shut-downs so that services are restored in time for normal facility operation hours. Coordinate all shut-downs with utility providers and facility users.

.2 Contractor shall be held responsible for damages to facility equipment as the result of service shut-downs.

.3 Contractor shall be held responsible for any and all unscheduled shut-downs of building utilities and services.

.4 Contractor will not be allowed to connect to Departmental existing data and communication services.

.5 Submit a “Fire Alarm Bypass” request to Departmental Representative 3 working days in advance for approval.

.6 Obtain permission from Departmental Representative for access to restricted areas outside the construction zones 3 working days in advance.

.3 Provide for personnel and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.8 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.9 NOISE CONTROL

.1 Comply with applicable provincial by-law for noise control.

1.10 DUST CONTROL

.1 Comply with applicable government regulations, provincial and or city by-law, WCB, Work Safe BC for dust control in the construction and affected areas.

END OF SECTION

MANAGEMENT AND COORDINATION

Part 1 This section includes the following:

.1 Coordination of Work under administration of Departmental Representative.

.2 Scheduled Pre-construction and Site meetings.

.3 Project planning and construction schedule.

.4 Site progress monitoring and control.

1.1 DESCRIPTION

.1 Coordinate and manage construction schedule, submittals, use of site, temporary utilities, construction facilities, quality control program, and construction Work, with progress of Work of subcontractors, other contractors and Departmental Representative.

1.2 RELATED WORK

.1 Refer to every technical section for waste management and disposal requirements.

1.3 DEFINITIONS

.1 Waste Reduction Workplan: written report which addresses opportunities for reduction, re-use or recycling of materials.

.2 Materials Source Separation Program: consists of series of ongoing activities to separate re-usable and recyclable waste material into material categories from other types of waste at point of generation.

1.4 MATERIALS SOURCE SEPARATION

.1 Before project start-up, prepare Materials Source Separation Program. Provide separate containers for re-usable and/or recyclable materials of following:

.1 Construction waste: including but not limited to following types.

.1 Uncontaminated packaging (wood, metal banding, cardboard, paper, plastic wrappings, polystyrene).

.2 Wood pallets (recycle or return to shipper).

.3 Metals (pipe, conduit, ducting, wiring, miscellaneous cuttings)

.4 Wood (uncontaminated).

.5 Paint, solvent, oil.

.6 Other materials as indicated in technical sections.

.2 Administration/worker waste (uncontaminated): including but not limited to following types.

.1 Paper, cardboard.

.2 Plastic containers and lids marked types 1 through 6.

.3 Glass and aluminum drink containers (recycle or return to vendor).

.2 Implement Materials Source Separation Program for waste generated on project in compliance with approved methods and as approved by Departmental Representative.

.3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.4 Locate separated materials in areas which minimize material damage.

1.5 DIVERSION OF MATERIALS

.1 Create list of materials to be separated from general waste stream and stockpiled in separate containers, to approval of Departmental Representative and consistent with applicable fire regulations.

.1 Mark containers.

.2 Provide instruction on disposal practices.

1.6 PRE-CONSTRUCTION MEETING

.1 Pre-construction Meeting:

.1 Within 10 days after award of Contract, Departmental Representative will arrange pre-construction meeting.

.2 Departmental Representative, Contractor and operations staff will be in attendance.

.3 Departmental Representative will establish time and location of meeting and notify parties concerned.

.4 The Departmental Representative will chair the meeting, record minutes and issue minutes to all attendees.

.1 Agenda of meeting is generally as follows:

.1 Project team introductions including main construction personnel, PWGSC personnel, RCMP staff and consultants.

.2 Communication protocol for submittals.

.3 Start date on site.

.4 RCMP security requirements.

.5 Construction Organization and Start-up:

.1 Comply with Departmental Representative's allocation of mobilization areas of site; for access, traffic, and parking facilities.

.2 During construction coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.3 Comply with instructions of Departmental Representative for use of temporary utilities and construction facilities.

.4 Coordinate layout of construction barrier with Departmental Representative.

1.7 PROJECT PLANNING

.1 Plan construction activities, submittals and field reviews ahead of time for efficient and effective management to ensure timely completion of project.

1.8 SCHEDULES

.1 Submit preliminary construction schedule to Departmental Representative during Pre-Construction meeting.

.2 After review, revise and resubmit schedule. Submit final full schedule within 2 weeks after Pre-Construction meeting.

.3 During progress of Work revise and resubmit as directed by Departmental Representative.

1.9 CONSTRUCTION MEETINGS

.1 During course of Work and prior to project completion, Departmental Representative will request Construction meetings as required.

.2 Project Consultant on behalf of Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance.

.3 Agenda to include following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Review of Health and Safety including any incidents, near misses, and WorkSafe BC visits.

.5 Problems which impede construction schedule.

.6 Review of off-site fabrication delivery schedules.

.7 Corrective measures and procedures to regain projected schedule.

.8 Revision to construction schedule.

.9 Progress schedule, during succeeding work period.

.10 Review submittal schedules: expedite as required.

.11 Update of Red Line As-Built Drawings.

.12 Maintenance of quality standards.

.13 Review proposed changes for effect on construction schedule and on completion date.

.14 Other business.

1.10 WALK THROUGH FIELD REVIEW BY DEPARTMENTAL REPRESENTATIVE

.1 Departmental Representative will carry out the following:

.1 Walk-through field review of the work with contractor’s representatives.

.2 Preparation and distribution of the Walk-through field review Reports. Reports will be distributed within 5 days of field review.

1.11 SUBMITTALS

.1 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.

.2 Process substitutions through Departmental Representative.

.3 Deliver closeout submittals for review and inspections, for transmittal to Departmental Representative.

1.12 CLOSEOUT PROCEDURES

.1 Notify Departmental Representative when Work is considered Substantially Complete. Contractor to prepare list of defects, deficiencies and incomplete work prior to inspection by Departmental Representative. Follow procedures as outlined in Section 01 78 00 – Closeout Submittals.

.2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Departmental Representative's instructions for correction of items of Work listed in deficiency list. completion or correction.

.4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

END OF SECTION

PROJECT MEETINGS

Part 1 General

1.1 ADMINISTRATIVE

.1 Schedule and administer site meetings throughout the progress of the work on a regular basis or at the call of Departmental Representative. Meeting to be held on site or via teleconference.

.2 Prepare and distribute agenda at least three (3) days prior to the meetings.

.3 Distribute written notice of each meeting seven (7) days in advance of meeting date to Departmental Representative.

.4 Meeting space can be held in the meeting room in the RCMP, location to be determined. Book meeting or room in advance through Departmental Representative.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within five (5) days after meetings and transmit to meeting participants and affected parties not in attendance, Departmental Representative and Consultants.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRE- CONSTRUCTION MEETING

.1 Within 10 days after award of Contract: Departmental Representative will request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Attendance will include, but is not limited to, the Departmental Representative, members of the RCMP and Contractor.

.3 Departmental Representative to establish time and location of preconstruction meeting, Contractor to notify parties concerned a minimum of 4 working days before meeting.

.4 Departmental Representative will chair the meeting, record minutes and issue minutes.

.5 Agenda to include:

.1 Introduction of official representative of participants in the Work.

.2 Start date on site.

.3 Communication Protocol for submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00 - Temporary Facilities.

.5 Site safety in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.6 Communication Protocol for proposed changes, change orders, procedures, approvals required.

.7 Owner's Work.

.8 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

1.3 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to Project Completion, schedule progress meetings bi-weekly.

.2 Attendance to include but is not limited to Departmental Representative, members of the RCMP and Contractor.

.3 Contractor responsible to record minutes of meetings and circulate to attending parties and affected parties not in attendance within five (5) days after meeting.

.4 Record next meeting dates in the meeting minutes or notify parties minimum of seven (7) days in advance for other ad-hoc meetings.

.5 Agenda to include, at a minimum, the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Health and Safety including any incidents, near misses, and WorkSafe BC visits.

.3 Review of Work progress since previous meeting.

.4 Coordination discussions with RCMP.

.5 Construction schedule review.

.6 Review of off-site fabrication delivery schedules.

.7 Corrective measures and procedures to regain projected schedule.

.8 Request for Information (RFI) log review.

.9 Engineering Disciplines Reviews.

.1 Electrical

.10 Change order log review.

.11 Review submittal schedule.

.12 Review updated as built.

.13 Review and resolve site issues.

.14 New business.

END OF SECTION

CONSTRUCTION PROGRESS SCHEDULE

1.1 SCHEDULES REQUIRED

.1 Submit schedules as follows.

.1 Construction progress schedule.

.2 Submittal schedule for shop drawings and product data.

.3 Product delivery schedule.

1.2 FORMAT

.1 Prepare schedule in form of horizontal bar chart (GANTT).

.2 Provide a separate bar for each major item of work, trade or operation.

.3 Provide horizontal time scale identifying first work day of each week.

.4 Format for listings: chronological order of start of each item of work.

.5 Identification of listings: by Specification subjects or system descriptions.

1.3 SUBMISSION

.1 Submit initial schedule within 7 working days after award of Contract.

.2 Submit minimum of 3 copies to be retained by the Departmental Representative.

.3 The Departmental Representative will review schedule and return review copy within 7 working days after receipt.

.4 Re-submit finalized schedule within 3 working days after return of review copy.

.5 Submit revised progress schedule with each application for payment.

.6 Distribute copies of revised schedule to:

.1 Subcontractors.

.2 Other concerned parties.

.7 Instruct recipients to report to Contractor within 5 working days, any problems anticipated by timetable shown in schedule.

1.4 SCHEDULING

.1 Include complete sequence of construction activities.

.2 Include dates for commencement and completion of each major element of construction as follows.

.3 Show projected percentage of completion of each item as of first day of week.

.4 Indicate progress of each activity to date of submission schedule.

.5 Show changes occurring since previous submission of schedule:

.1 Major changes in scope.

.2 Activities modified since previous submission.

.3 Revised projections of progress and completion.

.4 Other identifiable changes.

.6 Provide a narrative report to define:

.1 Problem areas, anticipated delays and impact on schedule.

.2 Corrective action recommended and its effect.

1.5 PROGRESS REPORTS

.1 Maintain accurate record of the progress of the Work. Submit progress reports at times requested by the Departmental Representative.

.2 Include in reports dates of commencement and percentage of work completed for different parts of the Work.

1.6 STAFFING AND OVERTIME

.1 Cease work at any particular point and transfer workers to other designated points, when so directed, should the Departmental Representative judge it necessary to expedite the Work.

.2 Should the Work fail to progress according to the approved progress schedule, work such additional time (including weekends and holidays), employ additional workers, or both, as may be required to bring the Work back on schedule, at no additional cost to Contract.

1.7 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings, product data and samples.

.2 Indicate dates for submitting, review time, re-submission time, last date for meeting fabrication schedule.

.3 Include dates when reviewed submittals will be required from the Departmental Representative.

END OF SECTION

SUBMITTAL PROCEDURES

1.1 APPROVALS

.1 Approval of shop drawings and samples: Refer to Section 01 11 55 - General Instructions.

1.2 GENERAL

.1 This Section specifies general requirements and procedures for Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.

.2 Present shop drawings, product data and samples in SI Metric units.

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

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

.5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract documents and stating reasons for deviations.

.6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.

.7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.

.8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.

.9 Do not proceed with work until relevant submissions are reviewed and approved by Departmental Representative.

1.3 SUBMISSION REQUIREMENTS

.1 Co-ordinate each submission with requirements of work and Contract documents. Individual submissions will not be reviewed until all related information is available.

.2 Allow 10 working days for Departmental Representative's review of each submission, unless noted otherwise.

.3 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.4 Submissions to include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.

.5 Details of appropriate portions of work as applicable.
- .1 Fabrication.
- .2 Layout, showing dimensions (including identified field dimensions and clearances).
- .3 Setting or erection details.
- .4 Capacities.
- .5 Performance characteristics.
- .6 Standards.
- .7 Operating weight.
- .8 Wiring diagrams.
- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.

.6 After Departmental Representative's review, distribute copies.

1.4 SHOP DRAWINGS

.1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portion of work which are specific to project requirements.

.2 Maximum sheet size: 850 x 1050 mm.

.3 Submit 6 prints of shop drawings for each requirement requested in specification sections and/or as requested by Departmental Representative.

.4 Cross-reference shop drawing information to applicable portions of Contract documents.

1.5 SHOP DRAWINGS REVIEW

.1 Review of shop drawings by Department Representative is for the sole purpose of ascertaining conformance with the general concept.

.2 This review will not mean the Department Representative approves detail design inherent in shop drawings, responsibility for which remains with Contractor submitting same.

.3 This review will not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract documents.

.4 Without restricting the generality of the foregoing, Contractor is responsible for:

.1 Dimensions to be confirmed and correlated at job site.

.2 Information that pertains solely to fabrication processes or to techniques of construction and installation.

.3 Co-ordination of work of all sub-trades.

1.6 PRODUCT DATA

.1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.

.2 Delete information not applicable to project.

.3 Supplement standard information to provide details applicable to project.

.4 Cross-reference product data information to applicable portions of Contract documents.

.5 Submit 6 copies of product data.

1.7 SAMPLES

.1 Samples: examples of materials, equipment, quality, finishes and workmanship.

.2 Where colour, pattern or texture is a criterion, submit a full range of samples.

.3 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.

1.8 PROGRESS SCHEDULE

.1 Submit work schedule and cost breakdown as required in Section 01 11 55 - General Instructions.

END OF SECTION

Part 1 General

PWGSC Update on Asbestos Use

Effective April 1, 2016, all Public Works and Government Services of Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit use of asbestos-containing materials.

COVID 19

All contractors shall follow Canadian Construction Association COVID-19 - Standardized Protocols for All Canadian Construction Sites, Provincial Regulations and Federal Site-Specific Guidelines.

1.1 REFERENCES

.1 Government of Canada.
- .1 Canada Labour Code - Part II (as amended)
- .2 Canada Occupational Health and Safety Regulations. (as amended)

.2 National Building Code of Canada (NBC): (as amended)
- .1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 The Canadian Electrical Code (as amended)

.4 Canadian Standards Association (CSA) as amended:
- .1 CSA Z797-2018 Code of Practice for Access Scaffold.
- .2 CSA S269.1-2016 Falsework for Construction Purposes.
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
- .4 CSA Z1006-10 Management of Work in Confined Spaces.
- .5 CSA Z462-18 Workplace Electrical Safety Standard

.5 National Fire Code of Canada 2015 (as amended)
- .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.

.6 American National Standards Institute (ANSI): (as amended)
- .1 ANSI/ASSP A10.3-2013, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.7 Province of British Columbia:
- .1 Workers Compensation Act Part 3-Occupational Health and Safety. (as amended)
- .2 Occupational Health and Safety Regulation (as amended)

.8 Hazardous Building Materials Assessment

1.2 RELATED SECTIONS

.1 Refer to the following current NMS sections as required:
- .1 Section 01 11 55 – General Instructions
- .2 Section 01 14 00 – Work Restrictions
- .3 Section 01 31 00 – Management and Coordination

.4 Section 01 33 00 – Submittal Procedures
.5 Section 01 51 00 – Temporary Facilities
.6 Section 01 56 00 – Temporary Barriers and Enclosures
.7 Section 01 61 00 – Common Product Requirements
.8 Section 01 71 00 – Examination and Preparations
.9 Section 02 81 01 – Hazardous Materials Use and Abatement
.10 Section 26 05 00 – Common Work Results for Electrical

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 33 00.
.2 Work affected by submittal shall not proceed until review is complete.
.3 Submit the following:
.1 Organizations Health and Safety Plan.
.2 Site Specific Safety Plan or Health and Safety Plan (SSSP or HASP)
.3 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
.4 Copies of incident and accident reports.
.5 Complete set of Material Safety Data Sheets (SDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
.6 Emergency Response Procedures.
.4 The Departmental Representative will review the Contractor's Site Specific Safety Plan or Health and Safety Plan (SSSP/HASP) and emergency response procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

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

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

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

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

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

1.6 RESPONSIBILITY

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

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

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

1.7 HEALTH AND SAFETY COORDINATOR

.1 Assign a competent and qualified Health and Safety Coordinator who shall:

.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 Safety Plan (SSSP) or Health and Safety Plan (HASP)

.3 Be on site during execution of work.

.4 Have minimum two (2) years' site-related working experience

.5 Have working knowledge of the applicable occupational safety and health regulations.

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 nighttime or provide security guard as deemed necessary to protect site against entry.

1.9 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Multi-employer work site.

.2 Federal employees and general public.

.3 Energized electrical services.

.4 Working from heights.

.5 Hazards - PWGSC Preliminary Hazard Assessment included as an Appendix to Specifications

1.10 UTILITY CLEARANCES

.1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work.

.2 The Contractor will not rely solely upon the Reference Drawings or other information provided for Utility locations.

1.11 REGULATORY REQUIREMENTS

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

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

1.12 WORK PERMITS

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

1.13 FILING OF NOTICE

.1 The General Contractor is to file Notice of Project with Provincial authorities prior to commencement of work. (All construction projects require a Notice of Work)

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

1.14 SITE SPECIFIC 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 the Site Specific Safety Plan (SSSP) or Health and Safety Plan (HASP) based on the required 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.
.11 COVID 19 Protocols and 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. SDS required for all products.
.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 Site Specifc Safety Plan (SSSP) and/or Health and Safety Plan (HASP) as required, and re-submit to the Departmental Representative.
.5 Departmental Representative's review: the review of Site Specific Safety Plan and/or 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 Site Specific Safety Plan and/or Health and Safety Plan of responsibility for meeting all requirements of construction and Contract documents and legislated requirements.

1.15 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an emergency response and emergency 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.

.5 A route map with written directions to the nearest hospital or medical clinic.

.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.

.6 Contractors must not rely solely upon 911 for emergency rescue in a confined space, working at heights, etc.

1.16 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS 2015) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Safety Data Sheets (SDS) 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 SDS and WHMIS 2015 documents as per Section 01 33 00.

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

.3 Provide adequate means of ventilation in accordance with Section 01 51 00.

.4 The contractor shall ensure that the product is applied as per manufacturers recommendations.

.5 The contractor shall ensure that only pre-approved products are bought onto the work site in an adequate quantity to complete the work.

1.17 ASBESTOS HAZARD

.1 Carry out any activities involving asbestos in accordance with current applicable Federal and Provincial Regulations.

.2 Removal and handling of asbestos will be in accordance with current applicable Provincial / Federal Regulations.

1.18 PCB REMOVALS

.1 Mercury-containing fluorescent tubes and ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.

.2 Remove, handle, transport and dispose of as indicated in Division 2 specifications.

1.19 REMOVAL OF LEAD-CONTAINING PAINT

.1 All paint containing TCLP lead concentrations above 5 ppm are classified as hazardous.

.2 Carry out demolition and/or remediation activities involving lead-containing paints in accordance with current applicable Provincial / Territorial Regulations.

.3 Work with lead-containing paint shall be completed as per Provincial and Federal regulations.

.4 Dry Scraping/Sanding of any materials containing lead is strictly prohibited.

.5 The use of Methylene Chloride based paint removal products is strictly prohibited.

1.20 ELECTRICAL SAFETY REQUIREMENTS

(Reference: Worksafe BC OHS Regulation Part 19 – Electrical Safety)

.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 arc flash protection, 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.

1.21 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.

1.22 OVERLOADING

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

1.23 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1-1975 (R2003) (as amended)

1.24 SCAFFOLDING

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

1.25 CONFINED SPACES

.1 Carry out work in compliance with current Provincial / Territorial regulations.

1.26 POWDER-ACTUATED DEVICES

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

1.27 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.

.3 Hot Work permits are a mandatory requirement for any hot work activities.

1.28 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. (as amended)

.3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the Departmental Representative is required prior to any gas or diesel tank being brought onto the work site.

1.29 FIRE PROTECTION AND ALARM SYSTEM

.1 Fire protection and alarm systems shall not be:
- .1 Obstructed.
- .2 Shut off.
- .3 Left inactive at the end of a working day or shift.

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

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

1.30 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 immediately advise the Departmental Representative verbally and in writing.

1.31 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:
- .1 Site Specific Safety Plan (SSSP) or Health and Safety Plan (HASP)
- .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 area 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 2015) documents.
- .9 Material Safety Data Sheets (SDS).
- .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .11 All Hazardous Material and Substance Reports including Lab Analysis

.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.

1.32 MEETINGS

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

1.33 CORRECTION OF NON-COMPLIANCE

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

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

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

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION

QUALITY CONTROLS

1.1 INSPECTION

.1 Be responsible for quality control during execution of Work.

.2 Allow the Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by the Departmental Representative's instructions, or law of Place of Work.

.4 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.

.5 The 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, Canada will pay cost of examination and replacement.

1.2 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.3 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 the 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.

.3 If in opinion of the Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the Departmental Representative may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by the Departmental Representative.

1.4 REPORTS

.1 Submit 3 copies of inspection and test reports to the Departmental Representative and Authority having Jurisdiction.

.2 Provide copies to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

END OF SECTION

TEMPORARY FACILITIES

Part 1 General

1.1 ACCESS AND DELIVERY

.1 Contractor is required to use only the designated entrance to access the work site, for deliveries to site, and as the exit for offsite disposal.

.1 Maintain for duration of contract.

.2 Make good damage resulting from Contractor's use.

.2 Use of the facility will be granted to the Contractor through the Departmental Representative.

.1 The contractor's work site is to be used for loading and unloading purposes.

.3 Provide and maintain access roads, sidewalk crossing ramps and construction runways as may be required for access to the work. All roadways and walkways outside of the Contractor's work site must be kept clear of materials and equipment at all times.

.4 Provide and maintain competent flag operators, traffic signals, barricades and flares, lights or lanterns as may be required to perform work and protect other users of the Facility.

1.2 CONSTRUCTION PARKING

.1 Construction staff shall be responsible for their own parking in nearby private facilities.

1.3 STORAGE FACILITIES

.1 Confine work and operations of employees to areas indicated on Contract Documents. Do not unreasonably encumber premises with products. Storage space to be limited to the area of construction.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work or existing structure or elements.

.3 Provide and pay for all off-site storage as required. Note that storage space is limited on site. Refer to site plan for location of Contractor's site storage and lay-down area.

1.4 SANITARY FACILITIES

.1 Contractor will provide their own portable sanitary facilities. Maintain in a safe and sanitary condition. Construction staff will not be allowed to use RCMP washrooms.

1.5 SCAFFOLDING

.1 Construct and maintain scaffolding in rigid, secure and safe manner.

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

1.6 HOISTING

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Sub-contractors for their use of hoists.

.2 Hoists shall be operated by qualified operator.

1.7 HOARDING

.1 Prior to all demolition and construction, install plywood hoarding or protective barrier as detailed. Maintain in safe and clean condition throughout duration of project. Submit hoarding plan to Departmental Representative for approval.

.2 Erect and maintain safety barricades around all openings and other danger areas as required by Building Code and WCB.

.3 Installation of hoarding must not create permanent damage to existing wall cladding or flooring finish which is of heritage value.

1.8 SITE OFFICE

.1 Contractor to provide their own trailer as temporary site office in an area to be designated by the Departmental Representative, if required.

.2 Contractor should clear and demolish site office at end of project according to contract requirement.

1.9 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities from site when directed by the Departmental Representative.

1.10 SIGNS AND NOTICES

.1 Signs and notices for safety and instruction shall be in both official languages or graphic symbols conforming to CAN/CSA-Z321.

.2 Maintain approved signs and notices in good condition for duration of Project, and dispose of offsite on completion of Project when directed by Departmental Representative.

1.11 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt of mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

.5 At completion of Project: Remove and dispose of all debris, thoroughly clean and restore site to condition found at commencement of Work. Repair and make good to all damage caused by construction activities.

END OF SECTION

TEMPORARY BARRIERS AND ENCLOSURES

Part 1 General

1.1 RELATED SECTIONS

.1 N/A

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations.

1.4 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.5 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.6 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.8 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.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1.1 PRODUCTS/MATERIAL AND EQUIPMENT

.1 Use NEW products/material and equipment unless otherwise specified. Term "products" is referred to throughout specifications.

.2 Use products of one (1) manufacturer for material and equipment of same type or classification unless otherwise specified.

.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 instructions. Departmental Representative will designate which document is to be followed.

.5 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur.

- .1 Prevent electrolytic action between dissimilar metals.
- .2 Use non-corrosive fasteners, anchors and spacers for securing exterior work.

.6 Fastenings which cause spalling or cracking are not acceptable.

.7 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.8 Use heavy hexagon heads, semi-finished unless otherwise specified.

.9 Bolts may not project more than 1 diameter beyond nuts.

.10 Types of washers as follows:

- .1 Plain type washers: use on equipment and sheet metal.
- .2 Soft gasket lock type washers: use where vibrations occur.
- .3 Resilient washers: use with stainless steel items and fasteners.
- .4 FRP fibre reinforced plastic washers: use with FRP items and fabrications.

.11 Deliver, store and maintain packaged material and equipment with manufacturer seals and labels intact.

.12 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.

.13 Store products in accordance with supplier instructions.

.14 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction:

- .1 Use primer or enamel to match original.
- .2 Do not paint over nameplates.

1.2 QUALITY OF PRODUCTS

.1 Products, materials and equipment (referred to as products) incorporated into work to 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 will be rejected regardless of previous inspections.

.1 Inspection does not relieve responsibility, but is precaution against oversight or error.

.2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Retain purchase orders, invoices and other documents to prove that all products utilized in this Contract meet requirements of specifications. Produce documents when requested by Departmental Representative.

.4 Should any dispute arise as to quality or fitness of products, the decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 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.

1.3 AVAILABILITY OF PRODUCTS

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.

.2 If delays in supply of products are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of work.

.3 In event of failure to notify Departmental Representative at start of work and should it subsequently appear that work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in either Contract price or Contract time.

1.4 MANUFACTURER INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer instructions.

.1 Do not rely on labels or enclosures provided with products.

.2 Obtain written instructions directly from manufacturer.

.2 Notify Departmental Representative in writing of conflicts between specifications and manufacturer 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 either Contract price or Contract time.

1.5 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING

.1 Products are 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 Prescriptive specifications and indicated Products.

.3 Products specified by performance and referenced standard: select any product meeting or exceeding 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 "Special Instructions to Tenderers".

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

1.6 SUBSTITUTION AFTER CONTRACT AWARD

.1 No substitutions are permitted without prior written approval of 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 proposed substitution.

.3 Proposals will be considered by 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 attention of Departmental Representative is considered by Departmental Representative as equivalent to product specified and will result in a credit to 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 project. Pay for design or drawing changes required as result of substitution.

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

END OF SECTION

EXAMINATION AND PREPARATION

Part 1 General

1.1 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings including but not limited to storm water pipes in the parking lot.

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

1.2 LAYOUT

.1 Confirm all project requirements prior to starting work.

.2 Make no changes or relocations without prior written notice to Departmental Representative.

.3 Confirm all structural, electrical, **civil** and mechanical work prior to starting construction.

1.3 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.

1.4 RECORDS

.1 Maintain a complete, accurate log of work as it progresses.

.2 Record locations of maintained, re-routed and abandoned service lines.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

EXECUTION REQUIREMENTS

1.1 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects any of following.

- .1 Structural integrity of any part of Project.
- .2 Efficiency, maintenance or safety of any operational element.
- .3 Visual qualities of sight-exposed elements.
- .4 Interior and exterior building finishes.

1.2 INCLUDE IN REQUEST

- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on work of Other Contractor.
- .7 Written permission of affected Other Contractor.
- .8 Date and time work will be executed.

1.3 MATERIALS

.1 Required for original installation.

1.4 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 Cover adjacent surfaces and finishes with clean and dry drop sheets, kraft paper, cardboard or other suitable coverings during minor demolition.

1.5 EXECUTION

- .1 Execute cutting, fitting and patching required to perform work. Perform minor demolition required for alterations with care not to damage adjacent construction, fittings, fixtures, surfaces and finishes scheduled to remain.
- .2 Obtain Departmental Representative's approval before cutting, boring or sleeving load-bearing members
- .3 Fit several parts together, to integrate with other work.
- .4 Uncover work to install ill-timed work, at no cost to Contract.
- .5 Remove and replace defective and non-conforming work, at no cost to Contract.
- .6 Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing. Make cuts with clean, true, smooth edges.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Restore work with new products in accordance with requirements of Contract Documents.

.9 Include cost of making good all surfaces, substrates and work disturbed by removal of existing work and by installation of new work.

1.6 MATCHING TO EXISTING WORK

.1 Make new work in existing areas and all alteration/renovation work match in every respect similar items in existing areas.

.2 Use new materials to match existing items. Where perfect matches cannot be made as to quality, texture, colour and pattern remove existing materials and replace with new materials of comparable quality selected by the Departmental Representative, to extent directed by the Departmental Representative.

.3 Execute Work carefully wherever existing work is being re-used. Make repairs to such reused items after re-installation to properly restore them. Where proper restoration is impractical, such items will be rejected and replaced to the Departmental Representative's approval.

.4 After removal of reusable items, carefully patch and repair original location.

.5 Wherever existing work is being altered to make way for new work, perform such cutting and patching neatly and make finished installations equal to quality and appearance.

.6 Where new work is a continuation or an extension of existing work take care to blend both together with complete regard to appearance. Obvious joints and visible patches not acceptable.

1.7 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as straight edges and templates required to facilitate the Departmental Representative's inspection of work.

.4 Review layouts with the Departmental Representative prior to commencement of work.

1.8 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 the Departmental Representative of impending installation and obtain his approval for actual location.

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

END OF SECTION

CLEANING

1.1 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 the Departmental Representative. Refer to Section 01 35 43 - Environmental Procedures for additional requirements.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris. Locate where directed by the Departmental Representative.

.5 Provide and use clearly marked separate bins for recycling wherever facilities are available. Refer to Section 01 74 21 - Waste Management and Disposal for additional requirements.

.6 Remove waste material and debris from site and deposit in waste containers at end of each working day.

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

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

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

1.2 FINAL CLEANING

.1 When Work is substantially completed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

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

.6 Clean lighting reflectors, lenses and other lighting surfaces in electrical room

.7 Vacuum clean and dust room interiors.

.8 Sweep and power wash pavement around building and all pavement parking/storage areas used by Contractor to remove all traces of construction spillage, stains and residue. Do not blast dirty water onto adjacent buildings and site features.

END OF SECTION

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT

1.1 RELATED WORK

.1 Refer to every technical section for waste management and disposal requirements.

1.2 DEFINITIONS

.1 Waste Reduction Workplan: written report which addresses opportunities for reduction, re-use or recycling of materials.

.2 Materials Source Separation Program: consists of series of ongoing activities to separate re-usable and recyclable waste material into material categories from other types of waste at point of generation.

1.3 MATERIALS SOURCE SEPARATION

.1 Before project start-up, prepare Materials Source Separation Program. Provide separate containers for re-usable and/or recyclable materials of following:

- .1 Construction waste: including but not limited to following types.
  - .1 Uncontaminated packaging (wood, metal banding, cardboard, paper, plastic wrappings, polystyrene).
  - .2 Wood pallets (recycle or return to shipper).
  - .3 Metals (pipe, conduit, ducting, wiring, miscellaneous cuttings)
  - .4 Wood (uncontaminated).
  - .5 Paint, solvent, oil.
  - .6 Other materials as indicated in technical sections.
- .2 Administration/worker waste (uncontaminated): including but not limited to following types.
  - .1 Paper, cardboard.
  - .2 Plastic containers and lids marked types 1 through 6.
  - .3 Glass and aluminum drink containers (recycle or return to vendor).

.2 Implement Materials Source Separation Program for waste generated on project in compliance with approved methods and as approved by Departmental Representative.

.3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.4 Locate separated materials in areas which minimize material damage.

1.4 DIVERSION OF MATERIALS

.1 Create list of materials to be separated from general waste stream and stockpiled in separate containers, to approval of Departmental Representative and consistent with applicable fire regulations.

- .1 Mark containers.
- .2 Provide instruction on disposal practices.

1.5 STORAGE, HANDLING AND APPLICATION

.1 Do work in compliance with Waste Reduction Workplan.

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

.3 Materials in separated condition: collect, handle, store on site and transport off-site to approved and authorized recycling facility.

.4 Materials must be immediately separated into required categories for re-use or recycling.

.5 Unless specified otherwise, materials for removal become Contractor's property.

.6 On-site sale of salvaged/recyclable material is not permitted.

.7 On-site burning of material is not permitted.

.8 Provide Departmental Representative with receipts indicating quantity of material delivered to landfill.

.9 Provide Departmental Representative with receipts indicating quantity and type of materials sent for recycling.

END OF SECTION

CLOSEOUT PROCEDURES

1.1 INSPECTION AND DECLARATION

.1 Contractor's inspection: Contractor and all Subcontractors will conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify the Departmental Representative in writing of satisfactory completion of Contractor's inspection and that corrections have been made.

.2 Request the Departmental Representative's inspection.

.2 The Departmental Representative's inspection: the Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor will correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Certificates required by authorities having jurisdiction have been submitted.

.4 Work is complete and ready for Final Inspection.

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

END OF SECTION

CLOSEOUT SUBMITTALS

1.1 SUBMISSION

.1 Prepare instructions and data by personnel experienced in maintenance and operation of described products.

.2 Revise content of documents as required before final submittal.

.3 Phasing of submission:

.1 5 working days before substantial performance of work submit to Departmental Representative 4 final copies of operation and maintenance manuals.

.2 5 working days before substantial performance of work submit to Departmental Representative 4 final copies of supplements to operation and maintenance manuals for each subsequent phase.

.4 Ensure that spare parts, maintenance materials and special tools provided are new, neither damaged nor defective and of same quality and manufacture as products provided in work.

.5 If requested, furnish evidence as to type, source and quality of products provided.

.6 Defective products will be rejected, regardless of previous inspections. Replace defective products at no cost to Contract.

1.2 FORMAT

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 D-ring, loose leaf 219 x 279 mm size with spine and face pockets.

.3 Cover: identify each binder with typed or printed title "Project Record Documents"; list title of project and identify subject matter of contents.

.4 Arrange content by systems under section numbers and sequence of Specifications Index.

.5 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.6 Text: manufacturer's printed data, or typewritten data.

.7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.3 CONTENTS, EACH VOLUME

.1 Table of contents - provide the following:

.1 Title of project.

.2 Date of submission.

.3 Names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.4 Schedule of products and systems, indexed to content of volume.

.2 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product data: mark each sheet to clearly identify products and component parts, and data applicable to installation. Delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.4 RECORD DOCUMENTS

.1 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.2 Field changes of dimension and detail.

.3 Changes made by change orders.

.4 Details not on original Contract drawings.

.5 References to related shop drawings and modifications.

.2 Contract specifications: legibly mark each item to record actual "Workmanship of Construction", including;

.1 Manufacturer, trade name and catalogue number of each "Product/Material" actually installed, particularly optional items and substitute items.

.2 Changes made by addenda and change orders.

.3 Recording information:

.1 Record changes in red ink.

.2 Mark on one (1) set of drawings, specifications and shop drawings with changes during progress of work.

.3 Provide one (1) set of CDs in AutoCAD dwg. file format with all as-built information on the CDs.

.4 Submit all sets for the Departmental Representative.

1.5 EQUIPMENT AND SYSTEMS

.1 Operating procedures - include the following:

.1 Start-up, break-in, and routine normal operating instructions and sequences.

.2 Regulation, control, stopping, shutdown, and emergency instructions.

.3 Summer, winter and any special operating instructions.

.2 Provide servicing schedule required.

.3 Include manufacturer printed operation and maintenance instructions.

.4 Include sequence of operation by controls manufacturer.

.5 Provide original manufacturer parts list, illustrations, assembly drawings and diagrams required for maintenance.

.6 Provide installed control diagrams by controls manufacturer.

.7 Additional requirements: as specified in individual specification Sections.

1.6 MANUFACTURER DOCUMENTATION REPORTS

.1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and system, instruct Departmental Representative's indicated facility personnel and provide detailed written report that demonstration and instructions have been completed.

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

1.7 SPARE PARTS

.1 Provide spare parts in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in work.

.3 Deliver to on-site location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to the Departmental Representative. Include approved listings in maintenance manual.

.5 Obtain receipt for delivered products and submit to Departmental Representative.

1.8 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in work.

.3 Provide all software, licenses, interface and cabling devices required to setup or maintain all equipment as installed in this project, whether specifically requested or not. Software shall be fully operational and not time-limited or demonstration versions. All passwords, keys or hardware locks will be provided to the Owner.

.4 Deliver to on-site location as directed; place and store.

.5 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in maintenance manual.

.6 Obtain receipt for delivered products and submit to Departmental Representative.

1.9 WARRANTIES, BONDS, TEST REPORTS, INSPECTION REPORTS

.1 Obtain Warranties, Bonds, Test Results, Inspection Reports executed in duplicate by subcontractors, suppliers, manufacturers and inspection agencies within 10 working days after completion of applicable item of work.

.2 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until date of substantial performance is determined.

.3 Verify that documents are in proper form, contain full information and are notarized.

.4 Co-execute submittals when required.

.5 Retain warranties and bonds until time specified for submittal.

1.10 COMPLETION

.1 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 and adjusted and are fully operational.

.4 Certificates required by BC Electrical Safety Authority has been submitted.

.5 Work is complete and ready for final inspection.

END OF SECTION

DEMONSTRATION AND TRAINING

Part 1 General

1.1 SECTION INCLUDES

.1 Procedures for demonstration and instruction of equipment and systems to Owner's personnel.

1.2 RELATED SECTIONS

.1 Section 01 78 00 - Closeout Submittals.

1.3 DESCRIPTION

.1 Demonstrate operation and maintenance of equipment and systems to Departmental Representative two weeks prior to date of final inspection.

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

1.4 QUALITY CONTROL

.1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

1.5 SUBMITTALS

.1 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative’s approval.

.2 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.3 Give time and date of each demonstration, with list of persons present.

1.6 CONDITIONS FOR DEMONSTRATIONS

.1 Equipment has been inspected and put into operation in accordance with Manufacturer’s recommendations.

.2 Testing, adjusting, and balancing has been performed and equipment and systems are fully operational.

.3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.7 PREPARATION

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

1.8 DEMONSTRATION AND INSTRUCTIONS

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.

.2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.

.3 Review contents of manual in detail to explain all aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

.5 Training and demonstration will be performed by manufacturers representative and will include actual interaction with all systems requiring software or computer interface.

1.9 TIME ALLOCATED FOR INSTRUCTIONS

.1 Contractor shall provide for a total of 1 working day of demonstration and training for all systems in the project, including but not limited to:

.1 Load shedding contactor operation and reset procedure.

.2 Walkthrough of system as it had been modified for user understanding.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 11 54 – General Instructions.

.2 Section 01 35 33 – Health and Safety Requirements.

1.2 REFERENCES

.1 Reports:

.1 Refer to the Assessment Report titled Hazardous Building Material Assessment Building E0181, Tofino, British Columbia, prepared for Public Services and Procurement Canada on behalf of the Royal Canadian Mounted Police, dated March 17, 2021. The report was prepared by DST Consulting Engineering Inc.

.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 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.

.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" (2017)

.3 "Lead-Containing Paints and Coatings; Preventing Exposure in the Construction Industry" (2017)

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

.7 The Federal PCB Regulations (SOR/2008-273).

.8 The British Columbia Waste Management Act - Ozone Depleting Substances and Other Halocarbons Regulation (BC Reg. 387/99).

.9 The Federal Halocarbons Regulation (July 2003).

.10 Canadian Construction Association

.1 Standard Construction Document CCA 82 "Mould Guidelines for the Canadian Construction Industry" (2004)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.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 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.

.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 Based on the construction date of the Subject Building (circa 2017) no ACMs are suspected within the Project Area.

.2 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 Departmental Representative.

.2 Lead and Lead-Containing Paints (LCPs)

.1 Refer to the Assessment Report for identities and locations of lead-containing materials (including LCPs) that may require disturbance during the Work.

.3 Polychlorinated Biphenyls (PCBs)

.1 Removal, alteration and/or disposal of PCB-containing equipment is not anticipated to be required during the Work.

.2 Should a material suspected to contain PCBs become uncovered during renovation activities (i.e., dielectric fluids, hydraulic fluids), all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if PCBs are present.

.3 PCB-containing items identified for removal and disposal should be handled, transported, stored and disposed of in accordance with the following:

.1 The transportation and disposal requirements of BC Reg. 63/88 .

.2 The transportation requirements of the Federal Transportation of Dangerous Goods Regulation.

.3 The Federal PCB Regulations (SOR/2008-273)

.4 Mould

.1 Removal, alteration and/or disposal of mould-impacted materials is not anticipated to be required during the Work.

.5 Mercury

.1 Removal of mercury-containing materials is not anticipated to be required during the Work:

.2 Precautions should be taken if workers may potentially be exposed to mercury or mercury vapours to ensure that workers exposure levels do not exceed the occupational exposure limit of 0.025 mg/m^3 as per the BC Reg. 296/97. This can be achieved by providing respiratory and skin protection applicable to the hazard and task to be completed.

.6 Ozone-Depleting Substances (ODSs)

.1 Removal, alteration and/or disposal of refrigeration or air conditioning equipment with ODS refrigerants is not anticipated to be required during the Work.

.7 Silica

.1 When silica-containing materials are to be disturbed and/or removed (e.g., coring through concrete slabs, demolition of masonry or concrete units), 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 74 11 – Cleaning. 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 74 11 – Cleaning.

.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 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.1-2018, Canadian Electrical Code, Part 1 (21st Edition), Safety Standard for Electrical Installations.

.2 CAN3-C235-83(R2000), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

.2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)

.1 EEMAC 2Y-1-1958, Light Gray Colour for Indoor Switch Gear.

.3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)

.1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.2 DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.3 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates and labels for control items in English

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of BC, Canada.

.2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure coordinated installation.

.3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.

.4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.

.5 Submit copies of 600 x 600 mm minimum size drawings and product data to authority having jurisdiction.

.6 If changes are required, notify Departmental Representative of these changes before they are made.

.3 Quality Control: in accordance with Section 01 45 00 - Quality Control. Provide CSA certified equipment and material.

.1 Where CSA certified material is not available, submit such material to authority having jurisdiction for special approval before delivery to site.

.2 Submit test results of installed electrical systems and instrumentation.

.3 Permits and fees: in accordance with General Conditions of contract.

.4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.

.4 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

1.5 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Contractor license or apprentices in accordance per the conditions of Provincial Act respecting manpower vocational training and qualification.

.3 Site Meetings:

.1 In accordance with Section 01 32 17 - Construction Progress Schedule - Bar (GANTT) Charts.

.2 Site Meetings: as part of Manufacturer's Field Services described in Part 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.

.1 After delivery and storage of products, and when preparatory Work is complete but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

.4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Material Delivery Schedule: provide Departmental Representative with schedule within 2 weeks after award of Contract.

.2 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.7 SYSTEM STARTUP

.1 Instruct Departmental Representative in operation, care and maintenance of systems, system equipment and components.

.2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

.3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant will aspects of its care and operation.

1.8 OPERATING INSTRUCTIONS

.1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

.2 Operating instructions to include following:

.1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.

.2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.

.3 Safety precautions.

.4 Procedures to be followed in event of equipment failure.

.5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

.3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.

.4 Post instructions where directed.

.5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.

.6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.

.2 Material and equipment to be CSA certified. Where CSA certified material and equipment is are not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

.3 Factory assemble control panels and component assemblies.

2.2 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of inspection authorities.

.2 Decal signs, minimum size 175 x 250 mm.

2.3 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.4 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates and labels as follows:

.1 Nameplates: lamicoid 3 mm thick plastic engraving sheet, black face, white core, lettering accurately aligned and engraved into core.

.2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.2 Labels: embossed plastic labels with 6mm high letters unless specified otherwise.

.3 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.

.4 Allow for minimum of twenty-five (25) letters per nameplate and label.

.5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

.6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.7 Terminal cabinets and pull boxes: indicate system and voltage.

.8 Transformers: indicate capacity, primary and secondary voltages.

2.5 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, numbered, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour coding: to CSA C22.1.

.4 Use colour coded wires in communication cables, matched throughout system.

2.6 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables.

.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.

.3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
up to 250 V	Yellow	
up to 600 V	Yellow	Green
up to 5 kV	Yellow	Blue
up to 15 kV	Yellow	Red
Telephone	Green	
Other Communication Systems	Green	Blue
Fire Alarm	Red	
Emergency Voice	Red	Blue

	Prime	Auxiliary
Other Security Systems	Red	Yellow

2.7 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.

.1 Paint outdoor electrical equipment light gray to EEMAC 2Y-1.

.2 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1.

Part 3 Execution

3.1 INSTALLATION

.1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

3.2 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 CONDUIT AND CABLE INSTALLATION

.1 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.

.2 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.4 CO-ORDINATION OF PROTECTIVE DEVICES

.1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.5 FIELD QUALITY CONTROL

.1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.

.1 Circuits originating from branch distribution panels.

.2 Insulation resistance testing:

.1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

.2 Check resistance to ground before energizing.

.2 Carry out tests in presence of Departmental Representative.

.3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

.4 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.6 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

SEISMIC RESTRAINTS – ELECTRICAL

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies materials and installation for seismic restraint systems for generator and automatic transfer switch installations.

1.2 REGULATORY REQUIREMENTS

.1 Restraints shall meet the requirements of the latest edition of the National building Code of Canada 2015 (NBC) and amendments.

.2 The Seismic Engineer shall be able to provide a proof of professional insurance and the related practice credentials, upon request. The Seismic Engineer shall be familiar with SMACNA, ECABC & NFPA guidelines as well as the NBC 2015 requirements.

.3 The Contractor’s Seismic Engineer shall submit original signed BC Building Code “Letters of Assurance” “Model Schedules S-B and S-C” to the Prime Consultant or Electrical Consultant.

.4 The above requirements shall not restrict or supplant the requirements of any local bylaws, codes, or other certified agencies which may have jurisdiction over all or part of the installation.

1.3 SCOPE

.1 It is the responsibility of equipment manufacturers to design their equipment so that the strength and anchorage of internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.

.2 Manufacturer's shop drawings to be submitted with seismic information on equipment structure, bracing and internal components and as required by Division 01.

.3 Provide restraint on all equipment and machinery, which is part of the building electrical services and systems, to prevent injury or hazard to persons and equipment in and around the structure. Restrain all such equipment in its normal position in the event of an earthquake.

.4 The total generator subbase fuel tank seismic restraint design and field review and inspection will be by a B.C. registered professional structural and seismic engineer who specializes in the restraint of building elements. Contractor to allow for coordination, provision of seismic restraints, as well as all costs for the services of the Seismic Restraint Engineer. This Engineer, herein referred to as the Seismic Engineer, will provide normal engineering functions as they pertain to seismic restraint of electrical installations.

.5 The Contractor shall be aware of, and comply with, all current seismic restraining requirements and make provision for those that may come into effect during construction of the project. Make proper allowance for such conditions in the tender.

.6 The Seismic Engineer shall provide detailed seismic restraint installation shop drawings to the Contractor. Copies of the shop drawings to be included in the final project manual.

.7 Provide seismic restraints on all equipment, and/or installations or assemblies, which are suspended, pendant, shelf mounted, freestanding and/or bolted to the building structure or support slabs.

.8 The Seismic Engineer shall provide inspections during and after installation. The Contractor shall correct any deficiencies noted without additional cost to the contract.

.9 Include all costs associated with the Seismic installation and certification in the base tender.

1.4 SHOP DRAWINGS & SUBMITTALS

.1 Submit shop drawings of all seismic restraint systems including details of attachment to the structure, either tested in an independent testing laboratory or approved by the seismic Engineer.

.2 Submit all the proposed types and locations of inserts or connection points to the building structure or support slabs. Follow the directions and recommendations of the Seismic Engineer.

Part 2 Products

2.1 SLACK CABLE SYSTEMS.

.1 Slack cable restraints shall be provided on generator and free standing ATS along with associated equipment and assemblies connected to them at the points of support. The restraint wires shall be oriented at approximately 90^{o} to each other (in plan), and tied back to the structure at approximately 45^{o} to the slab or basic structure. The restraints shall be selected for a 1 g earthquake loading, i.e. each wire shall have a working load capacity equal to the weight of the transformer. The anchors in the structure shall be selected for a load equal to the weight of the transformers at a 45^{o} pull.

.2 Slack cable systems to allow normal maintenance of equipment and shall not create additional hazard by their location or configurations. Contractor shall rectify any such installations at no additional cost, all to the satisfaction of the engineer and inspection authority having jurisdiction.

.3 Coordinate requirements of slack cables with suppliers prior to installation.

Part 3 Execution

3.1 GENERAL

.1 All seismic restraints systems shall conform to local authority having jurisdiction and all applicable code requirements.

3.2 CONDUITS

.1 Provide restraint installation information and details on conduit and equipment as indicated below:

.2 Vertical Conduit:

.1 Attachment - Secure vertical conduit at sufficiently close intervals to keep the conduit in alignment and carry the weight of the conduits and wiring.

Stacks shall be supported at their bases and, if over 2 stories in height, at each floor by approved metal floor clamps.

.2 At vertical conduit risers, wherever possible, support the weight of the riser, at a point or points above the center of gravity of the riser. Provide lateral guides at the top and bottom of the riser, and at intermediate points not to exceed 9.2 m o.c.

.3 Riser joints shall be braced or stabilized between floors.

.3 Horizontal Conduits:

.1 Supports - Horizontal conduit shall be supported at sufficiently close intervals to keep it in alignment and prevent sagging.

.2 EMT tubing - tubing shall be supported at approximately 1.2 m intervals for tubing.

.4 Provide transverse bracing at 12.2 m intervals maximum unless otherwise noted. Provide bracing at all 90^{o} bend assemblies, and pull box locations.

.5 Provide longitudinal bracing at 24.4 m intervals maximum unless otherwise noted.

.6 Do not brace conduit runs against each other. Use separate support and restraint system.

.7 Support all conduits in accordance with the capability of the pipe to resist seismic load requirements indicated.

.8 Trapeze hangers may be used. Provide flexible conduit connections where conduits pass through building seismic or expansion joints, or where rigidly supported conduits connect to equipment with vibration or seismic isolators.

.9 A conduit system shall not be braced to dissimilar parts of a building or two dissimilar building systems that may respond in a different mode during an earthquake. Examples: wall and a roof; solid concrete wall and a metal deck with lightweight concrete fill.

.10 Provide large enough conduit sleeves through walls or floors to allow for anticipated differential movements with firestopping where required.

.11 It is the responsibility of the contractor to ascertain that an appropriate size restraint device be selected for each individual piece of equipment. Submit details on shop drawings. Review with seismic Engineer and submit shop drawings to consultants for their reference.

3.3 FLOOR MOUNTED EQUIPMENT

.1 Bolt all equipment, e.g. generators, motor control centres, free standing automatic transfer switch, control panels, capacitor banks, etc. to the structure. Design anchors and bolts for seismic force applied horizontally through the center of gravity to a seismic force of 0.5g. For equipment which may be subject to resonances, use a nominal 1.0 g seismic force.

.2 Provide flexible conduit connections between floor mounted equipment to be restrained and its adjacent associated electrical equipment.

.3 The generator and sub-base tank to be seismically restrainted to generator pad such that the packaged generator system remains restrained in the event of flood with an empty fuel tank.

END OF SECTION

FIRESTOPPING

Part 1 General

1.1 SECTION INCLUDES

.1 This section includes materials and installation for tested firestopping systems as follows:

.1 Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated separations.

1.2 REFERENCES

.1 Test Requirements: CAN/ULC-S115-05, "Fire Tests of Fire Stop Systems"

1.3 QUALITY ASSURANCE

.1 Contractor’s certified installer, or manufacturer’s direct installation trainer to assist with initial installation of firestop systems to ensure appropriate contractor system selection and installation procedures.

.2 Firestop System application, products and installation must meet requirements of a listed system in accordance with CAN/ULC-S115, tested to provide the appropriate fire (and temperature if applicable) rating for the penetrated assembly. Systems may be approved by any Standards Council of Canada approved testing agency.

1.4 SUBMITTALS

.1 Submit Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of ULC or cUL firestop systems to be used and manufacturer's installation instructions to comply with Section 01 33 00.

.2 Submit material safety data sheets provided with product delivered to job-site.

1.5 INSTALLER QUALIFICATIONS

.1 Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary training to select and install manufacture’s products per applicable requirements. A supplier’s willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer. Qualification should consist of training, successful completion of testing based on the Firestopping Contractors International Association Manual of Practice, and continuing education.

.2 The work is to be installed by a contractor with at least one of the following qualifications:

.1 ULC Qualified Firestop Contractor

.2 Hilti Accredited Fire Stop Specialty Contractor

.3 Nuco Accredited Fire Stop Installer

.4 Other approved manufacturer qualification program

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and ULC or cUL label where applicable.

.2 Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job-site.

.3 Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.

.4 Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

.5 Do not use damaged or expired materials.

1.7 PROJECT CONDITIONS

.1 Do not use materials that contain flammable solvents.

.2 Scheduling

.1 Schedule installation of CAST IN PLACE firestop devices after completion of floor formwork, metal form deck, or composite deck but before placement of concrete.

.2 Schedule installation of Drop-In firestop devices after placement of concrete but before installation of the pipe penetration. Diameter of sleeved or cored hole to match the listed system for the device

.3 Schedule installation of other firestopping materials after completion of penetrating item installation but prior to covering or concealing of openings.

.3 Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

.4 Weather conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.

.5 During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

Part 2 Products

2.1 FIRESTOPPING, GENERAL

.1 Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

.2 Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

.3 For penetrations that are anticipated to be re-used (communication cable-trays, riser shaft sleeves, etc.), use a firestopping system that is re-enterable without the use of additional materials or detailed knowledge of the system (EZ-Path, Flamestopper, Speedsleeve or equivalent).

2.2 MATERIALS

.1 Use only firestop products that have been tested and approved for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

.2 Provide Departmental Representative with ULC listed system approved for fire stopping prior to fire stopping penetrations.

Part 3 Execution

3.1 PREPARATION

.1 Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

.1 Verify penetrations are properly sized and in suitable condition for application of materials.

.2 Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.

.3 Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.

.4 Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.

.5 Do not proceed until unsatisfactory conditions have been corrected.

3.2 COORDINATION

.1 Coordinate location and proper selection of cast-in-place Firestop Devices with trade responsible for the work. Ensure device is installed before placement of concrete.

.2 Responsible trade is to provide adequate spacing of field run pipes to allow for installation of cast-in-place firestop devices without interference.

3.3 INSTALLATION

.1 Regulatory Requirements: Install firestop materials in accordance with ULC Fire Resistance Directory or equivalent.

.2 Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration and construction joint materials.

.1 Seal all holes or voids made by penetrations to ensure an air and water resistant seal.

.2 Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of ULC firestop systems that might hamper the performance of fire dampers as it pertains to duct work.

.3 Protect materials from damage on surfaces subjected to traffic.

3.4 FIELD QUALITY CONTROL

.1 Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

.2 Keep areas of work accessible until inspection by authority having jurisdiction.

.3 Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, “Standard Practice for On-Site Inspection of Installed Fire Stops” or other recognized standard.

.4 Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.

3.5 IDENTIFICATION

.1 Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

.1 The words: "Warning -Through Penetration Firestop System-Do Not Disturb. Notify Building Management of Any Damage."

.2 Contractor's Name, address, and phone number.

.3 Through-Penetration firestop system designation of applicable testing and inspecting agency.

.4 Date of Installation.

.5 Through-Penetration firestop system manufacturer's name.

.6 Installer's Name.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies the materials and installation for wire and box connectors, rated to 1000V.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-C22.2No.18 latest edition, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.

.2 CSA C22.2No.65 latest edition, Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)

.1 EEMAC 1Y-2, latest edition, Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

.3 National Electrical Manufacturers Association (NEMA)

Part 2 Products

2.1 MATERIALS

.1 Pressure type wire connectors to: CSA C22.2No.65, with current carrying parts of copper alloy sized to fit copper conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2No.65, with current carrying parts of copper alloy sized to fit copper conductors 10 AWG or less.

.3 Bushing stud connectors: to EEMAC 1Y-2 to consist of:

.1 Connector body and stud clamp for stranded copper conductors.

.2 Clamp for stranded copper conductors.

.3 Stud clamp bolts.

.4 Bolts for copper conductors.

.5 Sized for conductors as indicated.

.4 Clamps or connectors for armoured cable, flexible conduit, as required to: CAN/CSA-C22.2No.18.

Part 3 Execution

3.1 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

.1 Install mechanical pressure type connectors and tighten screws [with appropriate compression tool recommended by manufacturer]. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

.2 Install fixture type connectors and tighten. Replace insulating cap.

.3 Install bushing stud connectors in accordance with [EEMAC 1Y-2] [NEMA].

END OF SECTION

WIRES AND CABLES (0-1000 V)

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies copper, 0-1000 Volts and the most common electrical insulation and covering materials.

1.2 REFERENCES

.1 CSA C22.2 No .0.3 latest edition, Test Methods for Electrical Wires and Cables.

.2 CAN/CSA-C22.2 No. 131 latest edition, Type TECK 90 Cable.

1.3 GENERAL REQUIREMENTS

.1 Typically use insulated 98% conductivity copper conductor wiring enclosed in EMT (steel) conduit for the general wiring systems unless otherwise indicated.

.2 Aluminium conductors not permitted.

.3 Teck cable may only be used where specifically indicated on the drawings or in the specifications. Where permitted, Teck wiring up to 750 system volts to be PVC jacketed armoured cable, multi-copper conductor type Teck90 1000 volt having a PVC jacket with FT-4 flame spread rating.

.4 Flexible AC90 armoured cabling (BX) shall not be used for the general wiring system other than final drops to recessed light fixtures in concealed locations.

.5 Cabling indicated to be 2-Hour Fire-Rated shall be compliant to CAN/ULC-S139 and CSA 38-95 (Draka Lifeline, Raychem RHW, or Shawflex). Cabling shall be low smoke halogen free. Conduit to be sized and installed as per manufacturers' requirements for these specialized cables and assemblies regardless of the size indicated on drawings.

.6 Non-metallic sheathed wiring is not to be used on this project.

Part 2 Products

2.1 WIRE AND CABLE GENERAL

.1 Conductors: stranded for 10 AWG and larger. Minimum size #12 AWG.

.2 Insulation to be 600 volt RW90XLPE (X link) for the general building wiring in conduit.

.3 Use RWU90XLPE for underground installations. Ensure conduits are sized to suit this type of wiring.

.4 Site services sub-circuits, including site lighting, to be minimum #10 AWG for power and #12 for controls. Increase wiring size for lengthy and/or loaded circuits so that system will not exceed the maximum voltage drop as recommended by the Canadian Electrical Code CSA 22.1 [latest edition].

.5 Main feeders to be conduit and copper insulated wiring unless otherwise noted on drawings. Provide ground wiring for all conduits in or below slabs. Increase conduit size as required.

.6 Armoured AC90 (BX) cable may only be utilized where existing is BX.

.7 Conductors to be colour-coded. Conductors No.10 gauge and smaller shall have colour impregnated into insulation at time of manufacture. Conductors size No.8 gauge and larger may be colour-coded with adhesive colour coding tape, but only black insulated conductors shall be employed in this case, except for neutrals which shall be white wherever possible. Where colour-coding tape is utilized, it shall be applied for a minimum of 50 mm at terminations, junctions and pullboxes and conduit fittings. Conductors not to be painted.

2.2 TECK CABLE

.1 Cable: to CAN/CSA-C22.2 No. 131 [latest edition].

.2 Conductors:

.1 Grounding conductor: copper.

.2 Circuit conductors: copper, size as indicated.

.3 Insulation:

.1 Type: ethylene propylene rubber.

.2 Chemically cross-linked thermosetting polyethylene rated type RW90, 600V .

.4 Inner jacket: polyvinyl chloride material.

.5 Armour: interlocking galvanized steel or aluminum.

.6 Overall covering: [thermoplastic [polyvinyl chloride]] material.

.7 Fastenings:

.1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

.2 Channel type supports for two or more cables at 1000 mm centers.

.3 Threaded rods: 6 mm dia. to support suspended channels.

.8 Connectors:

.1 Watertightapproved for TECK cable.

2.3 ARMOURED CABLES

.1 Conductors: insulated, copper, size as indicated.

.2 Type: AC90.

.3 Armour: interlocking type fabricated from galvanized steel or aluminum strip.

2.4 ARMOURED FIRE ALARM CABLE

.1 Use flexible armoured fire alarm cable from junction box to ceiling mounted fire alarm device.

.2 Type: SECUREX® II cable, fire rated to CSA FT4 requirements.

.3 Armour: interlocked aluminum tape armour. Cable armour shall be colour coded “red”.

2.5 CONTROL CABLES

.1 Type LVT: 2 soft annealed copper conductors, sized as indicated, with thermoplastic insulation, outer covering of thermoplastic jacket.

.2 Low energy 300 V control cable: solid annealed copper conductors sized as indicated, with TWH over each conductor and overall covering of PVC jacket.

.3 600 V type: stranded copper conductors, sizes as indicated with R90 (x-link) ethylene-propylene rubber insulation type over each conductor and overall covering of PVC jacket.

Part 3 Execution

3.1 INSTALLATION OF BUILDING WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Fittings.

.2 In underground ducts in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Fittings.

.3 In trenches in accordance with Section 26 05 44 – Installation of Cable in Trenches and Ducts.

.4 In wireways and auxiliary gutters in accordance with Section 26 05 37 - Wireways and Auxiliary Gutters.

.5 All wires are to be pulled in together in a common raceway, using liberal amounts of Compound 77 lubricant.

.6 All power circuits connected to isolated ground type receptacles are to have individual separate neutral c/w insulated bonding conductor.

.7 No combining of circuits onto common neutral will be permitted. Use 2 pole or 3 pole breakers for combined circuits, no connector clips will be allowed.

.8 Ensure that all single phase loadings are reasonably closely balanced over the main feeders.

.9 All dimmer circuits are to have individual neutral conductors for each circuit.

3.2 INSTALLATION OF TECK CABLE 0 -1000 V

.1 Install cables.

.1 Group cables wherever possible on channels.

.2 Install cable in trenches in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Fittings.

.3 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

3.3 INSTALLATION OF ARMOURED CABLES

.1 Group cables wherever possible.

.2 Install cable in trenches in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Fittings.

.3 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

END OF SECTION

HANGERS & SUPPORTS FOR ELECTRICAL SYSTEMS

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies U shape support channels either surface mounted. Suspended or set in poured concrete walls or ceilings.

Part 2 Products

2.1 SUPPORT CHANNELS

.1 U shape, size 41 x 41mm, 2.5mm thick, surface mounted, suspended, or set in poured concrete walls and ceilings.

Part 3 Execution

3.1 INSTALLATION

.1 Secure equipment to surfaces with lead anchors or nylon shields as required.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.

.5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.6 Fasten exposed conduit or cables to building construction or support system using straps.

- .1 One-hole steel straps to secure surface conduits and cables 50 mm and smaller.
- .2 Two-hole steel straps for conduits and cables larger than 50 mm.
- .3 Beam clamps to secure conduit to exposed steel work.

.7 Suspended support systems.

- .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
- .2 Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.

.8 For surface mounting of two or more conduits use channels at 1.5m on centre spacing.

.9 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

.10 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

.11 Do not use wire lashing or perforated strap to support or secure raceways or cables.

.12 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Departmental Representative.

.13 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies rigid and flexible conduits, raceways,, fasteners, fittings and installation.

1.2 REFERENCES

.1 Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware: to CSA C22.2 No. 18.

.2 Rigid metal conduit (RMC): to CSA C22.2 No. 45.

.3 Electrical metallic tubing (EMT): to CSA C22.2 No. 83.

.4 Flexible metal conduit (FMC): to CSA C22.2 No. 56.

1.3 BASIC WIRING METHODS

.1 Partition walls and ceilings:

.1 All wiring to be run in EMT conduit for:

.1 Branch circuits.

.2 Low voltage systems.

.3 Surface wiring in electrical and mechanical rooms.

.2 Motors, transformers and all vibrating equipment:

.1 Short (600mm to 1200mm) PVC jacketed flexible conduit with liquid tight connectors shall be used. Allow sufficient slack to avoid strain on connectors at extreme extension of equipment movement.

.3 Surface raceways - interior:

.1 All surface raceways shall be EMT, except if located without protection in areas susceptible to damage, which shall be rigid steel conduit.

.2 Where surface wiring is required in a finished, interior space, and approved by the Departmental Representative, a steel surface 'wiremold' raceway shall be used. Surface wiring in mechanical and electrical rooms shall be EMT conduit.

.3 Surface wiring in finished areas will only be allowed for block or poured concrete type construction or when it is impractical due to existing conditions.

1.4 LOCATION

.1 Electrical drawings are diagrammatic and do not show all conduits, wire, cable, etc. Electrical contractor to provide conduit, wire cable, etc., for a complete operating job to meet in all respects the intent of the drawings and specifications.

.2 Outlet positions shown on architectural drawings (plans and elevations) to take precedence over locations and mounting heights indicated on electrical plans or in specifications.

.3 Locate electrical devices on walls with regard given for convenience of operation and conservation of wall space. Switches, receptacles, fire alarm pull stations, etc. generally to be vertically lined up where items are in the same general location. Adjacent common devices to be installed in common outlet box.

.4 Review the exact location criteria of each electrical outlet and device with the Departmental Representative prior to rough-in. Relocate any item installed without architectural confirmation as required by the Departmental Representative at no cost to the owner as long as the relocation is within 3m of the location originally shown on the electrical drawings.

.5 Locate light switches on latch side of doors. Locate disconnect devices in mechanical rooms on latch side of door.

.6 All outlets located on exterior walls to be complete with moulded plastic vapour barriers to maintain integrity of wall vapour barrier system.

.7 All raceways and wiring shall be installed concealed in building fabric, except for mechanical and electrical rooms where they shall be installed on the surface.

.8 All outlet boxes, junction boxes, and cabinets to hold electrical devices shall be mounted so the equipment can be flush mounted unless indicated otherwise.

.9 All junction boxes and other raceway access devices shall be mounted to avoid being visible from public areas. Obtain approval from Departmental Representative for any and all junction boxes that, due to the building design, cannot be concealed.

.10 All junction boxes mounted, out of necessity, on surface of solid walls shall be painted to match adjacent surface, with junction boxes painted to match designated systems.

Part 2 Products

2.1 EMT RACEWAY

.1 Electrical Metallic Tubing (EMT) shall be galvanized steel of sufficient quality and thickness to allow smooth field formed bends.

.2 EMT couplings, connectors and fittings shall be steel. Cast type units shall not be used on this installation.

2.2 OUTLET BOXES AND JUNCTION BOXES

.1 Except as noted for rigid PVC raceways, all outlet boxes and junction boxes shall be one piece formed or welded.

.2 Outlet boxes to be galvanized steel.

.3 Junction boxes to be galvanized steel or aluminum.

2.3 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 50 mm and smaller. Two hole steel straps for conduits larger than 50 mm.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits at 1500mm oc.

.4 Threaded rods, 6 mm dia., to support suspended channels.

2.4 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Factory "ells" where 90° bends are required for 25 mm and larger conduits.

.3 Watertight connectors and couplings for EMT. Set-screws are not acceptable.

2.5 FISH CORD

.1 Polypropylene.

2.6 SURFACE RACEWAY

.1 Surface mounted electrical raceway shall be steel, architecturally styled with clip on covers, associated bends, 90s, offsets and boxes fully coordinated with this raceway system.

.2 Finish shall be epoxy type powder paint or similar quality wet process; color to be beige/off white.

.3 Surface wire way boxes shall be sized appropriately for the devices to be used and for wire fill calculations. Boxes used for fire alarm pull stations shall be red in color.

.4 Mounting clips shall utilise concealed fasteners.

Part 3 Execution

3.1 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.

.3 Use electrical metallic tubing (EMT) except in cast concrete and above 2.4 m not subject to mechanical injury.

.4 Use flexible metal conduit for connection to motors in dry areas, connection to recessed incandescent fixtures without a prewired outlet box, connection to surface or recessed fluorescent fixtures and work in movable metal partitions.

.5 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.

.6 Minimum conduit size for lighting and power circuits: 19mm. Fire Alarm: 16mm.

.7 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.8 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.9 Install fish cord in empty conduits.

.10 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.

.11 Dry conduits out before installing wire.

.12 Conduits shall be installed mechanically continuous from outlet to outlet and without pockets. All the necessary standard bushings, elbows and bends shall be provided. All conduit bends shall have a radius of not less than six (6) times the internal diameter of the conduit and in no case shall the equivalent of more than four quarter bends from outlet to outlet be made. For all conduit sizes to be used for low voltage raceway, the conduits shall have a minimum bending radius of 230mm.

.13 Conduit bends shall be made with no more than 10% flattening of the conduit. Bends shall be smooth throughout deformations.

.14 On surface wall runs, all conduit shall be installed in true vertical or horizontal direction and on ceilings in true 90 degree angles or parallel to the walls. Crossings of conduits shall also be made at 90 degree angles. Parallel running conduit shall be kept on equal spacing on the entire length of run including bends.

.15 All conduits shall be fastened to structure with steel straps (no cast type straps allowed).

.16 Where more than three conduits are run parallel in ceiling cavity, they shall be installed on cantruss type channel, complete with all Manufacturer's fittings to secure channel to structure and to conduit.

.17 Raceways extending out concrete slabs shall be securely protected using rebar stubs or similar material. All duct stubs are to be kept sealed during construction

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.

.3 Run conduits in flanged portion of structural steel.

.4 Group conduits wherever possible on suspended or surface channels.

.5 Do not pass conduits through structural members except as indicated.

.6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.3 CONCEALED CONDUITS

.1 Run parallel or perpendicular to building lines.

END OF SECTION

WIREWAYS AND AUXILIARY GUTTERS

Part 1 General

1.1 SECTION INCLUDES

.1 This section specifies wireways, auxiliary gutters and associated fittings and installation.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSAC22.2No.26-[R1999], Construction and Test of Wireways, Auxiliary Gutters and Associated Fittings.

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 26 05 00 Common Work Results - Electrical.

Part 2 Products

2.1 WIREWAYS

.1 Wireways and fittings: to CSA C22No.26.

.2 Sheet steel with [hinged] [bolted] cover to give uninterrupted access.

.3 Finish: baked grey enamel.

.4 Elbows, tees, couplings and hanger fittings manufactured as accessories to wireway supplied.

Part 3 Execution

3.1 INSTALLATION

.1 Install wireways and auxiliary gutters.

.2 Keep number of elbows, offsets, connections to minimum.

.3 Install supports, elbows, tees, connectors, fittings.

.4 Install barriers where required.

.5 Install gutter to full length of equipment.

END OF SECTION

PANELBOARDS BREAKER TYPE

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 This Section specifies standard and custom panelboards and their installation.

1.2 SCOPE OF WORK

.1 Provide and install panelboards as indicated on the drawings, single line diagram, panel schedules and these specifications.

.2 Types of panelboards in this section include the following:

.1 Lighting and power panelboards

1.3 PRODUCT INFORMATION

.1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Shop drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

.3 Shop drawings to include matching tub and trim details for factory installed low voltage relay cabinets where specified.

1.4 PLANT ASSEMBLY

.1 Install circuit breakers in panelboards before shipment from plant.

.2 In addition to CSA requirements, manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

.3 All panelboards to be of a common manufacturer.

1.5 FINISH

.1 Apply finishes in accordance with Section 26 05 00 – Common Work Results - Electrical.

.2 Panel finish in electrical and equipment rooms and closets to be standard ASA Grey baked enamel. Confirm with Departmental Representative prior to shop finishing panels.

Part 2 PRODUCTS

2.1 PANELBOARDS, DOORS AND TRIMS

.1 Panelboards: to CSA C22.2 No. 29 and product of one manufacturer.

.2 Bus and breakers unless otherwise indicated on the drawings and in the specifications, shall be rated for values determined in coordination study.

.3 Tin plated copper bus with full size neutral.

.4 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number.

.5 Mains capacity, number of circuits and number and size of branch circuit breakers as indicated.

.6 Provide all necessary connectors and mounting hardware in every space to facilitate installation of future breakers. Provide blank fillers for all spaces.

.7 Concealed hinges and concealed trim mounting screws, hinged locking door with flush catch.

.8 Panelboards to have flush doors.

.9 Provide two keys for each panelboard and key similar voltage and system panelboards alike.

.10 Panel tubs to be typically 600mm wide.

.11 All surface mounted enclosures to be complete with sprinkler drip cover.

.12 Provide door within door trims where indicated to facilitate ease of service maintenance Each tub trim cover to be hinged and self supporting and to swing out to expose breaker cable terminations and wireways. Hinged trim shall be secured with cover screws on opening side by concealed machine screws. Hinged breaker cover shall be recessed into the hinged overall tub cover. Breaker cover shall have latch type closures. Submit details on shop drawings prior to manufacturing.

.13 New panels to match existing panel board type – PRL1a

2.2 BREAKERS

.1 All breakers to be:

.1 Bolt on type molded case, non-adjustable and non-interchangeable trip, single, two and three pole, 120/208V , 277/480V or 347/600V and with trip free position separate from "On" or "Off" positions.

.2 Two and three pole breakers to have common simultaneous trip and able to be located in any circuit position within the panelboard.

.3 Main breaker (where required) to be separately mounted at top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.

.4 Provide circuit breakers with indicated trip ratings as shown in the panelboard schedules or the Single Line Diagram.

.5 Provide spare circuit breakers as indicated on panel schedules or single line diagram as applicable.

.6 Provide breaker type Ground Fault Interrupter(s) (GFI) as indicated.

.7 Provide Lock-on devices as indicated and for Fire Alarm circuits, Security Equipment circuits, Exit sign circuits and Emergency Battery Equipment circuits.

2.3 PANELBOARD IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 – Common Work Results - Electrical.

.2 Nameplate for each panelboard size 5 (2 line) engraved as indicated and include panel designation and voltage/phase.

.3 Complete updated circuit directory with typewritten card(s) located in slide-in plastic pocket(s) fixed to the back of the related door. Directory card to indicate the panel designation, mains size, voltage/phase and the location and load controlled of each circuit. Include a “letter sized” paper copy of each directory in the project maintenance manual.

.4 Provide a plasticized typewritten information card fixed to the back of the each panel door. Information card to indicate the panel designation and location, feeder type and size and locations of any controlling contactors and feeder pullboxes. Include a “letter sized” paper copy of each information card in the project maintenance manual.

Part 3 Execution

3.1 INSTALLATION

.1 Locate panelboards as indicated and mount securely, plumb true and square, to adjoining surfaces.

.2 Panelboards located in service rooms, mechanical rooms, and electrical rooms to be mounted on unistrut supports.

.3 Mount panelboards to height given in Section 26 05 00 or as indicated.

.4 Connect loads to circuits as indicated.

.5 Connect neutral conductors to common neutral bus with respective neutral identified.

.6 Provide spare breakers as indicated on panelboard schedules and on single line diagram.

END OF SECTION

MOULDED CASE CIRCUIT BREAKERS

Part 1 General

1.1 SECTION INCLUDES

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International).

.1 CSA-C22.2 No. 5-02, Moulded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (Tri-national standard with UL 489, tenth edition, and the second edition of NMX-J-266-ANCE).

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Include time-current characteristic curves for breakers with ampacity of 100A and over.

Part 2 Products

2.1 BREAKERS GENERAL

.1 Moulded-case circuit breakers, to CSA C22.2 No. 5

.2 Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40 degrees C ambient.

.3 Common-trip breakers: with single handle for multi-pole applications.

.4 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.

.1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

.5 Circuit breakers with interchangeable trips as indicated.

.6 Circuit breakers to have minimum 10kA symmetrical rms interrupting capacity rating.

2.2 THERMAL MAGNETIC BREAKERS

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

.2 Existing Panels are all by EATON/Cutler Hammer.

2.3 OPTIONAL FEATURES

.1 Provide:

.1 On-off locking device.

.2 Fire alarm breaker to be painted red.

Part 3 Execution

3.1 INSTALLATION

.1 Install circuit breakers in new, existing or retrofit distribution assemblies as noted in drawings.

END OF SECTION

APPENDIX A

Public Services and Procurement Canada | Services publics et Approvisionnement Canada

HAZARDOUS BUILDING MATERIALS ASSESSMENT

Building #334 (E0704) – Detachment
400 Campbell Street, Tofino, BC

March 5, 2021

PSPC Project # R. 105597.001
DST Project Number: 2003896
Task Authorization Contract: E0276-171394/002/VAN

Report prepared for:
Public Services and Procurement Canada, Environmental Services
Services Publics et Approvisionnement Canada, Services environnementaux
Suite 401 – 1230 Government Street
Victoria, BC
V8W 3X4

Report prepared by:
DST Consulting Engineers Inc., a Division of Englobe
Unit B – 4125 McConnell Drive
Burnaby, B.C.
V5A 3J7

EXECUTIVE SUMMARY

DST Consulting Engineers Inc., a Division of Englobe (DST), was retained by Public Services and Procurement Canada (PSPC) on behalf of the Royal Canadian Mounted Police (RCMP), to conduct a hazardous building materials assessment of the building located at 400 Campbell Street, Tofino, British Columbia (herein referred to as the Subject Building).

The purpose of the assessment was to investigate the presence of potential hazardous building materials and hazardous substances within the Subject Building.

All work was performed in accordance with the requirements of the Canada Labour Code, Part II Canada Occupational Health and Safety Regulations (COHSR) and the British Columbia Occupational Health and Safety Regulation (BC Reg. 296/97), as amended to the date of this report.

The hazardous building materials assessment was completed specifically to identify asbestos-containing materials (ACMs), lead including lead-containing paints (LCPs), elemental mercury, polychlorinated biphenyls (PCBs), Ozone-Depleting Substances (ODSs) or Chlorinated Fluorocarbon's (CFCs), biohazardous materials (mould-impacted materials, rodent droppings, etc.) and sources of silica and any other hazardous materials in or around the Subject Buildings.

Due to the 2017 construction date of the building, no asbestos-containing building materials are suspected to be present. Furthermore, based on sample analysis, no lead-containing building materials were identified throughout the Subject Building.

Based on DST's visual assessment, sources of elemental mercury, ozone depleting substances and crystalline silica/ rock dust were identified within the Subject Building. A summary of our findings and recommendations is presented below. It should be noted that this summary is subject to the same restrictions and limitations as presented in Section 6.0 (Recommendations) and Section 7.0 (Closure) of this report. The information provided is to be read in conjunction with the remainder of this report.

Executive Summary Table 1: Summary of Findings

Hazardous Building Material	Description
Asbestos-Containing Materials (ACMs)	Based on the construction date of the Subject Building (circa 2017), no ACMs are suspected to be present in the Subject Building.
Lead-Containing Paint (LCP) and Other Sources of Lead	No lead-containing paints (LCPs) were identified within the Subject Building. Suspect lead containing materials were identified within the Subject Building, below: • Lead-acid batteries located in emergency lighting systems within the Subject Building.
PCBs	Based on the construction date of the Subject Building (circa 2017), no sources of PCBs are suspected to be present in the Subject Building.
Elemental Mercury	Approximately 100 fluorescent light tubes suspected to contain elemental mercury were observed throughout the Subject Building.
ODSs and or CFCs	Two (2) HVAC units suspected to contain ODSs were identified within the Subject Building. Refrigerator units suspected to contain ODSs were identified in the Kitchen within the Subject Building.
Biological Hazards	No biological hazards were identified within the Subject Building.
Silica	Sources of silica in the form of concrete foundation, drywall and masonry block with associated mortar were observed throughout the Subject Building.

Findings and recommendations are provided in Section 5.0 and Section 6.0 of this report, respectively.

Abbreviations

ACGIH – American Conference of Governmental Industrial Hygienists

ACM – Asbestos-containing material

AIHA – American Industrial Hygiene Association

BC – British Columbia

CFCs – Chlorinated Fluorocarbons

COHSR – Canada Occupational Health and Safety Regulations

RCMP – Royal Canadian Mounted Police

EMSL – EMSL Canada Inc.

EPA – Environmental Protection Agency

HUD – Housing and Urban Development

HVAC – Heating, ventilation, and air conditioning

LCP – Lead-containing paint

mg/Kg – Milligram per Kilogram

NVLAP – National Voluntary Laboratory Accreditation Program

ODS – Ozone-depleting substance

OEL – Occupational Exposure Limit

PPM – Parts Per Million

PCB – Polychlorinated Biphenyl

PLM – Polarized light microscopy

PSPC – Public Services and Procurement Canada

SWP – Safe Work Practice

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1.0 INTRODUCTION

DST Consulting Engineers Inc., a Division of Englobe (DST), was retained by Public Services and Procurement Canada (PSPC) on behalf of the Royal Canadian Mounted Police (RCMP), to conduct a hazardous building materials assessment of building located at 400 Campbell Street, Tofino, British Columbia (herein referred to as the Subject Buildings).

The purpose of the assessment was to investigate the presence of potential hazardous building materials and substances within the Subject Building.

All work was performed in accordance with the requirements of the Canada Labour Code, Part II Canada Occupational Health and Safety Regulations (COHSR) and the current version of British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97), as amended during continued operations and maintenance.

The hazardous building materials assessment was completed specifically to identify asbestos-containing materials (ACMs), lead including lead-containing paints (LCPs), elemental mercury, polychlorinated biphenyls (PCBs), ozone-depleting substances (ODSs) and/or chlorinated fluorocarbon's (CFCs), biohazardous materials (mould-impacted materials, rodent droppings, etc.) and sources of silica and any other hazardous materials in or around the Subject Buildings.

The site work was conducted by Ketan Minhas of DST, on February 8, 2021.

2.0 BACKGROUND

DST understands that the Subject Building was constructed during a time when hazardous building materials were commonly or potentially used in construction. As such, and in accordance with the COHSR and Part 20, Section 20.112, *Hazardous Materials* of BC Reg. 296/97, as amended pertaining to the identification of hazardous building materials prior to demolition, PSPC commissioned this assessment.

2.1 Previous Report(s)

No previous reports were provided at the time of the assessment.

3.0 SCOPE OF WORK AND METHODOLOGY

This report has been prepared in preparation for the ongoing operation and maintenance of the Subject Building and was semi-destructive in nature. The structure and finishes of the Subject Buildings were examined to determine the presence of suspect ACMs, suspect lead (including LCPs), PCBs, mercury, sources of ODSs, biohazardous materials (mould, rodent droppings, etc.), and silica.

Representative samples of suspect ACMs and suspect LCPs were collected and were sent to a qualified laboratory for asbestos and lead content analysis.

Site work was conducted in general compliance with the requirements of the COHSR, BC Occupational Health and Safety Regulation 296/97, and DST's Safe Work Practices (SWPs).

3.1 Asbestos-Specific Analysis and Sampling Methodologies

The presence of asbestos in federal workplaces and pertaining to federally regulated workers is governed by the COHSR. According to the COHSR, ACM means any article that is manufactured and contains 1% or more asbestos (by weight) at the time of manufacture, or any material that contains 1% or more asbestos when tested in accordance with accepted methods.

The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. According to the current version of BC Reg. 296/97, ACM means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.

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 have a more stringent definition of ACM, and generally include the requirements noted in the COHSR, this assessment was conducted to meet the requirements of BC Reg. 296/97.

Based on the construction date of the Subject Building (circa 2017) ACMs are not expected within the Subject Building and no samples were taken at the time of the February 8, 2021 assessment.

3.2 Lead-Containing Paints (LCPs) and Other Sources of Lead

Bulk samples of suspected LCPs collected by DST during the site investigation were analyzed for their lead content by an accredited independent laboratory using the EPA 6010D-M Inductively Coupled Plasma-Atomic Emission Spectrometry method for acid extractable lead in a solid/paint.

Other suspect sources of lead were identified visually based on the surveyor's knowledge of the historic composition of building products.

3.3 Other Substances – Poly Chlorinated Biphenyls (PCBs), Elemental Mercury and Ozone-Depleting Substances (ODSs)/Chlorinated Fluorocarbons (CFCs)

Suspect sources of ODSs/CFCs, PCBs, and elemental mercury were identified visually based on appearance, age, and knowledge of historic applications. Suspect sources of PCBs were identified in electrical equipment only.

Equipment that may contain ODSs and/or CFCs (e.g. air conditioning and refrigeration equipment) or PCBs (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician.

3.4 Biohazardous Materials

Suspect sources of biohazardous materials, such as mould and/or pest related concerns were visually assessed based on the surveyor's knowledge.

3.5 Silica

Suspect sources of silica were visually assessed based on the surveyor's knowledge of the historic composition of building products.

4.0 LIMITATIONS OF ASSESSMENT

In preparation of this report, DST used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. DST relied on information gathered during the site investigations and laboratory analytical reports.

This report reflects the observations made within accessed portions of the Subject Building and the results of analyses performed on specific materials sampled during the assessment. Analytical results reflect the sampled materials at the specific sample locations.

Sampling was conducted pertaining to suspected ACMs and suspected LCPs only. The assessment for the presence of other hazardous building materials was visual in nature and was conducted pertaining to readily visible surfaces within accessible spaces.

4.1 Asbestos

Based on the construction date of the Subject Building (circa 2017) ACMs are not expected within the Subject Building and no samples were taken at the time of the February 8, 2021 assessment.

4.2 Lead

If encountered during demolition activities, any suspected LCPs not identified within this report should be presumed to contain lead and handled as such until otherwise proven, through analytical testing.

With respect to paint, samples of suspected interior and exterior LCPs were collected from the Subject Buildings only from surfaces of major paint applications where visually different paint colours and/or types were identified. Although the surfaces where samples were collected may be covered with more than one coat of paint, the paint samples are described by the surface (visible) colour only.

Attempts were made to represent all layers of paint in the samples collected. As analytical results are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour will be presumed to be the same, regardless of differing sub surface paints, if any. For the purposes of this assessment, an occupation exposure risk assessment was only completed on LCPs with a presumed or verified lead content equal to or greater than 600 ppm.

4.3 Polychlorinated Biphenyls

Visual assessment for the presence of PCB-containing equipment within the Subject Buildings was conducted in accessible areas. All areas of the Subject Buildings were accessible; as such, limitations to the identification of PCB-containing equipment do not apply.

4.4 Mercury

Visual assessment for the presence of mercury-containing equipment within the Subject Buildings was conducted in accessible areas. All areas of the Subject Buildings were accessible; as such, limitations to the identification of mercury-containing equipment do not apply.

4.5 Ozone Depleting Substances (ODSs)

Visual assessment for the presence of potential sources of ODSs within the Subject Building was conducted in accessible areas. All areas of the Subject Building were accessible; as such, limitations to the identification of ODSs do not apply.

4.6 Biohazardous Materials

Visual assessment for the presence of suspected biohazardous materials such as rodent dropping and/or suitable conditions for mould growth (e.g., moist and/or water-stained building materials) were conducted in accessed portions of the Subject Building. The assessment was not intrusive in nature and included visual assessment of exposed surfaces and closer inspection of known problem areas.

The conclusions made in this report provide description(s) of the potential source(s) of moisture within the Subject Buildings that may have led to suitable conditions for mould growth, only in those cases where potential source(s) of moisture were identified. These conclusions will not

necessarily identify all sources of moisture leading to suitable conditions for mould growth within the Subject Building or within the impacted area(s).

This assessment does not constitute a building envelope/building systems assessment for any of the subject buildings, which would include an intrusive investigation to assess the internal condition, potential moisture sources, and expected remaining service life of the various components and systems comprising the envelope of a building.

4.7 Silica

Visual assessment for the presence of silica-containing materials within the Subject Building was conducted in accessible areas. Additional silica-containing materials may be present in inaccessible areas including, but not limited to, underground installations.

5.0 RESULTS

The Subject Building is a two-storey cinderblock and wood framed building with a concrete foundation. The interior is clad in drywall and exposed painted cinderblock throughout, with carpets and vinyl sheet flooring. Site photographs are provided at the end of this report as Appendix A.

The results of the assessment for each of the considered hazardous materials within the Subject Building are provided in the following sub-sections. A plan drawing of the Subject Building, which include locations of the samples collected during this assessment and locations of identified hazardous building materials (where practical), is attached to this report as Appendix B.

A copy of the certificate of analysis provided by Bureau Veritas Laboratories for the suspected Lead samples submitted as part of this assessment is attached at the end of this report as Appendix C.

5.1 Asbestos-Containing Materials (ACMs)

Based on the construction date of the Subject Building (circa 2017) ACMs are not expected within the Subject Building and no samples were taken at the time of the February 8, 2021 assessment.

5.2 Lead-Containing Paints (LCPs)

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) suspect lead-containing materials were observed in the Subject Building. DST collected samples and the results of which are presented in Table 5.2.1. below.

Based on our interpretations of the results of suspected LCM samples, no paints containing >600 ppm lead were identified within the Subject Building.

5.2.1 Suspected LCP Sample Collection and Analysis Summary

Sample #	Area or Room	Building Material and Colour	Sampling Location	Result Lead Parts Per Million (PPM)
2003896-E0181-L1	[redacted]	Wood Wall – Off White Paint	North Wall, Center	< 12
2003896-E0181-L2		Wood Wall – Beige Paint	Floor, SW	< 6.0
2003896-E0181-L3		Drywall – Light Yellow Paint	North Wall, Center	< 10
2003896-E0181-L4		Drywall – Light Blue Paint	West Wall, North Corner	< 10
2003896-E0181-L5		Cinderblock – Grey Paint	West Wall, NW	< 20
2003896-E0181-L6		Cinderblock– Green Paint	North Wall, Cinderblock Wall	< 20
NOTE: Bold, highlighted text indicates confirmed LCP				

For the purposes of this assessment, an occupation exposure risk assessment was only completed on LCPs with a presumed or verified lead content equal to or greater than 600 ppm.

5.2.2 Other Potential Sources of Lead

Lead-acid batteries used in emergency lighting were observed to be present within the Subject Building and lead is expected to be present in these materials. Bulk sampling of these materials was not possible without interfering with their intended usage and they should be presumed to be lead-containing.

5.3 Polychlorinated Biphenyls (PCBs)

Based on the construction date of the Subject Building (circa 2017), no equipment containing PCBs is suspected.

5.4 Mercury

Approximately 100 fluorescent light tubes suspected to contain elemental mercury were observed throughout the Subject Building. The equipment suspected to contain elemental mercury were judged to be in good condition at the time of the assessment and can be managed in place.

5.5 Ozone-Depleting Substances (ODSs) and/ or Chlorofluorocarbons (CFCs)

Two (2) HVAC units on the roof of the Subject Building and Refrigerator units in the Kitchen within the Subject Building suspected to contain ODSs were identified. The suspected ODSs-containing equipment was observed to be in good condition at the time of the assessment.

5.6 Bio-Hazardous Materials

At the time of the assessment no sources of bio-hazardous materials were observed within the Subject Building.

5.7 Silica

Sources of crystalline silica and rock dust were identified in the concrete floor, drywall and masonry block with associated mortar throughout the Subject Building. The sources of silica and were judged to be in **GOOD** condition at the time of the assessment, and can be managed in place.

6.0 RECOMMENDATIONS

In general, identified hazardous building materials were observed to be in good condition and do not appear to require specific action to maintain compliance with applicable regulations for continued operations and maintenance.

General recommendations pertaining to management of identified hazardous building materials in in their current condition and state are provided below.

6.1 Elemental Mercury

Identified mercury-containing items (fluorescent lamp tubes) can be managed in place with acceptable standards of care. Mercury vapour within light tubes poses no risk to workers or occupants provided the mercury containers remain intact and undisturbed.

Complete removal of mercury-containing equipment is required prior to renovation or demolition activities that may disturb the equipment. When mercury-containing items (e.g., fluorescent light bulbs/tubes, thermostats) are removed, ensure all mercury waste is handled, stored and disposed of in accordance with the requirements the following:

- Transportation and disposal requirements of BC Reg. 63/88.
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation

Precautions should be taken if workers may potentially be exposed to mercury or mercury vapours to ensure that workers exposure levels do not exceed the occupational exposure limit of 0.025 mg/m3 as per the COHSR and BC Reg. 296/97. This can be achieved by providing respiratory and skin protection applicable to the hazard and task to be completed.

6.2 Ozone Depleting Substances (ODSs) and/or Chlorofluorocarbons (CFCs)

ODS/CFC-containing equipment can be managed in place in accordance with acceptable standards of care and must be serviced by licensed refrigeration technicians (as defined in the Federal Halocarbon Regulations).

If ODS/CFC-containing equipment is to be removed for renovation or demolition activities, ODSs/CFCs must be recovered, handled, recycled, stored, and/or disposed of in accordance with the requirements of the following:

- British Columbia Waste Management Act—Ozone Depleting Substances and Other Halocarbons, Regulation (BC Reg. 387/99 as amended by BC Reg. 109/2002).
- Transportation requirements of the Federal Transportation of Dangerous Goods Regulation.
- Federal Halocarbons Regulations.

6.3 Silica

In their current condition, (i.e., good condition), the identified silica-containing materials can be managed in place.

If silica-containing materials are to be removed or destructively altered (drilled, chipped, abraded, etc.), ensure dust control measures are employed such that airborne silica dust concentrations

do not exceed the exposure limit as stipulated by the COHSR and BC Reg. 296/97, as amended (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 is intended for PSPC and their Client only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling and paint chip sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith, and are based on several successful experiences.

Note also that standards, guidelines, and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

We hope the information presented in this document meets your current requirements. If you have any questions, or require additional information please contact us at your convenience.

Yours truly,

DST Consulting Engineers Inc.

Report Prepared By:

Noah Viner
Environmental Technician

Report Reviewed By:

Ketan Minhas
Senior Project Manager

Report Reviewed By:

Kevin Smith
Operations Manager and Team Lead

APPENDIX A

Site Photographs

Photo 1

Date: February 8, 2021

Description: View of good condition suspected mercury-containing fluorescent light tubes observed in the Mechanical Room of the Subject Building.

Photo 2

Date: February 8, 2021

Description: View of a suspected ODS-containing refrigerator in Good Condition located in the Break Room.

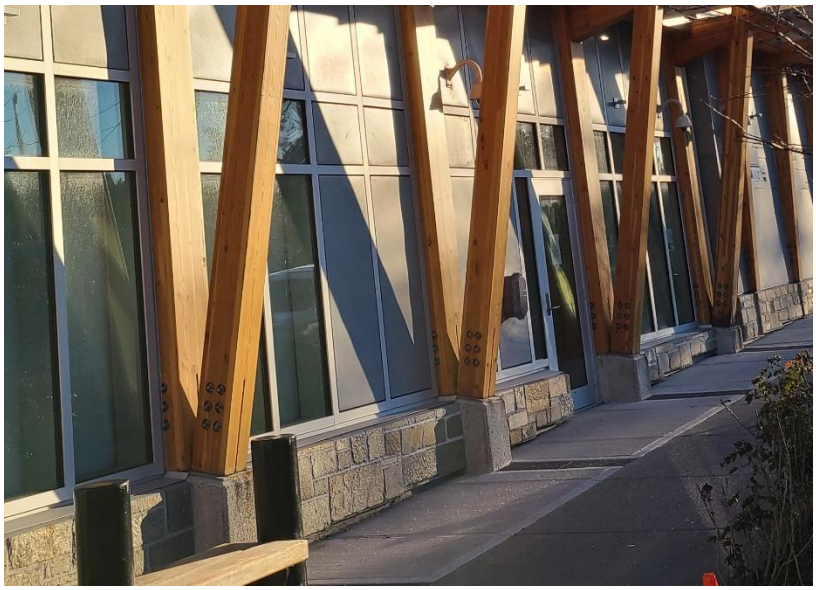

Photo 3

Date: February 8, 2021

Description: View of good condition sources of crystalline silica and rock dust in the form or masonry block, associated mortar, and concrete building foundations on the exterior of the Subject Building.

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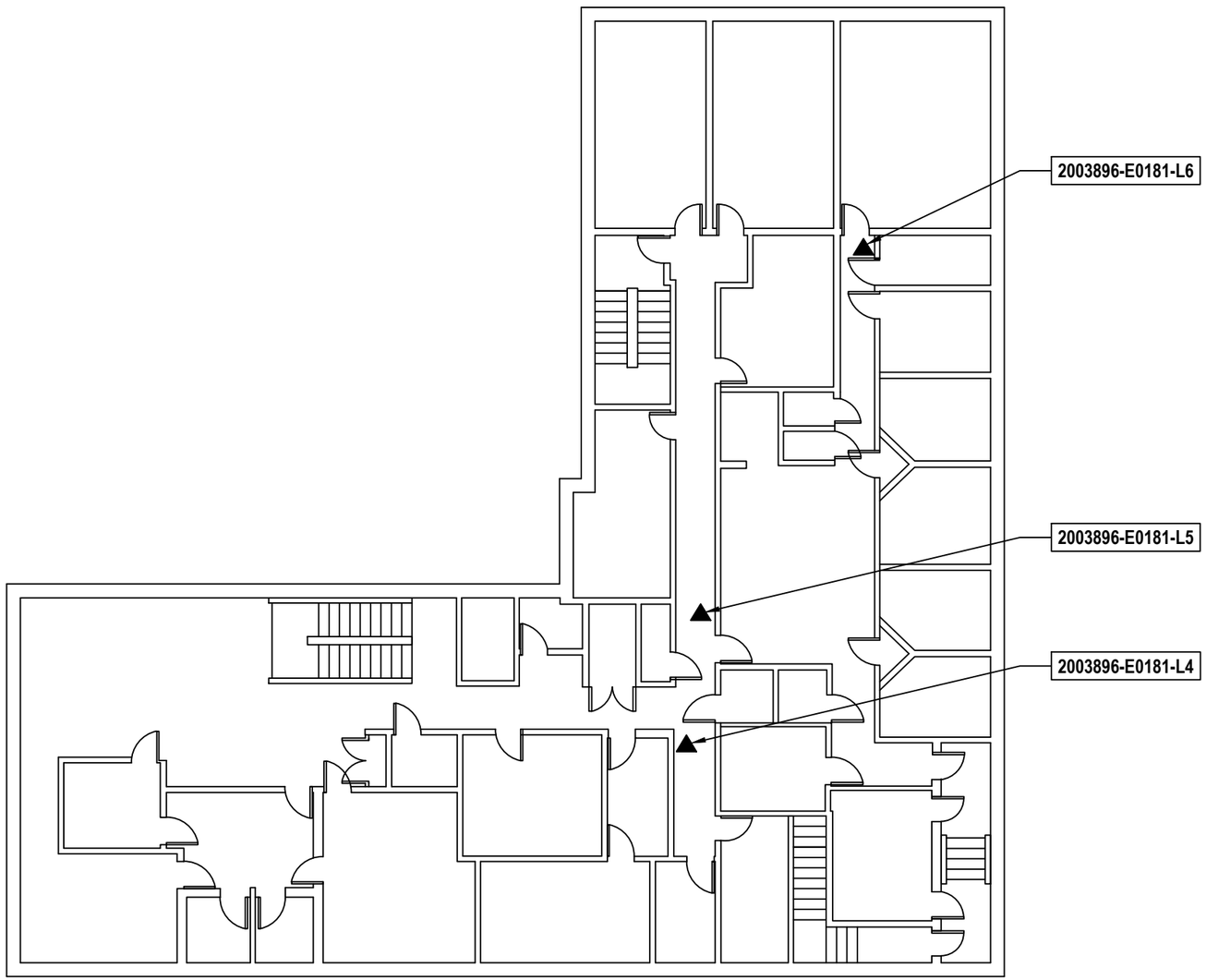
APPENDIX B

Site Drawings



NOTE: This map may not indicate all hazardous materials associated with the subject building

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Note

1. This drawing shall be read in conjunction with the associated technical report.
2. Do not scale drawing.
3. Lead Containing Material (LCM)

Legend

▲ APPROX. LCM SAMPLE LOCATION

Client
PUBLIC SERVICES & PROCUREMENT CANADA

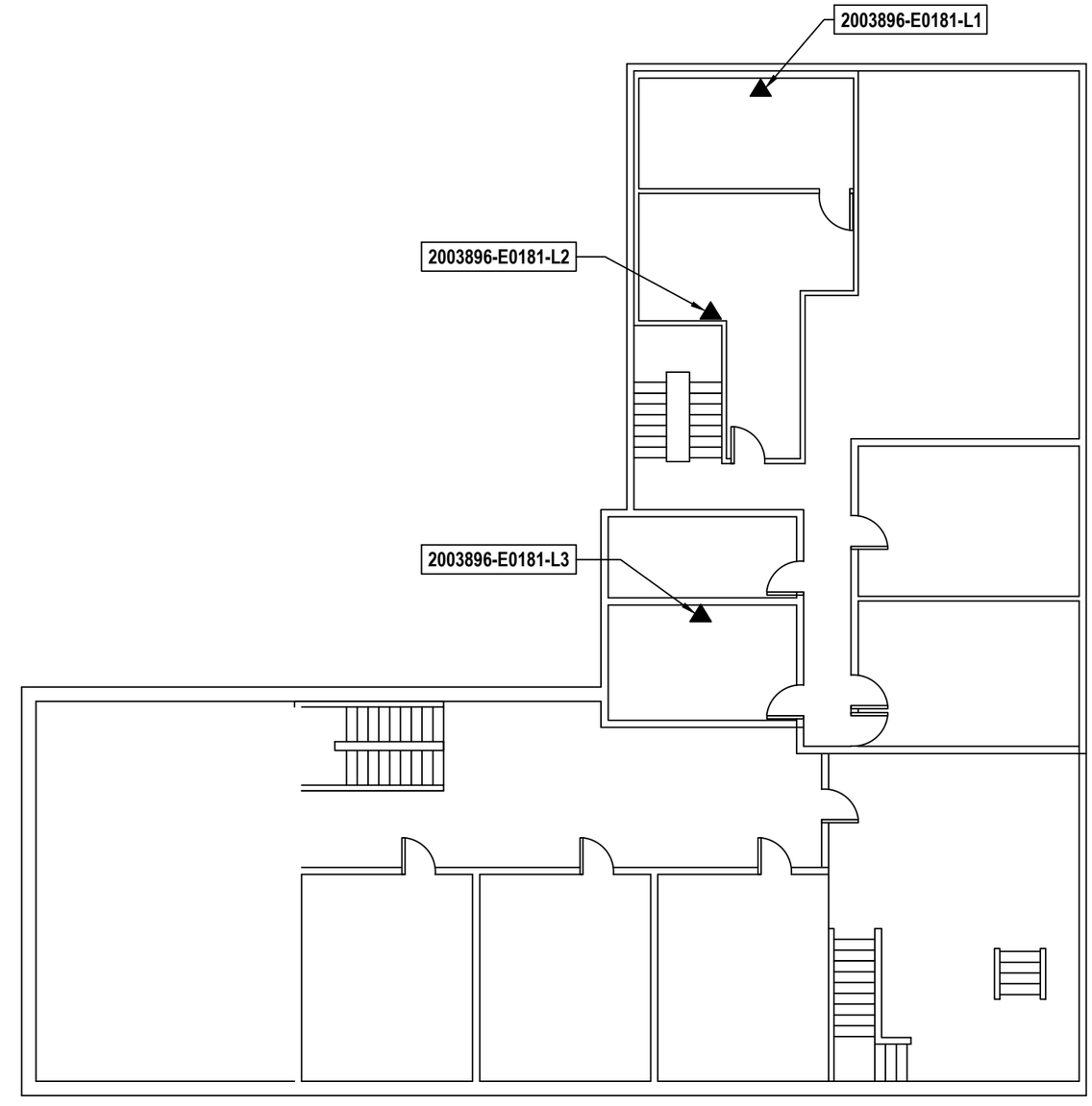
Site
400 CAMPBELL ST. TOFINO, B.C.

Report Title
HAZARDOUS MATERIALS SURVEY

Drawing Title
RCMP BUILDING
MAIN FLOOR MAP

Designed By	Scale
-	NTS
Drawn By	Date
NJP	19/02/2021
Approved By	Project No.
KM	2003896
Figure No.	
1	

Drawing: RCMP TRAINING FACILITY.dwg Folder: C:\Users\npollard\Desktop\PSPC\2003896 - Port Alberni Thursday, February 18, 2021 @ 12:08 by Nicholas Pollard



NOTE: This map may not indicate all hazardous materials associated with the subject building

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Note

1. This drawing shall be read in conjunction with the associated technical report.
2. Do not scale drawing.
3. Lead Containing Material (LCM)

Legend

▲ APPROX. LCM SAMPLE LOCATION

Client
PUBLIC SERVICES & PROCUREMENT CANADA

Site
400 CAMPBELL ST. TOFINO, B.C.

Report Title
HAZARDOUS MATERIALS SURVEY

Drawing Title
RCMP BUILDING
SECOND FLOOR MAP

Designed By	Scale
-	NTS
Drawn By	**Date**
NJP	19/02/2021
Approved By	**Project No.**
KM	2003896

Figure No. **2**

Drawing: RCMP TRAINING FACILITY.dwg Folder: C:\Users\npollard\Desktop\PSPC\2003896 - Port Alberni Monday, March 01, 2021 @ 09:29 by Nicholas Pollard

APPENDIX B

PRELIMINARY HAZARD ASSESSMENT FORM

Project Number:	R.112600.001
Location:	Tofino RCMP Generator Upgrades
Date:	2020-06-16
Name of Departmental Representative:	Masood Dezfooli, PSPC

Site Specific Orientation Provided at Project Location **Yes** ☒ **No** ☐

Notice of Project Required **Yes** ☒ **No** ☐

NOTE:
PWGSC requires "**A Notice of Project"** for all construction work related activities.

NOTE:
OHS law is made up of many municipal, provincial, and federal acts, regulations, bylaws and codes. There are also many other pieces of legislation in British Columbia that impose OHS obligations.

Important Notice: This hazard assessment has been prepared by PWGSC for its own project planning process, and to inform the Contractor of actual and potential hazards that may be encountered in performance of the work. PWGSC does not warrant the completeness or adequacy of this hazard assessment for the project and the paramount responsibility for project hazard assessment rests with the Contractor.

TYPES OF HAZARDS TO CONSIDER	Potential Risk for:				COMMENTS
Examples: Chemical, Biological, Natural, Physical, Psychosocial, and Ergonomic Listed below are common construction related hazards. Your project may include pre-existing hazards that are not listed. Contact the Regional Construction Safety Coordinator for assistance should this issue arise.	**PWGSC, Other Government Departments, and Inmates**		**General Public or other provincial contractors**		Note: When thinking about this pre-construction hazard assessment, remember a **hazard** is anything that may cause harm, such as chemicals, electricity, working from heights, etc; the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.
	Yes	**No**	**Yes**	**No**	

Typical Construction Hazards					Comments
Concealed/Buried Services (electrical, gas, water, sewer, etc)	Yes		Yes		
Slip Hazards or Unsound Footing	Yes		Yes		
Working at Heights **(2.4m)**	Yes		Yes		In a federal work environment the fall protection requirement is **2.4m NOT 3m** as per WBC OHSR
Working Over or Around Water		No		No	
Heavy overhead lifting operations, mobile cranes etc.		No		No	
Marine and/or Vehicular Traffic (site vehicles, public vehicles, etc.	Yes		Yes		
Fire and Explosion Hazards	Yes		Yes		

PRELIMINARY HAZARD ASSESSMENT FORM

High Noise Levels	Yes		Yes		
Excavations	Yes		Yes		TBD by contractor
Blasting		No		No	
Construction Equipment	Yes		Yes		
Pedestrian Traffic (site personnel, tenants, visitors, public)	Yes		Yes		
Multiple Employer Worksite	Yes		Yes		Federal and provincial employees may be on site.

Electrical Hazards					**Comments**
Contact With Overhead Wires					TBD by contractor
Live Electrical Systems or Equipment	Yes		Yes		
Other: Arc Flash	Yes		Yes		

Physical Hazards					**Comments**
Equipment Slippage Due To Slopes/Ground Conditions	Yes		Yes		
Earthquake	Yes		Yes		
Tsunami	Yes		Yes		
Avalanche		No		No	
Forest Fires	Yes		Yes		
Fire and Explosion Hazards	Yes		Yes		
Working in Isolation		No		No	
Working Alone		No		No	
Violence in the Workplace	Yes		Yes		
High Noise Levels	Yes		Yes		
Inclement weather	Yes		Yes		High winds, and rain
High Pressure Systems		No		No	
Other:					

Hazardous Work Environments					**Comments**
Confined Spaces / Enclosed Spaces					Follow Worksafe B.C. Confined Space Regulations
Suspended / Mobile Work Platforms		No		No	
Other:					
Biological Hazards					**Comments**
Mould Proliferations		No		No	
Accumulation of Bird or Bat Guano		No		No	
Bacteria / Legionella in Cooling Towers / Process Water		No		No	
Rodent / Insect Infestation		No		No	
Poisonous Plants		No		No	

PRELIMINARY HAZARD ASSESSMENT FORM

Sharp or Potentially Infectious Objects in Wastes	Yes		Yes		
Wildlife	Yes		Yes		Bears, Wolves, and Cougars
Other					
COVID 19	Yes		Yes		Reference: CSA National COVID 19 Standardized Protocol, Province of B.C. Construction - Business PHO, Worksafe, B.C.

Chemical Hazards					**Comments**
Asbestos Materials on Site **(See comments)**		N/A		N/A	
Designated Substance Present		N/A		N/A	If "yes" a pre-project designated substance survey report is required.
Chemicals Used in work **(see comments)**	Yes		Yes		WHMIS 2015 SDS for all products being used
Lead in paint **(See comments)**		N/a		N/A	
Mercury in Thermostats or Switches **(See comments)**		N/A		N/A	
Application of Chemicals or Pesticides		N/A		N/A	
PCB Liquids in Electrical Equipment **(See comments)**		N/A		N/A	
Radioactive Materials in Equipment		N/A		N/A	
Other: Silica (See comments)	Yes		Yes		Reference Worksafe B.C. silica and rock dust regulations

Contaminated Sites Hazards					**Comments**
Hazardous Waste		No		No	
Hydrocarbons		No		No	
Metals		No		No	
Other:					
Security Hazards					**Comments**
Risk of Assault	Yes		Yes		
Other:					

Other Hazards					**Comments**

Other Compliance and Permit Requirements[1]	**YES**	**NO**	**Notes / Comments[2]**
Is a Building Permit required?		**n/a**	
Is a Electrical permit required?	Yes		
Is a Plumbing Permit required?		**n/a**	
Is a Sewage Permit required?		**n/a**	
Is a Dumping Permit required?	**TBD**		Contractor shall follow federal/provincial regulations

PRELIMINARY HAZARD ASSESSMENT FORM

Is a Hot Work Permit required?	Yes		Mandatory for any hot work process
Is a Permit to Work required?		No	
Is a Confined Space Entry Permit required?	Yes		Mandatory for all Confined Spaces
Is a Confined Space Entry Log required?	Yes		Mandatory for all Confined Spaces
Discharge Approval for treated water required?	n/a	n/a	

Notes:

(1) Does not relieve Contractor from complying with all applicable federal, provincial, and municipal laws and regulations.

(2) TBD means To Be Determined by Contractor.

(3) Contractor and employees (including sub-trades) must attend a CSC/PSPC Security and Safety Orientation prior to gaining any access to institutional property prior to work commencing.

Prime Contractor Acknowledgement: We confirm receipt and review of this Preliminary Project Hazard Assessment and acknowledge our responsibility for conducting our own assessment of project hazards, and taking all necessary protective measures (which may exceed those cited herein) for performance of the work.			
Contractor Name			
Signatory for Contractor		**Date Signed**	
RETURN EXECUTED DOCUMENT TO PWGSC DEPARTMENTAL REPRESENTATIVE.			