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END OF SECTION

1 General

1.1 DESCRIPTION OF STANDING OFFER WORK

- .1 Work under this Standing Offer includes, but shall not be limited to, the provision of labour, materials, tools, and equipment necessary to complete minor renovation and/or minor repairs and maintenance including:
 - .1 Structural work.
 - .2 Cabinetry.
 - .3 Insulating.
 - .4 Siding and roofing.
 - .5 Doors and windows.
 - .6 Interior finish work.
 - .7 Flooring.
 - .8 Crack filling.
 - .9 Painting.
 - .10 Wall coverings.
 - .11 Mechanical work including plumbing and heating.
 - .12 Electrical work.
 - .13 Concrete and asphalt repair.
 - .14 Landscaping.
- .2 Facilities included:
 - .1 Standing Offer is to support the operations of the RCMP facilities program including: Detachments, Married Quarters, and Community Radio shelters in Labrador excluding locations within the Nunatsiavut settlement area (which includes Hopedale, Makkovik, Nain and Rigolet).
- .3 Section deleted.
 - .1
- .4 Locations:
 - .1 Forteau, Mary's Harbour, Cartwright, Happy Valley-Goose Bay, Northwest River, Sheshatshiu, Postville, Natuashish.
- .5 All Work shall be coordinated with RCMP Property Management office or the local RCMP Detachment office where the properties are located.
- .6 For each call-up on the Standing Offer, a scope of work will be provided on an as required basis, when and where needed.

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Taxes, Permits and Regulations:
 - .1 Comply with by-laws, ordinances, regulations, and standards governing all or part of Work. Where variance exist between requirements of agencies governing all or part of Work, the most restrictive will govern; but, in no instance will the standards established by the drawings and specifications which exceed such requirements be reduced.
 - .2 The Contractor is responsible for applicable federal, provincial and municipal taxes.
 - .3 Obtain permits and approvals as specified in Section 01 41 00 - Regulatory Requirements.
- .2 Invoicing:
 - .1 Notify the Departmental Representative upon completion of Work at each facility or residence before submitting an invoice.
 - .2 Each invoice shall show:
 - .1 Contact number.
 - .2 Work location.
 - .3 Description of Work.
 - .4 Project Number.
 - .5 Quantity broken down as per Unit Price Table.
 - .3 In event of a dispute, make records available to the Departmental Representative to substantiate the invoiced amount.

1.3 COORDINATION OF WORK

- .1 Be responsible for coordinating Work of various trades, where Work of each trade interfaces with each other.
- .2 Convene meeting between trades whose work interfaces, and ensure they are fully aware of areas and extent of where interfacing is required. Provide each trade with drawings and specifications of interfacing trade as required, to assist them in planning and carrying out their respective work.
- .3 Shop drawing review and material ordering shall only commence after this coordination has taken place between trades and all conditions affecting Work of interfacing trades has been made known.
- .4 Ensure coordination and cooperation between trades to facilitate general progress of Work and avoid situations of spatial interference.
- .5 Ensure each trade provides other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed Work.

1.4 CONTRACT DOCUMENTS

- .1 Contract Drawings:
 - .1 Departmental Representative will issue drawings to assist in proper execution of Work.
These drawing will be issued for location and clarification only. Such drawings will have same meaning and intent as if they were included in Contract Documents.
 - .2 Drawing indicate the extent and general dimensions of Work. Take necessary measurement to ensure result of Work is in accordance with intent.
 - .3 Verify existing conditions in field prior to proceeding with Work.
- .2 Contract Specifications:
 - .1 These specifications and those issued under this Standing Offer Contract are intended to describe and provide for a finished project. They are intended to be complementary, and what is called for by either will be as binding as if called for by both.
 - .2 Contractor shall understand that Work herein described will be complete in every detail, notwithstanding than every item necessarily involved is not particularly mentioned, and that the Contractor will be held to provide all labour, material and equipment necessary for entire completion of Work.

1.5 WORK SCHEDULE

- .1 Be advised that locations of the work will be determined by the Departmental Representative on a priority basis within the boundaries of the Regions as defined in paragraph 1.1.4.
- .2 Contractor will be required to mobilize at the individual locations within 72 hours of notification from the Departmental Representative.

1.6 WORK SEQUENCE

- .1 Construct Work in stages to accommodate use of premises during construction.
- .2 Maintain fire access/control.
- .3 Protect workers and public safety.

1.7 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
- .3 Submit site-specific Health and Safety Plan in accordance with Section 01 35 29 - Health and Safety Requirements.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Call-ups and Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings and submissions.

- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Manufacturer's installation and application instructions.
- .12 Standards listed in Part 1 of the specification sections under Reference Standards.
- .13 Other documents as specified.

1.9 PERSONNEL

- .1 Provide only journeymen personnel, with a valid Newfoundland and Labrador Department of Labour license or certification, to work on trades related projects under this Contract.
- .2 Departmental Representative may, at any time during this Contract, request to inspect a worker's certification.

1.10 CONTRACTOR USE OF PREMISES

- .1 Use of premises is limited. Coordinate use of premises under the direction of Departmental Representative.
- .2 Some facilities where the RCMP residence is attached to the existing Detachment office may require Contractor to be accompanied by approved security guard or Commissionaires.
- .3 Obtain additional storage or work areas needed for operations under this Contract.
- .4 Refer to Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities, and Section 01 56 00 - Temporary Barriers and Enclosures, for temporary facilities, parking areas, and utilities.
- .5 Ensure that operations and conditions of exiting work at completion are still the same, equal to, or better than that which existed before new work started.
- .6 Do not interfere with day-to-day operations of facility or residence.
- .7 Do not unreasonably encumber site with materials or equipment.
- .8 Be responsible for arranging storage of materials on and off site.
- .9 Move stored product and equipment supplied under this Contract which interfere with day to day operations of facility or residence or other Contractors.
- .10 Exercise care so as not to obstruct or damage public or private property in the area of Work.
- .11 Upon completion of Work, restore area of Work to its original condition. Repair damage to grounds and property. Remove construction equipment, materials, residue, excess, etc. and leave site in condition acceptable to Departmental Representative.

1.11 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate Owner usage.

1.12 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants, public, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 "As-Built" information for each facility may be available for inspection at the RCMP Property Management office located in St. John's, Newfoundland and Labrador. This material may not be current and will be made available for information purposes only.
- .3 Parties intending to tender for this Work are advised to visit sample facilities within the Province and make their own assessment of the facilities and difficulties attending execution of the Work, actual site conditions, and all other contingencies. RCMP Property Management must coordinate such site visits.

1.13 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 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic, and occupants.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .4 Submit schedule and obtain acceptance from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Provide temporary services when directed by Departmental Representative to maintain critical building and user services.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.

1.14 GUARANTEE

- .1 Guarantee work free from defects for a period of one (1) year from Interim Certificate, unless specifically noted otherwise.
- .2 Make good defects, other than normal wear and tear, during life of the guarantee.
- .3 Make necessary changes, adjustments, and replacements.

2 Products

2.1 NOT USED

- .1 Not used.

3 Execution

3.1 SETTING OUT 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 Departmental Representative's inspection of work.

3.2 CONFINED SPACES

- .1 Carry out Work in confined spaces in accordance with Canada Labour Code, Part II.
- .2 Provide and maintain equipment as required by any person to enter and/or perform Work in a safe manner, in compliance with the Canada Occupational, Safety and Health Regulations.
 - .1 At Departmental Representative's request, Contractor agrees to provide to Departmental Representative or its Consultants, all necessary equipment to enter confined space and Contractor acknowledges that they are responsible for the safety and efficacy of this equipment.
- .3 Provide and maintain training, as required by the Canada Labour Code, Part II, Section 11.
 - .1 Contractor shall provide proof of training and qualifications (Contractor's, employees, subcontractors) when required by Departmental Representative.
- .4 Provide Departmental Representative with copy of an "Entry Permit" for each and every entry into a confined space to ensure compliance with Canada Labour Code, Part II, Section 11.

3.3 CUTTING, FITTING AND PATCHING

- .1 Execute cutting (including excavation), fitting and patching required to make work fit properly.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work. This includes patching of openings in existing work resulting from removal of existing services.
- .3 Obtain Departmental Representative's approval before cutting, boring, or sleeving load-bearing members.
- .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .5 Fit work airtight to pipes, sleeves ducts and conduits.

3.4 REPAIR OF WORK

- .1 Repair damage resulting from operations under this Contract.

END OF SECTION

1 General

1.1 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 regulations.

1.2 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.
- .4 Provide sanitary facilities as necessary. Departmental Representative may, at their discretion, assign existing sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.4 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 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions to a minimum. Schedule interruptions with Departmental Representative.

1.5 SPECIAL REQUIREMENTS

- .1 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.

1.6 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:
 - .1 Personnel employed on this project will be subject to security check.
 - .2 Obtain requisite clearance, as instructed, for each individual required to enter premises.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is not permitted in building nor on site.

2 Products

2.1 NOT USED

.1 Not Used.

3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
- .4 Provide physical space and make arrangements for meetings.
- .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 two days after meetings and transmit to meeting participants, Departmental Representative and affected parties not in attendance.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PROGRESS MEETINGS

- .1 During course of Work and at the call of Departmental Representative.
- .2 Contractor, major Subcontractors involved in Work, Departmental Representative are to be in attendance.
- .3 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within two days.
- .4 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for effect on construction schedule and on completion date.
 - .12 Other business.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow five (5) working days for review of each submission by Departmental Representative.
- .4 Adjustments made on submittal by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .5 Make changes in submittal as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

- .6 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.
- .7 Submissions 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 Cross-reference information to applicable portion of Contract Document.
- .8 After Departmental Representative's review, distribute copies.
- .9 Submit three (3) prints, or one (1) electronic copy when approved by Departmental Representative, of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request. Departmental Representative will retain two (2) copies.
 - .1 Maximum sheet size: 850 mm x 1050 mm.
- .10 Submit three (3) hard copies, or one (1) electronic copy when approved by Departmental Representative, of product data sheets or brochures for requirements requested in specification Sections and as Departmental Representative may reasonably request, where shop drawings will not be prepared due to standardized manufacture of product. Departmental Representative will retain two (2) copies.
 - .1 Sheet size: 215 mm x 280 mm, maximum of three (3) modules.
- .11 Submit three (3) hard copies, or one (1) electronic copy when approved by Departmental Representative, of Operation and Maintenance Data for requirements requested in specification Sections and as Departmental Representative may reasonably request.
- .12 Delete information not applicable to project.
- .13 Supplement standard information to provide details applicable to project.

- .14 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 SAMPLES

- .1 Submit for review samples, in duplicate, as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with Section 01 45 00 - Quality Control.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Society of Safety Engineers (CSSE).
 - .1 Canadian Dictionary of Safety Terms, latest edition.
- .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .3 Province of Newfoundland and Labrador
 - .1 Occupational Health and Safety Act - latest update.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work.
- .3 Submit copies of reports or directions issued by Federal, Provincial health and safety inspectors.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS/SDS - Material Safety Data Sheets/Safety Data Sheets.
- .6 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.
- .7 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- .8 Submit name of person designated for full-time health and safety supervision at Site.
- .9 Upon request, submit for Departmental Representative's review, reports and documentation on health and safety related issues such as site safety inspection, accident/incident reports, safety meeting, etc.

1.3 FILING OF NOTICE

- .1 File Notice of Project and other notices with Provincial authorities prior to beginning of Work.

1.4 PERMITS

- .1 Obtain permits as required prior to commencement of Work and post on site.
- .2 Where particular permit or certificate cannot be obtained notify and obtain Departmental Representative's approval to proceed prior to carrying out that portion of Work.

1.5 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.
- .2 Identify health risks and safety hazards during course of Work. Carryout as follows:
 - .1 Initial assessment prior to commencement of Work.

- .2 On-going assessments identifying new risks and hazards resulting from Work progress and Site conditions.
- .3 As a minimum, conduct hazard assessments when:
 - .1 New subtrade work, new subcontractor, or new workers arrive at site to commence their work.
 - .2 The scope of Work has been changed by Change Order in a contract amendment.
 - .3 Potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.
- .4 Hazard assessments to be project specific, based upon review of Work, Site and weather conditions.
- .5 Make assessments in writing. Keep on site and make available to Departmental Representative for inspection upon request.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Conduct regular safety meetings and briefing during progress of work in accordance with provincial occupation health and safety regulations.
 - .1 Keep workers informed of anticipate or potential hazards. Provide safe work practices and procedures to be followed.
 - .2 Record minutes of meetings.
 - .3 Changes in site and project conditions.
- .3 Provide site safety orientation to all workers and other authorized persons prior to granting the access to work site. Outline site conditions, safety hazards, and state all safety rule to be observed on site.

1.7 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.8 PROJECT/SITE CONDITIONS

- .1 The following are known or potential project related health and safety hazards at site:
 - .1 Areas under renovation shall be free and clear of construction hazards, material and equipment during the daytime areas of weekday for use by facility employees and building occupants.
 - .2 Asbestos was commonly used as an insulator of hot water pipes and air heating ducts. It is a component of some types of vermiculite insulation that may be located in ceilings and attics, commonly used in plaster and gypsum board joint filling compounds, flooring tiles, and adhesives and mastics.
 - .3 Crawl space/Attic hazards: insects, rodents, birds, bats, and their droppings may be disease vectors.
 - .4 Mould/fungus: Dampness, soil, and organic debris may be present in crawl spaces providing a potential environment for microbial growth.
- .2 Above list shall not be construed as being complete and inclusive of potential safety and health hazards encountered during Work. Include above items into the hazard assessments.

1.9 HEALTH AND SAFETY PLAN

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative will review Contractor's site-specific Health and Safety Plan. Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request resubmission with correction of deficiencies or concerns.
- .3 Departmental Representative's review of Contractor's final Health and Safety Plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .4 Health and Safety Plan shall contain three (3) parts with following information:
 - .1 Part 1: List of individual health risks and safety hazards identified by hazard assessments.
 - .2 Part 2: List of measures to control or mitigate each hazard and risk identified in Part 1 of Plan. State engineering controls personal protective equipment and safe work practices to be used.
 - .3 Part 3: Emergency and Communications:
 - .1 Emergency measures: standard operating procedures, evacuation measures and emergency response to be followed during an accident or incident, representative of all risks and hazards identified in Plan.
 - .2 Emergency Contact: names and telephone numbers of officials should an accident, incident or emergency situation occur, including:
 - .1 General Contractor and all subcontractors.
 - .2 Federal and Provincial Departments and resources from local emergency organization as applicable to type and nature of emergency which might occur and as stipulated by applicable laws and regulations.
 - .3 Officials from RCMP and site facility management.
Departmental Representative will provide list.
 - .3 Site Communications:
 - .1 Site procedures used to share work related information and safety issues between workers, subcontractors and General Contractor.
 - .2 List of critical Work activities to be communicated with the Departmental Representative.
- .5 Prepare Health and Safety Plan in a three (3) column format, addressing the three (3) Parts specified above as follows:

| Column 1 | Column 2 | Column 3 |
|-------------------|------------------------------|---|
| Identified Hazard | Control Measures Implemented | Emergency and Communications Procedures |

- .6 Develop Plan in collaboration with subcontractors. Address all work and activities of subcontractors and update Plan, if required, as they arrive on site.
- .7 Implement and enforce compliance with requirements of the Health and Safety Plan until completion of Work and demobilization from Site.
- .8 As work progresses, review and update Plan addressing additional health risks and safety hazards identified by ongoing hazard assessments.

- .9 Submit revised version of Plan to Departmental Representative.
- .10 Post a copy of Plan, including all updates, in a common visible location at site.

1.10 RESPONSIBILITY

- .1 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.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.11 SAFETY SUPERISION AND INSPECTIONS

- .1 Designate one (1) person to be present on site at all times, responsible for supervision health and safety.
 - .1 Person to be competent in Occupation Health and Construction Safety as defined in Provincial Occupational Health and Safety Act.
- .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
- .3 Provide name to Departmental Representative.
- .4 Cooperate with Facility's Health and Safety Representative responsible for the entire site.
- .5 Conduct regularly scheduled safety inspection to Work site.
- .6 Maintain written documentation on each inspection.

1.12 TRAINING

- .1 Ensure workers and other persons granted site access are effectively trained on:
 - .2 Safe tool and equipment operation.
 - .3 Wear and use of appropriate PPE.
 - .4 Safe practices and procedures for performance of assigned tasks.
 - .5 Site conditions and minimum safety rules in force at site.

1.13 MINIMUM SITE SAFTY RULES

- .1 Notwithstanding the requirement to abide by Federal and Provincial Health and Safety Regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted access:
 - .1 Wear personal protection equipment (PPE) appropriate to function and task onsite; the minimum requirements being hard hat, safety footwear and eye protection.
 - .2 Immediately report unsafe activities, conditions, near-misses, injuries and damages.
 - .3 Maintain site in tidy condition.
 - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules, and on disciplinary measure to be taken for violation or non-compliance. Post such information on site.

1.14 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Regulation, N.B. Reg. 91-191.
- .2 Comply with Canada Labour Code Part II, and Canada Occupational Safety and Health Regulations made under Part II of the Canadian Labour Code.
- .3 Observe and enforce construction safety measure required by:
 - .1 National Building Code of Canada, latest edition.
 - .2 Provincial Workers' Compensation Board.
 - .3 Municipal statutes and ordinances.
- .4 In event of conflict between any provision of the above authorities the most stringent provision shall apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .5 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative upon request.

1.15 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.
- .4 Negligence or failure to follow applicable safety laws, regulations and safety requirements specified in the Contract could result in disciplinary measure imposed on worker, subcontractor, and Contractor by regulatory agency having jurisdiction.
- .5 Departmental Representative shall use system of Non-Compliance Notifications issued to Contractor when non-compliance of safety violations is observed and includes progressive disciplinary measures taken. Measures may include removal of offending party from site and could result in "Taking the Work Out of Contractor's Hands" depending on severity or frequency of infractions.
- .6 Details of system will be provided by Departmental Representative prior to commencement of Work.
- .7 Departmental Representative will make final decision as to when a Non-Compliance Notification will be issued, based on nature of violation noted or brought to their attention by an authorized safety representative.
- .8 Non-Compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders, and fines levied against Contractor by a regulatory agency having jurisdiction.

1.16 INCIDENTS AND ACCIDENTS

- .1 Investigate and report incidents and accidents as outlined in Provincial Occupation Health and Safety Act and Regulations.

- .2 Investigate and immediately report to Departmental Representative incidents and accidents which results in:
 - .1 Injuries requiring medical aid as define in the CSSE Canadian Dictionary of Safety Terms.
 - .2 Required notification to Workers Compensation Board or other regulatory agency as stipulated by applicable regulations.

1.17 UNFORESEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety Representative and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.18 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.
- .2 Keep on site copy of safety documents and reports so specified in Contact Documents and as received by authorities having jurisdiction.

1.19 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.20 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.21 TOOL AND EQUIPMENT SAFETY

- .1 Routinely check and conduct maintenance of tools and equipment. Ensure safe operation as recommended by tool manufacturer.
- .2 Tag and remove from site items found faulty of defective.

1.22 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS/SDS data sheets for all materials delivered to site. Post on site in a conspicuous location.
- .3 Submit copy to Departmental Representative.

1.23 SITE CONTROL AND ACCESS

- .1 Control site and entry points to construction areas. Approve and grant access only to workers and authorized persons. Immediately stop non-authorized persons from circulating within construction areas.
- .2 Provide site safety orientation to all persons in accordance with Article 1.6 - Meetings.

- .3 Delineate and isolate construction areas by use of effective means. Erect barricades and hoarding as required.
- .4 Erect signage at strategic locations of site initiating that construction areas are restricted to authorized persons only.
- .5 Provide PPE to persons granted access to perform inspections and other approved purposes.

1.24 LOCKOUTS

- .1 Ensure electrical power and other source of energy to mechanical and electrical equipment are effectively disconnected and locked-out before proceeding with Work on such items.
- .2 Refer also to Section 03 35 25 - Lockout Requirements.

1.25 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

2 Products

2.1 NOT USED

- .1 Not used.

3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA).
 - .1 CSA W117.2, Safety in Welding, Cutting, and Allied Processes, latest edition.
- .2 Government of Canada.
 - .1 Fire Protection Standard, latest edition.
- .3 National Building Code of Canada (NBC), latest edition.
- .4 National Fire Code of Canada (NFC), latest edition.

1.2 DEFINITIONS

- .1 Hot Work defined as:
 - .1 Welding work
 - .2 Cutting of materials by use of torch or other open flame devices
 - .3 Grinding with equipment which produces sparks.
 - .4 Torching operations.

1.3 FIRE SAFETY REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Building Code of Canada.
 - .2 National Fire Code of Canada.
 - .3 Fire Protection Standards.
 - .4 Federal and Provincial Occupational Health and Safety Acts and Regulations.
 - .5 Municipal and local codes and regulations.
 - .6 CSA W117.2.
- .2 In event of conflict between any provisions of above authorities the most stringent provision shall apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.4 HOT WORK AUTHORIZATION

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot Work on site.
- .2 To obtain authorization submit to Departmental Representative:
 - .1 Contractor's Hot Work Procedures to be followed on site to ensure fire safety.
 - .2 Description of the type and frequency of Hot Work required.
 - .3 Completed Hot Work Permit.
- .3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Subdivide the work into pre-determined, individual activities, each activity requiring individual Hot Work Permit and individual written authorization to proceed.

- .4 Requirement for individual authorization will be based on:
 - .1 Nature or phasing of work;
 - .2 Risk to Facility operations;
 - .3 Quantity of various trades needing to perform hot work on project or;
 - .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.
- .6 In occupied Facility, coordinate performance of Hot Work with Property Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of the Facility. Follow Departmental Representative's directives in this regard.
- .7 Failure to comply with established hot work procedures may result in issuance of a Noncompliance Notification at Departmental Representative's discretion with possible disciplinary measure imposed.

1.5 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Hot Work Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in section 01 35 29 - Health and Safety Requirements.
 - .2 Use of a Hot Work Permit system with individually issued permit by Contractor's Superintendent to worker or subcontractor granting permission to proceed with Hot Work.
 - .3 Permit required for each Hot Work event.
 - .4 Designation of a person(s) on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 60 minutes immediately following the completion of the Hot Work.
 - .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
 - .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly Label document as being the Hot Work Procedures for this contract.
- .4 Hot Work Procedures to be typewritten, listing step-by-step procedures and worker instructions, to clearly establish and allocate responsibilities of:
 - .1 Worker performing hot work,
 - .2 Person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

1.6 HOT WORK PERMIT

- .1 Hot Work Permit to include the following:
 - .1 Project name and project number;
 - .2 Building name and specific room or area where hot work will be performed;
 - .3 Date of issue;
 - .4 Description of hot work type needed;
 - .5 Special precautions to be followed, including type of fire extinguisher needed;
 - .6 Name and signature of permit issuer.
 - .7 Name of worker to which the permit is issued.
 - .8 Permit validity period not to exceed eight (8) hours. Indicate start time/date and termination time/date.
 - .9 Worker's signature with time/date of hot work completion.
 - .10 Stipulated time period of safety watch.
 - .11 Fire Safety Watcher's signature with time/date.
- .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .3 Each Hot Work Permit to be completed in full, signed and returned to Contractor's Superintendent for safe keeping on site.

1.7 FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut-off, unless approved by Departmental Representative.
 - .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.

1.8 DOCUMENTS ON SITE

- .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
- .2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Environmental Protection Plan (EPP) for review by Departmental Representative before delivering materials to site or commencing construction activities.
- .3 EPP shall include comprehensive overview of known or potential environmental issues to be addressed on site during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction task.
- .5 Include in Environmental Protection Plan (EPP):
 - .1 Site-specific Erosion and Sediment Control Plan (ESCP) identifying the type and location of erosion and sediment control measures to be provided on site.
 - .2 Submit a Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

1.3 FIRES

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

1.4 DISPOSAL OF WASTE

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of hazardous waste including volatile materials, such as mineral spirits, paint thinner, oil and fuel into waterways, storm sewers, sanitary sewers, or municipal solid waste landfills.
- .3 Refer also to Section 01 74 19 - Waste Management and Disposal and Section 01 47 19 - Sustainable Requirements for additional disposal and recycling requirements.

1.5 DRAINAGE

- .1 Ensure that the ESCP measures are provided and that its recommendations are followed on site at all times during construction.

1.6 PLANT PROTECTION

- .1 Protect trees and shrubs and encase with protective wood framework. Ensure that control measures used for protection comply with laws and regulations.

- .2 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Keep waterways free of excavated fill, waste material and debris.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements. Check with local authorities for any environmental compliance requirements.
- .3 Prevent materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where indicated and as directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .5 Maintain list of hazardous materials used and stored on site. Indicate product name, quantity and date when storage began on site.
- .6 Have emergency spill response equipment and rapid clean-up kit, appropriate to Work, on site. Locate adjacent to Work and storage areas of hazardous materials. Provide personal protection equipment as required for clean-up.

1.9 REPORTING AND NOTIFICATION

- .1 Report petroleum and other hazardous material spill, as well as other accidents having potential of polluting the environment, to Federal and Provincial Department of the Environment. Notify Departmental Representative and submit written spill report to Departmental Representative within 24 hours of occurrence.
- .2 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal and Provincial environmental laws and regulations.
- .3 Contractor after receipt of such notice, shall inform Departmental Representative of proposed corrective action and take such action to obtain the approval of Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .4 Departmental Representative may issue stop work order until satisfactory corrective action has been taken.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1 General

1.1 GENERAL

- .1 Due to nature of RCMP Detachment operations therein, security regulations pertaining to Detachment sites and buildings will be in place during the Work resulting in need for:
 - .1 Control and limit movement of construction workers at the site and inside building;
 - .2 Escort and continuous supervision of workers by security personnel;
 - .3 Workers shall undergo a security clearance process;
 - .4 Specific rules and regulations as specified in this section and as directed by Departmental Representative to be stringently followed.
- .2 It is the Contractor's responsibility to:
 - .1 Submit necessary documentation required and obtain security clearances for all personnel who work on site or inside of RCMP Detachments;
 - .2 Become familiar with and abide by security rules and regulations;
 - .3 Brief workers and subcontractors in respect of security regulations and ensure they abide by security rules and directives.
- .3 The Departmental Representative will coordinate a pre-construction meeting between Contractor, Property Manager and Security Personnel who will provide details and directives on control and movement on site.
- .4 Any infraction of site security regulations on part of the Contractor, members of work force, or any Subcontractor in his employ, could result in:
 - .1 Demand immediate removal of offending party from the site.
 - .2 Preclusion from obtaining future RCMP facility access or security clearance in the future.

1.2 SECURITY PERSONNEL

- .1 Departmental Representative will obtain the services of security personnel employed by the Canadian Corps of Commissionaires to provide escort and security supervision of all workers during Work of this Contract.
- .2 Commissionaires employed on this project will have a current Enhanced Security Clearance status issued by RCMP.
- .3 A minimum of one (1) commissionaire will be on site at all times when work is being performed inside the building, having the following responsibilities:
 - .1 Limit movement of workers to within boundaries established by Departmental Representative;
 - .2 Maintain security control list of workers authorized to be on site as determined by Contractor and Departmental Representative;
 - .3 Manage distribution and control of worker ID tags;
 - .4 Escort workers who need to circulate on site beyond established boundaries of work, including corridors, stairwells and elevators used for entry into work inside existing building, and access to and from work areas.
 - .5 Escort and supervise short term visitors who need access to the work site such as for material deliveries or to conduct inspections.
- .4 Additional commissionaires may be provided when required to perform supervision or escort function as may be needed due to Contractor's work operations in order that no worker is left unsupervised if Work is to take place inside restricted building(s) on site.

- .5 Commissionaire(s) must be present on site for entire work shift including work breaks and time period after work shifts until all workers have left site.
- .6 Commissionaire must stay within the actual construction area and provide surveillance of workers ensuring that security rules and requirements are obeyed and to limit movement to approved work areas of site.
- .7 Commissionaire shall escort workers from approved entry locations and work area(s).
- .8 Escort and supervision of workers by Commissionaire, when required by Work, will be provided at all times when work is being performed regardless of whether this is during regular business hours or beyond.
- .9 Commissionaire shall report directly to Departmental Representative and ensure that site security directives are obeyed by all workers.
 - .1 Empower Commissionaire with authority to remove any worker deemed non-compliant with security directives.
- .10 Ensure Commissionaire is fitted and wears approved safety hard hat, safety footwear and other personnel protective equipment appropriate to Work in accordance with applicable Occupational Health and Safety requirements specified.

1.3 SECURITY CLEARANCE REQUIREMENTS

- .1 All persons employed by Contractor or by subcontractors who will be working on Detachment Facilities shall undergo the following check:
 - .1 Apply for RCMP personnel security clearance screening and obtain a clearance as indicated in the Security Requirements Check List (SRCL) of the Standing Offer, for all work completed inside Detachment Building.
 - .2 Contractor's and subcontractor's workers are required to undergo an RCMP security clearance process determined by the Security Zone being accessed, and the type of work/trade being completed. Process may include an extensive investigation to determine suitability and reliability of applicant as determined by Departmental Representative.
- .2 Persons do not have security clearance, as specified above, will not be allowed on site.
- .3 Departmental Representative will advise when worker security clearance has been received and whether escort and supervision is still needed for any worker.

1.4 SECURITY CLEARANCE APPLICATION

- .1 To expedite security clearance process, the Contractor shall submit application forms and supporting documentation for workers who require Security Clearance for Work on RCMP Detachment facilities only.
 - .1 Make application for workers to facilitate processing and minimize delays.
- .2 Processing Time:
 - .1 To avoid delays, prepare worker documentation as soon as possible; however, submit documentation for each applicant as one package and send information for entire workforce as one submission. Ensure forms are fully completed, signed and that all information and photo identification is clear and legible.

- .3 Facilitate workers security clearance process as follows:
 - .1 Prepare comprehensive list of workers who will require security clearance throughout project, including those of subcontractors.
 - .2 Provide copy of list to Departmental Representative.
 - .3 Coordinate and expedite submission of various subcontractors.
 - .4 Brief and assist applicants in preparing and submitting documentation.
 - .5 Review documentation of each applicant for completeness before submission.
 - .6 Have each worker keep a copy of their completed application form in case the initial submission gets lost.
 - .7 Submit documentation in an organized manner with transmittal letter clearly identifying project for which worker clearance is required.
- .4 Send submission(s) directly to Departmental Representative or to the approved mailing address as directed by Departmental Representative.
- .5 Persons who have not been successful in obtaining security clearance, upon documentation review by RCMP, will not be allowed further access on site.

1.5 SITE AND BUILDING

- .1 All personnel, visitor or worker, requiring access on site or inside existing Detachment building(s) on site beyond the public lobby require an HRMIs number issued by RCMP.
- .2 It is the responsibility of the Contractor and personnel, visitors and workers to know their HRMIS number.

1.6 SECURITY CONTROL LIST

- .1 Provide a list of employee names from workforce and from subcontractors who will be present at site during the course of work.
- .2 List to include each person's name, address and telephone number and HRMIS number.
- .3 Submit copy of list to Departmental Representative, Departmental Representative, and to SecurityCommissionaire for control of workers.
- .4 Update list as work progresses.
- .5 Ensure each worker can provide proof of identity upon demand, when requested by Facility's Security Personnel, Departmental Representative, or by Property Manager.

1.7 BUILDING ACCESS

- .1 Keys and door security access cards necessary for access to restricted areas may be issued at the discretion of the Departmental Representative. Follow instructions in regards to use, care and disposition of keys and access cards so issued.
- .2 Keys and security access cards given to the Commissionaire for his sole possession, as determined by Departmental Representative, shall not under any circumstances be given to any worker or subcontractor.
- .3 Do not, under any circumstances, make or allow workers to make duplicates of keys issued.
- .4 At end of project, return to Departmental Representative all keys and access cards issued.
- .5 Immediately report to Departmental Representative any lost, stolen or destroyed keys and doorsecurity access cards.

1.8 SITE SECURITY

- .1 When work must be carried out during "off-hours" or beyond the work hours previously agreed upon at start of work, provide notice as soon as possible in order to minimize the impact on security and other operations on site.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 SUMMARY

- .1 This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.2 REFERENCES TO REGULATORY REQUIREMENTS

- .1 Perform Work in accordance with National Building Code of Canada (NBC) 2015 including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
 - .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.

1.4 BUILDING SMOKING ENVIRONMENT

- .1 No smoking is permitted within building and on property.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, the Contractor is responsible for obtaining, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements in force on date of submission against call-up, and,
 - .2 A change in regulatory requirements scheduled to become effective after date of submission and of which public notice has been given before date of submission.

1.6 EASEMENTS AND NOTICES

- .1 Departmental Representative will obtain permanent easements and rights of servitude that may be required for performance of Work.
- .2 Contractor shall give notices required by regulatory requirements.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 INSPECTION

- .1 Allow 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.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 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.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative.

1.3 ACCESS TO WORK

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

1.4 REJECTED WORK

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

1.5 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications.
- .2 Construct in locations as specified in specific Section or as otherwise acceptable to Departmental Representative.
- .3 Prepare mock-ups for review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Remove mock-up at conclusion of Work unless mock-up is scheduled to remain as part of Work.
- .5 Reviewed and accepted mock-ups shall become standards of workmanship and material against which installed work will be judged.

- 2 Products
- 2.1 NOT USED
 - .1 Not Used.
- 3 Execution
- 3.1 NOT USED
 - .1 Not Used.

END OF SECTION

1 General

1.1 EROSION AND SEDIMENTATION CONTROL

- .1 Preserve site watersheds and prevent contamination of groundwater.
- .2 Maintain an Erosion and Sedimentation Control Plan (ESCP) to control stormwater runoff and other erosion measures.
- .3 Construct and erect erosion barriers to locations indicated and as directed by Departmental Representative.

1.2 INDOOR AIR QUALITY

- .1 Indoor Chemical and Pollutant Source Control:
 - .1 Ensure that materials and products purchased are in accordance with environmental procurement policy and are specifically:
 - .1 Low Volatile Organic Compound (VOC) emitting materials.
 - .2 Engineered or composite wood materials that do not emit formaldehyde.
 - .3 Materials that deter microbial without application of anti-microbial testaments.

1.3 GENERAL CONSTRUCTION MATERIALS/PRACTICES

- .1 Materials and Resources:
 - .1 Ensure that materials and services used are environmentally friendly.
 - .2 Develop purchasing policy, which specifies that wherever possible, materials and services are to be manufactured to the criteria of the Environmental Choice Program as being environmentally friendly.
- .2 Storage and Collection of Recyclables:
 - .1 Ensure recyclable waste generated is routinely collected as demand requires.
 - .2 Maintain and clean recycling stations.
 - .3 Label recycling stations to identify acceptable materials.
- .3 Construction Waste Management:
 - .1 Minimize waste generated from operation and maintenance of buildings.
- .4 Recycled Content:
 - .1 Ensure materials and products purchased are in accordance with environmental procurement policy and contain highest possible percentage of recycled content.
- .5 Local/Regional Materials:
 - .1 Procurement policy should give preference to product and materials that are manufactured within 1600 kilometres of site.
- .6 Rapidly Renewable Materials:
 - .1 Procurement policy should give preference to materials that have been manufactured with rapidly renewable raw materials.
- .7 Wood:
 - .1 Procurement policy should give preference to furnishings and other materials and products that have been manufactured with wood harvested from sustainable practices.
 - .2 Materials made from composite wood materials or agricultural products: not contain urea-formaldehyde resins.

1.4 INSULATION

- .1 Use materials that meet following requirements.
 - .1 Board-type thermal insulation materials shall contain:
 - .1 Minimum 20% recycled material by weight of finished product if made from extruded polystyrene.
 - .2 Minimum 11% recycled material by weight of finished product if made from polyisocyanurate.
 - .2 Batt and blanket type thermal insulation materials shall contain:
 - .1 Minimum 65% recycled material by weight of finished product if made from glass fibre.
 - .2 Minimum 9% recycled material by weight of finished product, if made from mineral wool.
 - .3 Use insulation materials manufactured or installed that do not contain CFC's.

1.5 ACOUSTIC CEILINGS

- .1 Use materials that meet following requirements.
 - .1 Have noise reduction coefficient (NRC) of at least 0.50.
 - .2 Contain:
 - .1 Over 70 % recycled material by weight of finished product, if made from cellulose fibre.
 - .2 Over 35 % recycled material by weight of finished product if made from glass fibre or mineral composition.

1.6 PAINTS, STAINS, VARNISHES

- .1 Use materials that meet following requirements.
 - .1 For interior applications use paints and coatings that comply with the following limits for VOC content:
 - .1 Flat Paints and Coatings: VOC not more than 50 g/L.
 - .2 Non-Flat Paints and Coatings: VOC not more than 150 g/L.
 - .3 Varnishes and Sanding Sealers: VOC not more than 350 g/L.
 - .4 Stains: VOC not more than 250 g/L.
 - .2 No products are to be formulated or manufactured with aromatic solvents, formaldehyde, or halogenated solvents, mercury, lead, cadmium, hexavalent chromium and their compounds.
 - .3 Products to have flash point of 61°C or greater.

1.7 ADHESIVES, SEALANTS, AND CAULKING COMPOUNDS

- .1 Use materials that meet following requirements.
 - .1 For interior applications use adhesives and sealants that comply with the following limits for VOC content:
 - .1 Wood Glues: 30 g/L.
 - .2 Adhesives for Porous Materials (Except Wood): 50 g/L.
 - .3 Subfloor Adhesives: 50 g/L.
 - .4 Plastic Foam Adhesives: 50 g/L.
 - .5 Carpet Adhesives: 50 g/L.
 - .6 Carpet Pad Adhesives: 50 g/L.
 - .7 VCT Adhesives: 50 g/L.

- .8 Cove Base Adhesives: 50 g/L.
- .9 Gypsum Board and Panel Adhesives: 50 g/L.
- .10 Ceramic Tile Adhesives: 65 g/L.
- .11 Multipurpose Construction Adhesives: 70 g/L.
- .12 Contact Adhesive: 250 g/L.
- .13 ABS Welding Compounds: 400 g/L.
- .14 CPVC Welding Compounds: 490 g/L.
- .15 PVC Welding Compounds: 510 g/L.
- .16 Sealants: 250 g/L.
- .2 No adhesives to be formulated or manufactured with aromatic solvents, borax, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .3 No sealant and caulking materials to be formulated or manufactured with aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulfate.

1.8 FLOORING

- .1 Use materials that meet following requirements.
 - .1 Carpet: Indoor Air Quality compliance with CRI Green Label Plus Program. Label each carpet product with CRI-IAQ label.
 - .2 Under cushion materials that were not manufactured with ozone depleting substances.
 - .1 Under cushion to include 85% recycled content.
 - .3 Resilient Flooring: manufactured with recycled content.

1.9 HVAC EQUIPMENT

- .1 Ozone Depleting Substances:
 - .1 Use materials, products and systems that have reduced ozone depleting potential.

1.10 PLUMBING FIXTURES

- .1 Water Efficiency:
 - .1 Minimize consumption of potable water in building and on site.
- .2 Water Use Reduction:
 - .1 For all applicable fixtures and fittings, maximum water consumption to be as follows:
 - .1 Toilet (water closet): 4.8 litres/flush.
 - .2 Urinal: 0.5 litres/flush.
 - .3 Public lavatory (restroom) faucet: 1.5 litres/minute.
 - .4 Kitchen faucet: 8.3 litres/minute.
 - .5 Showerhead: 6 litres/minute.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.2 DEWATERING

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

1.3 WATER SUPPLY

- .1 Provide continuous supply of potable water for construction use.
- .2 Arrange for connection, installation, maintenance and removal with appropriate utility company.
- .3 Contractor may use existing water supply where available on site. Departmental Representative will pay utility charges.

1.4 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be non-flameless type.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 10°C in areas where construction is in progress.
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
- .6 Permanent heating system of building may be used when available. Be responsible for damage to heating system if use is permitted.
- .7 On completion of Work for which permanent heating system is used, replace filters.

- .8 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .9 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.
- 1.5 TEMPORARY POWER AND LIGHT
- .1 Provide temporary power during construction for temporary lighting and operating of power tools.
 - .2 Arrange for connection, installation, maintenance and removal with appropriate utility company.
 - .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx (15-foot candles).
 - .4 Permanent power distribution system of building or parts thereof may be used for temporary power and lighting where approved by Departmental Representative. Be responsible for damage thereof.
 - .5 Where approval to use permanent power distribution system is given, be responsible for that portion of the distribution system, and ensure its use will in no way affect normal operation of building.
- 1.6 TEMPORARY COMMUNICATION FACILITIES
- .1 Provide temporary telephone, data, and fax hook up, lines, and equipment necessary for own use.
- 1.7 FIRE PROTECTION
- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
 - .2 Burning rubbish and construction waste materials is not permitted on site.
- 2 Products
- 2.1 NOT USED
- .1 Not Used.
- 3 Execution
- 3.1 NOT USED
- .1 Not Used.

END OF SECTION

-
- 1 General
 - 1.1 REFERENCE STANDARDS
 - .1 Canadian Standards Association (CSA International)
 - .1 CSA Z797, Code of Practice for Access Scaffold, latest edition.
 - 1.2 INSTALLATION AND REMOVAL
 - .1 Provide construction facilities in order to execute work expeditiously.
 - .2 Remove from site all such work after use.
 - 1.3 SCAFFOLDING
 - .1 Scaffolding in accordance with CSA Z797.
 - .2 Provide and maintain temporary stairs, platforms, scaffolding, ladders, and ramps.
 - 1.4 SITE STORAGE/LOADING
 - .1 Confine work and operations of employees to limits indicated by laws, ordinances, permits and Contract Documents. Do not unreasonably encumber premises with products.
 - .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
 - 1.5 CONSTRUCTION PARKING
 - .1 Parking will be permitted on site at discretion of Departmental Representative.
 - .2 Departmental Representative reserves the right to limit parking based upon RCMP operational requirements, safety, and public need.
 - 1.6 OFFICES
 - .1 Contractor may provide their own office as necessary, provided they agree to conditions imposed by Departmental Representative.
 - .2 Locate site office as directed by Departmental Representative.
 - .3 Strictly enforce no smoking and use of scent-free product policies.
 - 1.7 EQUIPMENT, TOOL AND MATERIALS STORAGE
 - .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
 - .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.
 - .3 Location of sheds as directed by Departmental Representative.
 - 1.8 SANITARY FACILITIES
 - .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
 - .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

- .3 Permanent sanitary facilities may be used where approved by Departmental Representative. Maintain in clean condition.

1.9 CONSTRUCTION SIGNAGE

- .1 No signs or advertisements, other than warning and informational signs, are permitted on site.
- .2 Signs and notices for safety and instruction in both official languages.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

1.10 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .2 Protect travelling public from damage to person and property.
- .3 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .4 Dust control: adequate to ensure safe operation at all times.

1.11 PEST CONTROL

- .1 Provide effective non-pesticide pest control to site offices; equipment, tool and materials storage sheds and areas; and areas under construction.
- .2 Keep food stuffs and wrappers in sealed containers and remove immediately at end of each workday.

1.12 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or 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.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

-
- 1 General
 - 1.1 INSTALLATION AND REMOVAL
 - .1 Provide temporary controls in order to execute Work expeditiously.
 - .2 Remove from site all such work after use.
 - 1.2 HOARDING
 - .1 Erect and maintain hoarding as necessary to protect public, occupants, and users, and as required by governing authorities.
 - .2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
 - 1.3 GUARD RAILS AND BARRICADES
 - .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
 - .2 Provide as required by governing authorities.
 - 1.4 WEATHER ENCLOSURES
 - .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
 - .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
 - .3 Design enclosures to withstand wind pressure and snow loading.
 - 1.5 DUST TIGHT SCREENS
 - .1 Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
 - .2 Maintain and relocate protection until such work is complete.
 - 1.6 ACCESS TO SITE
 - .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
 - 1.7 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.
 - 1.8 FIRE ROUTES
 - .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.9 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.

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

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 REFERENCE STANDARDS

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents. Contractor is responsible in the event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, 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.
- .7 Maintain construction equipment and plant in good working order.

1.3 VERIFICATION

- .1 Within five (5) days of written request by Departmental Representative, submit following information for materials and equipment proposed for supply:
 - .1 Name and address of manufacturer,
 - .2 Trade name, model and catalogue number,
 - .3 Performance, descriptive and test data,
 - .4 Manufacturer's installation or application instructions,
 - .5 Evidence of arrangements to procure.

- .2 Upon written request by Departmental Representative, provide proof, to satisfaction of Departmental Representative, that construction equipment and plant are adequate to manufacture, transport, place, and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Contractor is responsible for the transportation of products required in performance of Work.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will 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 reinstallation.

1.7 QUALITY OF WORK

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

- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 COORDINATION

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

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

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

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of conflicting installation. Install as directed.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.12 FASTENINGS

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

- .7 Obtain Departmental Representative's approval before using powder (explosive) actuated fastening devices.

1.13 FASTENINGS - EQUIPMENT

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

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 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 Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.

1.3 PREPARATION

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

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
 - .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
 - .9 Restore work with new products in accordance with requirements of Contract Documents.
 - .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with applicable ULC Design, full thickness of the construction element.
 - .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
 - .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.
- 1.5 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- 2 Products
- 2.1 NOT USED
- .1 Not Used.
- 3 Execution
- 3.1 NOT USED
- .1 Not Used.

END OF SECTION

1 General

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 daily regularly scheduled times. Do not burn waste materials on site.
- .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 material and debris.
- .5 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each workday.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .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 Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .6 Clean lighting reflectors, lenses, and other lighting surfaces.
- .7 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .8 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer. Vacuum carpets.
- .9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .10 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .11 Remove dirt and other disfiguration from exterior surfaces.

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- .12 Sweep and wash clean paved areas.
 - 1.3 WASTE MANAGEMENT AND DISPOSAL
 - .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - 1.4 CLEANING AGENCY
 - .1 Employ and use the service of a professional and recognized cleaning agency to provide personnel on site to perform cleaning at end of each workday.
 - .2 Personnel from cleaning agency shall:
 - .1 Wash walls, floors, and other surfaces dirtied or smeared during execution of Work.
 - .2 Vacuum carpets in immediate Work areas as well as corridors and stairs used by workers in the course of their work.
 - .3 Arrive at an appropriate time near end of workday.
 - .4 Stay on premises for one (1) additional hour after Contractor's off-hour work shift has terminated to address complaints and concerns from Departmental Representative on degree of cleanliness required and perform additional cleaning as required.
 - 2 Products
 - 2.1 NOT USED
 - .1 Not Used.
 - 3 Execution
 - 3.1 NOT USED
 - .1 Not Used.

END OF SECTION

1 General

1.1 SUMMARY

- .1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor's commitment to reduce and divert waste materials from landfill.

1.2 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re modeling, repair and demolition operations.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

.18 Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.3 WASTE MANAGEMENT GOALS

.1 Departmental Representative has established that this project is to generate the least amount of waste possible. This require that construction processes ensure as little waste as possible, either due to error, poor planning, breakage, mishandling, contamination, or other factors.

.2 Departmental Representative recognizes that waste in any project is inevitable, but indicates that as much of the waste materials as economically feasible. Reused, salvage, or recycle as required.

.3 Minimize waste disposal to landfills.

1.4 WASTE MANAGEMENT PLAN

.1 Submit a Waste Management Plan to Departmental Representative for review.

.2 Waste Management Plan shall indicate recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

.4 Protect, stockpile, store and catalogue salvaged items

2 Products

2.1 NOT USED

.1 Not Used.

3 Execution

3.1 PREPARATION

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

3.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.

3.3 WASTE MANAGEMENT PLAN IMPLEMENTATION

- .1 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by parties at appropriate stages of the project.
- .2 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return:
 - .1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
 - .2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

END OF SECTION

1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative's Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted, balanced and fully operational.
 - .4 Certificates required by Utility companies and Fire Commissioner: submitted.
 - .5 Operation of systems: demonstrated to Owner's personnel.
 - .6 Commissioning of mechanical systems: completed in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements.
 - .7 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative.
 - .2 When Work is incomplete according to Departmental Representative, complete outstanding items and request reinspection.
- .2 Authorization for Final Payment:
 - .1 Departmental Representative will not authorize final payment until such time that Contractor performs following work and turns over specified documents:
 - .1 Operations and Maintenance manuals,
 - .2 Maintenance materials,
 - .3 Certificates of test and test results,
 - .4 Guarantee and Warranty certificates.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 47 19 - Sustainable Requirements and Section 01 74 19 - Waste Management and Disposal.

- 2 Products
- 2.1 NOT USED
 - .1 Not Used.
- 3 Execution
- 3.1 NOT USED
 - .1 Not Used.

END OF SECTION

1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting with Departmental Representative, in accordance with Section 01 31 19 -Project Meetings to:
 - .1 Review guarantee/warranty requirements.
 - .2 Establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .2 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .3 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one (1) interim copy of operations and maintenance manual for review by Departmental Representative. Make revisions and additions as directed and resubmit.
- .3 Upon review and acceptance of interim copy by Departmental Representative, submit two (2) final copies to Departmental Representative. Initial copies will not be considered as final copies unless they have been fully revised and are identical to final accepted version.
- .4 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .5 Submission date: submit completed operations and maintenance manual to Departmental Representative prior to submission of invoices for payments.

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 215 x 280 mm with spine and face pockets.
- .3 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .4 Arrange content under Section numbers and sequence of Contract specifications.
- .5 Separate each Section with cardboard dividers and labels. 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.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .8 Drawings, diagrams, and manufacturers' literature must be legible.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Cover sheet containing:
 - .1 Date of submission.
 - .2 Project title, location, and project number.
 - .3 Names and addresses of Contractor, subcontractors, and suppliers.
 - .4 Schedule of products and systems indexed to content of volume.
- .2 Table of Contents for Each Volume indicating contents of each binder.
- .3 List of maintenance materials.
- .4 List of spare parts.
- .5 Original or certified copy of Warranties and Guarantees.
- .6 Copies of approvals and certificates issued by Inspection Authorities.
- .7 Copies of reports and results from tests designated as Contractor's responsibilities.
- .8 For each product or system include:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts, and local service depots.
 - .2 Nameplate information including equipment number, make, size, capacity, model number, and serial number.
 - .3 Parts list.
 - .4 Installation details.
 - .5 Operating instructions.
 - .6 Maintenance instructions for equipment.
- .9 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .10 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .11 Typewritten Text: as required to supplement product data.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain at site for Departmental Representative one (1) record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.

- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders in contract amendments.
 - .3 Details not on original Contract Drawings.
 - .4 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders in contract amendments.
- .6 Other Documents: maintain inspection certifications, manufacturer's certifications, and other documentation required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Provide servicing and lubrication schedule, and list of lubricants required.
- .3 Include manufacturer's printed operation and maintenance instructions.
- .4 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .5 Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

- .1 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 site; place and store where directed by Departmental Representative.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
- .2 Extra Stock 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 Deliver to site; place and store where directed by Departmental Representative.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site; place and store where directed by Departmental Representative.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
- .4 Clearly mark items including:
 - .1 Product name and product number.
 - .2 Identification of where item was installed or intended use in building.
 - .3 Installation instructions
 - .4 Name, address and telephone number of nearest suppliers.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 SUMMARY

.1 Section Includes:

.1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.

.2 Acronyms:

- .1 BMM - Building Management Manual.
- .2 Cx - Commissioning.
- .3 O&M - Operation and Maintenance.
- .4 PI - Product Information.
- .5 PV - Performance Verification.
- .6 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

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

- .1 Verify installed equipment, systems and integrated systems operate in accordance with Contract Documents and design criteria and intent.
- .2 Ensure appropriate documentation is compiled into the BMM.
- .3 Effectively train O&M staff.

.2 Contractor performs Cx process, operating equipment and systems, troubleshooting and making adjustments as required.

- .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
- .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

.3 Design Criteria: To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

.1 Provide a fully functional facility:

- .1 Systems, equipment and components meet user's functional requirements before date of acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.
- .2 Property Manager and O&M personnel have been fully trained in aspects of installed systems.
- .3 Complete documentation relating to installed equipment and systems.

- .2 Cx responsibilities:
 - .1 Contractor is responsible for:
 - .1 Organizing Cx.
 - .2 Testing.
 - .3 TAB.
 - .4 Performance of Cx activities.
 - .5 Monitoring operations Cx activities.
 - .6 Witnessing, certifying accuracy of reported results.
 - .7 Developing BMM.
 - .8 Demonstrations.
 - .9 Training.
 - .10 Preparation and submission of test reports.
 - .11 Delivery of training and Cx documentation.
 - .2 Departmental Representative is responsible for:
 - .1 Witnessing, certifying accuracy of reported results.
 - .2 Witnessing and certifying TAB and other tests.
 - .3 Implementation of Training Plan.
 - .3 Property Manager is responsible for:
 - .1 Attending training sessions.
- .3 Cx to be a line item of Contractor's cost breakdown.
- .4 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility/system is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
- .6 Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.
 - .2 Equipment, components and systems have been commissioned.
 - .3 O&M training has been completed.
- .7 The following system types, when applicable to project, shall be commissioned:
 - .1 Potable water storage and delivery systems.
 - .2 Fire protection systems including sprinkler, standpipe, fire pump, fire and smoke dampers, kitchen suppression systems, fire shutters, fire alarm systems, exit lights, emergency lights, door hold open devices, fan shutdown, gas shutdown, smoke control and stair pressurization.
 - .3 Lighting Controls.
 - .4 Electrical Switchgear.
 - .5 Energy Monitoring Systems.
 - .6 HVAC systems including cooling equipment, complete air handling systems and associated equipment, complete heating plant and heating distribution equipment including water treatment systems.
 - .7 Telephone, data, cable and PA system.
 - .8 Video surveillance and access intrusion alarms.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.

1.5 PRE-CX REVIEW

- .1 Before start of Cx:
 - .1 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .2 Fully understand Cx requirements and procedures.
 - .3 Have Cx documentation shelf-ready.
 - .4 Understand completely design criteria and intent and special features.
 - .5 Submit complete start-up documentation to Departmental Representative.
 - .6 Have Cx schedules up-to-date.
 - .7 Ensure systems have been cleaned thoroughly.
 - .8 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.
 - .9 Ensure "As-Built" system schematics are available.
- .2 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than four (4) weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at four (4) weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least four (4) weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Installation/Start-up check lists:
 - .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
 - .2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
 - .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
 - .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
 - .5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.
- .2 Product Information (PI) Report Forms:
 - .1 Product Information (PI) forms compile gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
 - .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.
- .3 Performance Verification (PV) Forms:
 - .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
 - .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
 - .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.
- .4 Samples of Commissioning Forms:
 - .1 Develop required project-specific Commissioning forms in electronic format complete with specification data.
 - .2 Revise items on Commissioning forms to suit project requirements.
- .5 Departmental Representative to review and approve Cx documentation.
- .6 Provide completed and approved Cx documentation to Departmental Representative.

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction.
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.10 STARTING AND TESTING

- .1 Contractor is responsible for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.11 WITNESSING OF STARTING AND TESTING

- .1 Provide 14 days notice prior to commencement.
- .2 Departmental Representative to witness of start-up and testing.
- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.12 MANUFACTURER'S INVOLVEMENT

- .1 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative.
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

1.13 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 21 days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.14 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.

1.15 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.16 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Provide copies to Departmental Representative within five (5) days of test and with Cx report.

1.17 COMMISSIONING CONSTRAINTS

- .1 Since access into secure or sensitive areas will be very difficult after occupancy it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems in these areas before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.

1.18 SUNDRY CHECKS AND ADJUSTMENTS

- .1 Make adjustments and changes which become apparent as Cx proceeds.
- .2 Perform static and operational checks as applicable and as required.

1.19 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.
- .2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.20 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.21 TRAINING

- .1 Training Objectives:
 - .1 Training to be detailed and duration to ensure:
 - .1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
 - .2 Effective on-going inspection, measurements of system performance.
 - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
 - .4 Ability to update documentation.
 - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.
- .2 Training Materials:
 - .1 Instructors to be responsible for content and quality.
 - .2 Training materials to include:
 - .1 "As-Built" Contract Documents.

- .2 Operating Manual.
- .3 Maintenance Manual.
- .4 Management Manual.
- .5 TAB and PV Reports.
- .3 Departmental Representative and Property Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .3 Scheduling:
 - .1 Include in Commissioning Schedule time for training.
 - .2 Deliver training during regular working hours, training sessions to be maximum three (3) hours in length.
 - .3 Training to be completed prior to acceptance of facility.
- .4 Training Content:
 - .1 Training to include demonstrations by Instructors using the installed equipment and systems.
 - .2 Content includes:
 - .1 Review of facility and occupancy profile.
 - .2 Functional requirements.
 - .3 System philosophy, limitations of systems and emergency procedures.
 - .4 Review of system layout, equipment, components and controls.
 - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
 - .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
 - .7 Maintenance and servicing.
 - .8 Trouble-shooting diagnosis.
 - .9 Inter-Action among systems during integrated operation.
 - .10 Review of O&M documentation.
 - .11 Provide specialized training as specified in relevant Technical Sections of the specifications.

1.22 OCCUPANCY

- .1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy.

1.23 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 02 41 19 - Selective Building Demolition.

1.2 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.
- .2 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.
- .3 Waste Management Plan: Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - Waste Management and Disposal.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate requirements for Waste Management and Disposal for materials being reused or recycled in accordance with Section 01 74 19 - Waste Management and Disposal:
 - .1 Divert excess materials from landfill.
 - .2 Separate materials identified for recycling place in identified areas in accordance with Waste Management Plan.
 - .3 Label location of salvaged material's storage areas and provide barriers and security devices.
 - .4 Remove materials that cannot be salvaged for re use or recycling and dispose of in accordance with applicable codes at licensed facilities.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: ensure Work is performed in compliance with applicable Provincial regulations.
- .2 Comply with hauling and disposal regulations of Authority Having Jurisdiction.

1.5 SITE CONDITIONS

- .1 Protect existing site features to remain or identified for salvage or reuse; make repairs and restore to a similar condition to existing where damage to these items occurs as directed by Departmental Representative:
 - .1 Remove and store salvaged materials to prevent contamination.
 - .2 Store and protect salvaged materials as required for maximum preservation of material.
 - .3 Handle salvaged materials same as new materials.
- .2 Perform pavement removal work to prevent adverse effects to adjacent watercourses, groundwater and wildlife, and to prevent excess air and noise pollution:
 - .1 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
 - .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with Authorities Having Jurisdiction.

-
- .3 Protect existing site features and structures, trees, plants and foliage on site and adjacent properties.
 - 2 Products
 - 2.1 NOT USED
 - .1 Not Used.
 - 3 Execution
 - 3.1 PREPARATION
 - .1 Verify extent and location of asphalt identified for removal, disposal, alternative disposal, recycling, salvage and items to remain.
 - .2 Locate and protect utilities, preserve active utilities traversing site in operating condition.
 - .3 Temporary Erosion and Sedimentation Control:
 - .1 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .4 Prior to beginning removal operation, inspect and verify with Departmental Representative areas, depths and lines of asphalt pavement to be removed.
 - .5 Protection: protect existing pavement not designated for removal, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Departmental Representative.
 - 3.2 REMOVAL
 - .1 Remove existing asphalt pavement to lines and grades as indicated.
 - .2 Demolition of pavements, curbs and gutters:
 - .1 Square up adjacent surfaces to remain in place by saw cutting or other method acceptable to Departmental Representative.
 - .2 Protect adjacent joints and load transfer devices.
 - .3 Protect underlying and adjacent granular materials where they are exposed and identified to remain.
 - .4 Prevent contamination with base course aggregates, when removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving.
 - .3 Use equipment and methods of removal and hauling which do not damage or disturb underlying pavement.
 - .4 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.
 - .5 Suppress dust generated by removal process.
 - 3.3 FINISH TOLERANCES
 - .1 Finished surfaces in areas where asphalt pavement has been removed within ± 5 mm of grade specified but not uniformly high or low.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Sweep remaining asphalt pavement surfaces clean of debris resulting from removal operations using rotary power brooms and hand brooming as required.
- .4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
 - .2 Removed asphalt pavement which is to be recycled in hot mix asphalt concrete under this contract may be stockpiled at designated asphalt plant site.

END OF SECTION

1 General

1.1 SUMMARY

- .1 This Section includes the following:
 - .1 Demolition and removal of selected portions of exterior building components or structural elements.
 - .2 Demolition of mechanical and electrical equipment.
 - .3 Demolition and removal of selected site elements.
 - .4 Repair procedures for selective demolition operations.

1.2 REFERENCE STANDARDS

- .1 National Research Council Canada (NRC)
 - .1 National Building Code of Canada.
- .2 National Fire Protection Association (NFPA)
 - .1 NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, latest edition.
 - .2 NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, latest edition.

1.3 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.
- .2 Remove and Salvage: Detach items from existing construction and turn over to Departmental Representative.
- .3 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- .4 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.
- .5 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCBs, or other material that can endanger human health or wellbeing if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.
- .2 Coordination: Coordinate with Departmental Representative for the material ownership as follows:
 - .1 Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Departmental Representative's property, demolished materials shall:
 - .1 Become property of the Departmental Representative. Contractor and Departmental Representative shall review items and identify items that are to remain property of Departmental Representative.

- .2 Items not identified to remain property of Departmental Representative shall become property of Contractor. Contractor shall remove and dispose of items off site.
- .2 Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Departmental Representative that may be encountered during selective demolition remain Departmental Representative's property.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: Comply with governing environmental notification requirements and regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction, and in accordance with the following:
 - .1 Provincial Workers Compensation Boards/Commissions.
 - .2 Provincial Occupational Health and Safety Standards and Programs.
 - .3 Requirements of NFPA 51B.
 - .4 Requirements of NFPA 241.
 - .5 Other pertinent codes, by-laws and regulations.

1.6 SITE CONDITIONS

- .1 Portions of building immediately adjacent to selective demolition area may be occupied:
 - .1 Conduct selective demolition so that operations will not be disrupted or will have only minimal disruption.
 - .2 Provide not less than 72 hours notice to Departmental Representative of activities that will affect operations.
- .2 Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- .3 Departmental Representative assumes no responsibility for condition of areas to be selectively demolished:
- .4 Hazardous Substances:
 - .1 Unless previously identified, it is not expected that Hazardous Substances will be encountered in the Work.
 - .2 When removal of previously identified Hazardous Substances is included in Work, Contractor to engage subcontractor specializing in removal of identified Hazardous Substances.
 - .3 Discovery of Hazardous Substances not previously identified:
 - .1 Immediately notify Departmental Representative if materials suspected of containing hazardous substances are encountered.
- .5 Storage or sale of removed items or materials on site will not be permitted.

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- .6 Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - .7 Maintain fire protection facilities in service during selective demolition operations.
- 2 Products
- 2.1 MATERIALS
- .1 Temporary Support Structures: Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer registered or licensed in province of the Work.
 - .2 Repair Materials: Use repair materials identical to existing materials:
 - .1 If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - .2 Use materials whose installed performance equal or surpasses that of existing materials.
 - .3 Comply with material and installation requirements specified in individual technical specification Sections.
- 3 Execution
- 3.1 EXAMINATION
- .1 Verify that utilities have been disconnected and capped.
 - .2 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
 - .3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
 - .4 Notify the Departmental Representative where existing mechanical, electrical, or structural elements conflict with intended function or design.
 - .5 Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- 3.2 UTILITY SERVICES
- .1 Coordinate existing services indicated to remain and protect them against damage during selective demolition operations.
 - .2 Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - .3 Coordinate with Mechanical and Electrical Divisions for shutting off, disconnecting, removing, and sealing or capping utilities.
 - .4 Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- .1 Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- .2 Conduct selective demolition and debris removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities:
 - .1 Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Departmental Representative and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - .2 Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - .3 Protect existing site improvements, appurtenances, and landscaping to remain.
 - .4 Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- .3 Provide temporary barricades, guards, railings, lights, warning signs, watchmen and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain, and as follows:
 - .1 Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - .2 Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - .3 Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - .4 Cover and protect furniture, furnishings, and equipment that have not been removed.
 - .5 Prevent unauthorized entry into Work Area.
- .4 Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
 - .1 Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures.
 - .2 Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- .5 Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- .6 Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished:
 - .1 Strengthen or add new supports when required during progress of selective demolition.

- .2 If at any time, safety of adjacent portion of building appears to be endangered, ceases operations, notify Departmental Representative, and take precautions to support structure. Do not resume operations until permission has been granted. If such movement of settlement of adjacent portion of building is caused by negligence or default of Contractor, restore structural integrity of the structure to Departmental Representative's design. When Departmental Representative considers additional bracing or shoring necessary to safeguard or prevent such movement or settlement, install bracing and shoring upon order.

3.4 POLLUTION CONTROLS

- .1 Dust Control: Provide water mist, temporary enclosures or other suitable methods reviewed and accepted by the Departmental Representative to limit spread of dust and dirt. Comply with governing environmental protection regulations, and as limited below:
 - .1 Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - .2 Wet mop floors to eliminate tracking of dirt, wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- .2 Remove and transport debris to prevent spillage on adjacent surfaces and areas.
- .3 Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- .4 Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- .1 Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - .1 Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - .2 Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - .3 Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- .2 Removed and Salvaged Items:
 - .1 Clean salvaged items and pack or crate items after cleaning.
 - .2 Identify contents of containers.
 - .3 Store items in a secure area until delivery to Departmental Representative.
 - .4 Transport items to Departmental Representative's storage area designated by Departmental Representative.
 - .5 Protect items from damage during transport and storage
- .3 Removed and Reinstalled Items:
 - .1 Clean and repair items to functional condition adequate for intended re use. Paint equipment to match new equipment.
 - .2 Pack or crate items after cleaning and repairing.

- .3 Identify contents of containers.
- .4 Protect items from damage during transport and storage.
- .5 Reinstall items in locations indicated.
- .6 Comply with installation requirements for new materials and equipment.
- .7 Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- .4 Existing Items to Remain:
 - .1 Protect construction indicated to remain against damage and soiling during selective demolition.
 - .2 Items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- .5 Concrete:
 - .1 Demolish in small sections.
 - .2 Cut concrete to a depth of at least 19 mm at junctures with construction to remain, using power driven saw.
 - .3 Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition.
 - .4 Neatly trim openings to dimensions indicated.
- .6 Masonry:
 - .1 Demolish in small sections.
 - .2 Cut masonry at junctures with construction to remain, using power driven saw, then remove masonry between saw cuts.
- .7 Roofing: Remove no more existing roofing than can be covered in one day by new roofing.
- .8 Air Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 CLOSEOUT ACTIVITIES

- .1 Patching and Repairs: Promptly repair damage to adjacent construction caused by selective demolition operations and as follows:
 - .1 Patch to produce surfaces suitable for new materials where repairs to existing surfaces are required,
 - .2 Completely fill holes and depressions in remaining existing masonry walls remain with an approved masonry patching material applied according to manufacturer s written recommendations.
 - .3 Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- .2 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre) and as follows:
 - .1 Promptly dispose of demolished materials.
 - .2 Do not allow demolished materials to accumulate onsite.
 - .3 Do not burn demolished materials.

END OF SECTION

1 General

1.1 GENERAL

- .1 This section covers items common to Sections of Division 22 - Plumbing, and Division 23 - Heating, Ventilating and Air-Conditioning (HVAC). This section supplements requirements of Division 1 - General Requirements.
- .2 Additional Sections of Division 22 and 23 may be issued separately under the terms of the Standing Offer. These additional Sections are to be coordinate with this Section and shall form part of the Contract.

1.2 SUMMARY OF WORK

- .1 Work under this Contract, generally includes, but is not limited to the following:
 - .1 Supply and installation of new HVAC systems as indicated.
 - .2 Modification to existing HVAC systems as indicated.
 - .3 Supply and installation of new plumbing systems as indicated.
 - .4 Modifications to existing plumbing systems as indicated.
 - .5 Other mechanical work as indicated or specified.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for all mechanical products.
- .3 Shop Drawings:
 - .1 Indicate on drawings:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
- .4 Shop drawings and product data accompanied by:
 - .1 Acoustical sound power data, where applicable.
 - .2 Points of operation on performance curves.
 - .3 Manufacturer to certify current model production.
 - .4 Certification of compliance to applicable codes.
- .5 Equipment list:
 - .1 List of equipment and materials to be use on this project including manufacturer's name, model number and details of materials.
 - .2 Submit list for approval within ten (10) days after award of Contract.
- .6 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit Operations and Maintenance Data in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.

- .3 Operation data to include, where applicable:
 - .1 Control schematics for systems including environmental controls.
 - .2 Description of systems and their controls.
 - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for systems and component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.
- .4 Maintenance Data to include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.
- .5 Performance data to include:
 - .1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified.
 - .4 Testing, adjusting and balancing reports as specified.
- .6 Additional data:
 - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.
- .7 Site records:
 - .1 Departmental Representative will provide one (1) set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.
 - .2 Transfer information to reproducible, revising reproducibles to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
- .8 As-built drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing (TAB), finalize production of as-built drawings.
 - .2 Identify each drawing in lower right-hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED"
(Signature of Contractor) (Date).
 - .3 Submit to Departmental Representative for approval and make corrections as directed.
 - .4 Perform TAB using as-built drawings.
 - .5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.
 - .6 Submit copies of as-built drawings for inclusion in final TAB report.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Furnish spare parts as follows:
 - .1 One set of packing for each pump.
 - .2 One casing joint gasket for each size pump.
 - .3 One head gasket set for each heat exchanger.
 - .4 One glass for each gauge glass.
 - .5 One (1) filter cartridge or set of filter media for each filter or filter bank in addition to final operating set, for each applicable piece of equipment.
 - .6 As indicated.
- .3 Provide one (1) set of special tools required to service equipment as recommended by manufacturers.

1.6 PERMITS AND FEES

- .1 Obtain permits as required by Local Codes, regulations, and Authority Having Jurisdiction, including, but not limited to:
 - .1 Provincial Department of Labour.
 - .2 Provincial Fire Marshal.
 - .3 Municipal Board of Insurance Underwriters.
 - .4 Provincial Department of Health.
- .2 Provide additional products and labour required to conform to any of these regulations.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

2 Products

2.1 ACCESS DOORS

- .1 Supply access doors to concealed mechanical equipment for operating, inspecting, adjusting and servicing.
- .2 Flush mounted 600 mm x 600 mm for body entry and 300 mm x 300 mm for hand entry unless otherwise noted. Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.

- .3 Material:
 - .1 Special areas such as tiled surfaces: use stainless steel with brushed satin or polished finish as directed by the Departmental Representative.
 - .2 Remaining areas: use prime coated steel.
 - .4 Installation:
 - .1 Locate so that concealed items are accessible.
 - .2 Locate so that hand or body entry (as applicable) is achieved.
 - .3 Installation is specified in applicable sections.
 - .5 Provide access doors in ductwork to access fire dampers.
- 2.2 ANCHOR BOLTS AND TEMPLATES
- .1 Supply anchor bolts and templates required for work by other Divisions.
- 2.3 DIELECTRIC COUPLINGS
- .1 General:
 - .1 To be compatible with and to suit pressure rating of piping system.
 - .2 Where pipes of dissimilar metals are joined.
 - .2 Pipes NPS 2 and under: isolating unions.
 - .3 Pipes NPS 2-1/2 and over: isolating flanges.
- 2.4 DRAIN VALVES
- .1 Locate at low points and at section isolating valves unless otherwise specified.
 - .2 Minimum NPS 3/4 unless otherwise specified: bronze, with hose end male thread and complete with cap and chain.
- 2.5 ELECTRICAL
- .1 Electrical work to conform to Division 26 - Electrical.
 - .2 Supply and installation responsibility is indicated in mechanical and electrical specifications and on mechanical and electrical drawings as appropriate.
 - .3 Control wiring and conduit, 120V and under, shall be supplied and installed by this trade. Refer to Division 26 for quality of materials and workmanship.
- 2.6 FINISHES
- .1 Shop finish equipment by application of rust resistant primer and at least two (2) coats of finish enamel.
 - .2 Clean and prime exposed ferrous hangers, racks and fastenings to prevent rusting.
- 3 Execution
- 3.1 EXAMINATION
- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied.
 - .2 Drawings represent approximate as-built location of equipment and services.
- 3.2 PREPARATION FOR FIRESTOPPING
- .1 Uninsulated unheated pipes not subject to movement: no special preparation.
 - .2 Uninsulated heated pipes subject to movement: wrap with non-combustible smooth material to permit pipe to move without damaging firestopping material.
 - .3 Insulated pipes and ducts: ensure integrity of insulation and vapour barrier of fire separation.
- 3.3 EQUIPMENT INSTALLATION
- .1 Unions or flanges: provide for ease of maintenance and disassembly.
 - .2 Space for servicing, disassembly and removal of equipment and components: provide as recommended by manufacturer or as indicated.
 - .3 Equipment drains: pipe to floor drains.
 - .4 Install equipment, rectangular cleanouts and similar items parallel to or perpendicular to building lines.
- 3.4 REDUNDANT EQUIPMENT AND SERVICES
- .1 Remove and dispose of redundant services and equipment.
- 3.5 PAINTING REPAIRS AND RESTORATION
- .1 Prime and touch up marred finished paintwork to match original.
 - .2 Restore to new condition, finishes which have been damaged.
- 3.6 SYSTEM CLEANING
- .1 Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units.
- 3.7 FIELD QUALITY CONTROL
- .1 Site Tests: conduct following tests in accordance with Section 01 45 00 - Quality Control.
 - .1 Piping:
 - .1 General: maintain test pressure without loss for 4 hours unless otherwise specified.
 - .2 Test drainage, waste and vent piping to National Plumbing Code and departmental representative. Perform ball test on all underground drainage piping systems.
 - .3 Test domestic hot, cold and recirculation water piping at 1-1/2 times system operating pressure or minimum 860 kPa whichever is greater.
 - .2 Equipment: test as specified in relevant sections.
 - .2 Give 24 hours written notice of date for tests.
 - .3 Insulate or conceal work only after testing and approval by the departmental representative.
 - .4 Conduct tests in presence of the Departmental Representative.

- .5 Contractor is responsible for retesting and making good.
- .6 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.

3.8 DEMONSTRATION

- .1 Departmental Representative will use equipment and systems for test purposes prior to acceptance.
Supply labour, material, and instruments required for testing.
- .2 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .3 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.
- .4 Instruction duration time requirements as specified in appropriate sections.
- .5 Where specified, have manufacturers provide demonstrations and instructions.

3.9 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning:
 - .1 Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.10 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

1 General

1.1 GENERAL

- .1 This section covers items common to Sections of Division 26 - Electrical, Division 27 - Communications, and Division 28 - Electronic Safety and Security. This section supplements requirements of Division 1 - General Requirements.
- .2 Additional Sections of Division 26, 27 and 28 may be issued separately under the terms of the Standing Offer. These additional Sections are to be coordinate with this Section and shall form part of the Contract.

1.2 SUMMARY OF WORK

- .1 Work under this Contract, generally includes, but is not limited to the following:
 - .1 Supply and installation of breakers and wiring as indicated.
 - .2 Relocation of electrical equipment as indicated.
 - .3 Supply and installation of new electrical items as indicated.
 - .4 Supply and installation of new switches and receptacles as indicated.
 - .5 Supply and installation of telephone and data outlets.
 - .6 Other electrical, communications, and security work as indicated or specified.

1.3 REFERENCE STANDARDS

- .1 CSA Group.
 - .1 CSA C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations, latest edition.
 - .2 CSA C22.3 No. 1, Overhead Systems, latest edition.
 - .3 CSA C235, Preferred Voltage Levels for AC Systems up to 50,000 V, latest edition.
- .2 Electrical Equipment Manufacturers Association of Canada (EEMAC).
 - .1 EEMAC Y1-1, Equipment Green Colour for Outdoor Electrical Equipment, latest edition.
 - .2 EEMAC 2Y-1, Light Gray Colour for Indoor Switch Gear, latest edition.
- .3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC).
 - .1 IEEE SP1122, The Authoritative Dictionary of IEEE Standards Terms, latest

1.4 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.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for all electrical products.

- .3 Shop drawings:
 - .1 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.
 - .2 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .3 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
- .4 Certificates:
 - .1 Submit test results of installed electrical systems and instrumentation.
 - .2 Permits and fees: in accordance with General Conditions of contract.
 - .3 Submit, upon completion of Work, load balance report as described in Article 3.8 - Field Quality Control.
 - .4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.
- 1.6 CLOSEOUT SUBMITTALS
 - .1 Submit Operation and Maintenance Data in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.
 - .3 Data to include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.
- 1.7 PERMITS AND FEES
 - .1 Submit necessary number of drawings and specifications for examination and approval to local Electrical Inspection Department, prior to commencement of work.
 - .2 Departmental Representative will, at no cost, provide Contractor with drawing and specifications required by local Electrical Inspection Department.
 - .3 Notify Departmental Representative of changes required by local Electrical Inspection Department prior to making changes.
- 1.8 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
 - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.9 QUALIFICATIONS

- .1 Electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentice's program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks - the activities permitted shall be determined based upon the level of training attained and demonstration of ability to perform specific duties.
- .2 Work of this Division to be carried out by a Contractor who holds a valid Master Electrical contractor license as issued by the Province in which the Work is being constructed.

2 Products

2.1 DESIGN REQUIREMENTS

- .1 Operating voltages: to CSA 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 labels or nameplates for control items in English and French.

2.2 MATERIALS AND EQUIPMENT

- .1 Provide in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in Article 1.5 - Action and Informational Submittals.
- .3 Factory assemble control panels and component assemblies.

2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Verify installation and coordination responsibilities related to motors, equipment and controls, as indicated.
- .2 Control wiring and conduit: in accordance with Division 26 - Electrical, except for conduit, wiring and connections below 50 V which are related to control systems specified in mechanical sections.

2.4 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of Departmental Representative and authority having jurisdiction.
- .2 Decal signs, Minimum size 175 mm x 250 mm.

2.5 WIRING

- .1 Wiring: copper, RW90 unless indicated otherwise.
 - .1 Branch wiring: No. 12 AWG up to 21.4 m and No. 10 AWG from 21.5 m to 36.6 m.
- .2 Calculate voltage drop at 3%.
- .2 Surface mounted wiring shall be in Wiremold.
 - .3 Install cables neatly, parallel to building lines. Support in accordance with Canadian Electrical Code.

2.6 WIRING TERMINATIONS

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

2.7 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with labels and nameplates as follows:
 - .1 Nameplates: lamacoid 3 mm thick plastic engraving sheet, matt white finish face, black core, mechanically attached with self-tapping screws.
 - .2 Sizes as follows:

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

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates and labels to be in English and French, and 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, voltage and power source designation.
- .7 Terminal cabinets and pull boxes: indicate system and voltage.

2.8 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, 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.

2.9 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.

| Type | 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 |
| Other Security Systems | Red | Yellow |

2.10 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two (2) coats of finish enamel.
 - .1 Paint outdoor electrical equipment "equipment green" finish to EEMAC Y1-1.
 - .2 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1.
- .2 Clean and prime exposed ferrous hangers, racks and fastenings to prevent rusting.

3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.
- .2 Drawings represent approximate as-built locations of equipment and services.

3.2 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.

3.3 TEMPORARY SERVICES

- .1 Be responsible for maintaining all electrical services in safe operating conditions at all times.
- .2 Temporary wiring and service shall comply with requirements of Canadian Electrical Code and all authorities having jurisdiction.

3.4 NAMEPLATES AND LABELS

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

3.5 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete.
 - .1 Sleeves through concrete: schedule 40 steel pipe, plastic, or sheet metal, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.
- .4 Cabling installation shall be done under a communication cabling permit issued by local electrical inspection department and by holding a communications cabling specialist certificate recognized by the Newfoundland and Labrador Department of Labour.

3.6 LOCATION OF OUTLETS

- .1 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
- .2 Change location of outlets, providing distance does not exceed 3000 mm, and information is given before installation.
- .3 Locate light switches on latch side of doors.
 - .1 Locate disconnect devices in mechanical and elevator machine rooms on latch side of floor.

3.7 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centerline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Install electrical equipment at following heights unless indicated otherwise.
 - .1 Local switches: 1400 mm.
 - .2 Wall receptacles:
 - .1 General: 300 mm.
 - .2 Above top of continuous baseboard heater: 200 mm.
 - .3 Above top of counters or counter splash backs: 175 mm.
 - .4 In mechanical rooms: 1400 mm.
 - .3 Panelboards: as required by Code or as indicated.
 - .4 Telephone and interphone outlets: 300 mm.
 - .5 Wall mounted telephone and interphone outlets: 1500 mm.

- .6 Fire alarm stations: 1500 mm.
- .7 Fire alarm bells: 2100 mm.
- .8 Television outlets: 300 mm.
- .9 Wall mounted speakers: 2100 mm.
- .10 Clocks: 2100 mm.
- .11 Doorbell pushbuttons: 1500 mm.

3.8 CO-ORDINATION OF PROTECTIVE DEVICES

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

3.9 PAINTING REPAIRS AND RESTORATION

- .1 Prime and touch up marred finished paintwork to match original.
- .2 Restore to new condition, finishes which have been damaged.

3.10 FIELD QUALITY CONTROL

- .1 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
 - .3 Provide upon completion of work, load balance report as directed in Article 1.5 - Action and Informational Submittals, phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .2 Conduct the following tests:
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .1 Panels shall be balanced within 5% of load per phase.
 - .2 Grounding shall be as required by the Canadian Electrical Code.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and its control.
 - .4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
 - .5 Systems: fire alarm and communications.
 - .6 Insulation resistance testing:
 - .1 Check resistance to ground before energizing.
- .3 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed in accordance with manufacturer's instructions.
- .4 Carry out tests in presence of Departmental Representative. Provide five (5) days written notice to Departmental Representative prior to performing tests.
- .5 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .6 Submit test results for Departmental Representative and approval.

3.11 SYSTEM START-UP

- .1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems, system equipment and components. Provide five (5) days written notice to Departmental Representative prior to providing instructions.
- .2 Contractor is responsible 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 with aspects of its care and operation.

3.12 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 32 01 11.02 - Pavement Crack Cleaning and Filling.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for each type of abrasives and solvent used on project.

.2 Submit copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Packaging Waste Management: remove for reuse and return of pallets, packaging materials, and crates as specified in Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

2 Products

2.1 MATERIALS

.1 Abrasives and solvents used for removal of paint, oil, grease, rubber deposits: proprietary products specially designed for pavement cleaning, subject to approval by Departmental Representative.

3 Execution

3.1 REMOVING PAVEMENT MARKINGS

.1 Remove rubber tire deposits and paint markings, in areas indicated or as directed by Departmental Representative, by blasting, rotary grinding, heater planing or other method approved in writing by Departmental Representative.

.2 Exercise care to avoid dislodging of coarse aggregate particles, excessive removal of fines, damage to bituminous binder, and damage to joint and crack sealers.

.3 Do not heat pavement surfaces above 120°C, when using heater planing equipment.

3.2 PAVEMENT SURFACE CLEANING

.1 Remove sealing compound which has protruded excessively, where indicated or as directed by Departmental Representative.

.1 Dispose of removed material as directed by Departmental Representative.

.2 Remove dust, contaminants, loose and foreign materials, oil and grease, in areas indicated or as directed by Departmental Representative, and by method approved in writing by Departmental Representative.

.3 Use rotary power brooms or vacuum sweepers, supplemented by hand brooming.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling or reuse in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 02 41 13.13 - Paving Removal.
- .2 Section 32 12 16 - Asphalt Paving.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM C117, Standard Test Method for Material Finer Than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing, latest edition.
 - .2 ASTM C136/C136M, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, latest edition.
 - .3 ASTM D977, Standard Specification for Emulsified Asphalt, latest edition.
 - .4 ASTM D2397/D2397M, Standard Specification for Cationic Emulsified Asphalt, latest edition.
 - .5 ASTM D2419, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate, latest edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for cleaning and filling materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 If requested by Departmental Representative, submit samples of materials proposed for use two (2) weeks before beginning Work.
 - .1 One (1) 4 L container of asphalt material. Submit emulsions in plastic container.
 - .2 One (1) 20 kg sample of each aggregate gradation.
 - .2 Provide access for Departmental Representative to sample materials actually incorporated into Work as required.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return of pallets, packaging materials, and crates as specified in Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

2 Products

2.1 MATERIALS

- .1 Emulsified asphalt: to ASTM D2397/D2397M, Grade CRS-1 or ASTM D977, Grade SS-1.
- .2 Aggregate for crack filling: material to following requirements:
 - .1 Screened sand or screenings.
 - .2 Gradations to be within limits specified when tested to ASTM C136/C136M and ASTM C117.
 - .3 Table:

| Sieve Designation | % Passing |
|-------------------|------------------------------------|
| | Sand-asphalt slurry using emulsion |
| 12.5 mm | - |
| 9.5 mm | - |
| 4.75 mm | - |
| 2.00 mm | 100 |
| 0.425 mm | 30-55 |
| 0.180 mm | 12-30 |
| 0.075 mm | 3-12 |

- .4 Sand equivalent: to ASTM D2419, not less than 45%.
- .5 Mixing water: potable.

2.2 EQUIPMENT

- .1 Pressure applicator capable of applying slurry at 100 kPa from nozzle arrangement.
- .2 Manual pouring cones.
- .3 Hand tools.
- .4 Mechanical rotary routers specifically designed for following random irregular cracks without tearing, chipping or spalling edge and capable of producing clean, vertical side walls. Open "V" type grooves not permitted.

2.3 MIXES

- .1 Prepare sand asphalt slurry with following proportions:
 - .1 50 kg of aggregates.
 - .2 10 L to 16 L of asphalt material as determined by Departmental Representative.
 - .3 Water to produce uniform mix of consistency to achieve full penetration into cracks.
- .2 Hot mix asphalt concrete: in accordance with Section 32 12 16 - Asphalt Paving.

3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for pavement crack cleaning and filling in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

- .1 Clean cracks designated by Departmental Representative.
- .2 Remove existing sealer and loose materials, if present:
 - .1 From spalled edges and pavement surface.
 - .2 To minimum depth of 50 mm.
 - .3 Open "V" type grooves not permitted.
- .3 Rout designated cracks to width approved by Departmental Representative.
- .4 Rout designated cracks to depth between 25 mm and 30 mm.
 - .1 Clean cracks larger than 2 mm and less than 25 mm as directed by Departmental Representative.
 - .2 Rout cracks between 2 mm and 10 mm to minimum width of 10 mm and depth of 20 mm below pavement surface.
 - .3 Rout cracks over 10 mm to less than 25 mm to width of 25 mm to 30 mm and depth of 25 mm below pavement surface.
- .5 Clean loose material from cracks with oil free compressed air applied at pressure not less than 600 kPa.
- .6 Apply soil sterilant in crack prior to placing filler material.
- .7 Dispose of material removed from cracks as directed by Departmental Representative.

3.3 CRACK FILLING

- .1 Ensure cracks are clean and dry immediately before filling.
- .2 Fill cracks designated and approved by Departmental Representative.
- .3 Do not use frozen aggregate.
- .4 Fill cracks when air temperature is above 10°C.
 - .1 When daily low temperature does not fall below 5°C.
 - .2 When no rain is forecast.
- .5 Finishing:
 - .1 For cracks routed to width of 10 mm: place joint sealant 2 mm to 4 mm above pavement surface to provide an overband seal over crack.
 - .1 Ensure sealant overlaps both sides of crack by 40 mm minimum and 80 mm maximum.
 - .2 For cracks routed to width of 25 mm to 30 mm: place joint sealant to ensure that upon cooling, sealant is recessed 2 mm below pavement surface.

- .6 Fill and tamp cracks with sufficient applications to ensure cured fill material is level with pavement surface.
- .7 Fill cracks wider than 50 mm with hot mix asphalt concrete and tamped, immediately before placement of asphalt concrete overlay, where and when approved in writing by Departmental Representative.
- .8 Slightly overfill entire crack reservoir with filler material. Smooth with narrow V-shaped squeegee immediately after placement of filler material on each side of crack to within 25 mm as directed by Departmental Representative.
- .9 Remove and dispose of excess filling material as directed by Departmental Representative.
- .10 Road lanes to be opened to traffic only after filler material has set sufficiently that it will not pick up under traffic. Blotting material may be applied to filler material after surface has set.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 01 11.01 - Pavement Cleaning and Marking Removal.
- .2 Section 32 01 11.02 - Pavement Crack Cleaning and Filling.

1.2 REFERENCE STANDARDS

- .1 American Association of State Highway and Transportation Officials (AASHTO).
 - .1 AASHTO M320, Standard Specification for Performance Graded Asphalt Binder, latest edition.
 - .2 AASHTO R29, Standard Specification for Grading or Verifying the Performance Graded of an Asphalt Binder, latest edition.
- .2 Newfoundland and Labrador Transportation and Infrastructure
 - .1 Standard Specification for Highway Construction, latest edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling.
 - .2 If requested by Departmental Representative, submit samples of following materials proposed for use a minimum one (1) week prior to commencing work:
 - .1 One (1) 5 L container of asphalt cement.
 - .2 If material have been tested by an independent testing laboratory within previous two (2) months and have successfully passed tests equal to requirements of this specification, submit test certificates from testing laboratory showing suitability of materials instead of submitting sample.
- .3 Mix design:
 - .1 Submit asphalt concrete mix.
- .4 Test results:
 - .1 Submit previous test result of the proposed materials.

2 Products

2.1 MATERIALS

- .1 Materials: to NSDTIR Standard Specification for Highway Construction.
- .2 Asphalt concrete: to NSDTIR, Mix type D.
 - .1 Do not change mix design without prior approval from Departmental Representative.
 - .2 Should change in material source be proposed, provide new mix design to Departmental Representative.
- .3 Asphalt cement: to AASHTO M320, grade PG 58-34 when tested to AASHTO R29.
- .4 Traffic paint: to NSDTIR, waterborne, yellow or white as selected by Departmental Representative.

3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt paving in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PLANT AND MIXING REQUIREMENTS

- .1 Plant and mixing requirements to be in accordance with NSDTI Standard Specifications for Highway Construction.

3.3 TRANSPORTATION AND PLACING

- .1 Transportation, placing and compaction requirements to be in accordance with NSDTIR Standard Specifications for Highway Construction.
- .2 Place asphalt concrete to depths, widths and lines indicated or as directed by Departmental Representative.

3.4 PAVEMENT THICKNESS

- .1 An average thickness of 75 mm will be place over new granular base material in two (2) lifts.
- .2 Finish tolerance: finished asphalt surface to be within 5 mm of design elevation, but not uniformly high or low.
 - .1 Finished asphalt surface not to have irregularities exceeding 5 mm when check with 4 m straight edge place in any direction.

3.5 TRAFFIC MARKINGS

- .1 Paint parking space divisions and other pavement markings in accordance with manufacturers recommendations and as indicated.
- .2 Thin in accordance with manufacturer's requirements.

3.6 DEFECTIVE WORK

- .1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required.
 - .1 If irregularities or defects remain after final compaction, remove surface course promptly and lay new material to form true and even surface and compact immediately to specified density.
- .2 Repair areas showing checking, rippling, or segregation.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION