

## **1.1 DESCRIPTION OF WORK**

- .1 Site of Work is located at: Canadian Coast Guard College, 1190 Westmount Road, Sydney, Nova Scotia, B1R 2J6.
- .2 Work under this contract comprises of the replacement of the welding lab exhaust system in the Louis S. St. Laurent (LSSL) building (MET) at the Canadian Coast Guard College (CCGC) in Sydney, NS. This includes, but is not limited to, the following items:
  1. Supply and install new weld capture exhaust system in Machine Shop Welding Lab Room at the Canadian Coast Guard College, Sydney, NS. In general, work under the contract to include but not limited to:
    - .1 Supply and install one new cartridge style dust collector.
    - .2 Supply and install new cartridge style dust collector's associated exhaust fan, weld fume extraction arms, mounting brackets, mounting support stanchions structural supports, blast gates, exhaust fan silencer, starters and controls, compressed air piping, sprinkler piping and connection, ductwork, safety return HEPA filter, solenoid valves, pipe hangers, duct hangers, etc...
    - .3 Supply and install controls and electrical wiring and conduit for new system equipment.

## **1.2 FAMILIARIZATION**

- .1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the Work.

## **1.3 CODES AND STANDARDS**

- .1 Perform work in accordance with the 2010 National Building Code of Canada and any other code of provincial or local application, including all amendments up to bid closing date, provided that in any case of conflict or discrepancy, the more stringent requirement shall apply.
- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

#### **1.4 INTERPRETATION OF DOCUMENTS**

- .1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

#### **1.5 TERM ENGINEER**

- .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.

#### **1.6 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.
- .4 Supply stakes and other survey markers required for laying out work.

#### **1.7 COST BREAKDOWN**

- .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Required forms will be provided for application of progress payment.
- .2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.
- .3 Upon approval, cost breakdown will be used as basis for progress payment.

#### **1.8 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each of the following:
  - .1 Contract Drawings
  - .2 Specifications
  - .3 Addenda
  - .4 Reviewed Shop Drawings
  - .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 Other documents as stipulated elsewhere in the Contract Documents.

## **1.9 PERMITS**

- .1 In accordance with the General Conditions, obtain and pay for building permit, certificates, licenses and other permits as required by municipal, provincial and federal authorities.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
- .4 Submit to Departmental Representative, copy of application forms and approval documents received from above referenced authorities.

## **1.10 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 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .3 Where elevators, dumbwaiters, conveyors or escalators exist in building, only those assigned for Contractor's use may be used for moving workers and material within building. Protect walls of passenger elevators, to approval of Departmental Representative prior to use. Accept liability for damage, safety of equipment and overloading of existing equipment.
- .4 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas which will be operative during such work.

## **1.11 ROUGHING - IN**

- .1 Be responsible for obtaining manufacturer's literature and for correct roughing-in and hook-up of equipment, fixtures and appliances.

## **1.12 CUTTING, FITTING AND PATCHING**

- .1 Ensure that cutting and patching required by all trades is included in total bid price submitted for the work.
- .2 Execute cutting, including excavation, fitting and patching required to make work fit properly.
- .3 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.
- .4 Do not cut, bore, or sleeve load-bearing members, except where specifically approved by Departmental Representative.

- .5 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .6 Fit work airtight to pipes, sleeves ducts and conduits.

### **1.13 CONCEALMENT**

- .1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

### **1.14 LOCATION OF FIXTURES**

- .1 Location of equipment, fixtures and outlets, shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

### **1.15 EXISTING SERVICES**

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian, vehicular traffic, tenant operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.

### **1.16 BILINGUAL NOTATION**

- .1 Any items supplied and installed under these contacts which have operating instructions on them such as door hardware, washroom accessories, push button activation controls powered hand dryers, mechanical equipment such as water coolers, etc., and which can be expected to be used by the public and building tenants, must have such operating instructions on bilingual format – English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operations is an acceptable alternate to lettering.
- .3 Items supplied with factory – embossed recessed lettering of one official language with applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized colour coding such as red and blue center pieces for plumbing brass is acceptable.

- .5 No extras costs will be paid for re-stocking or re-ordering of materials and equipment due to Contractor's failure to fully meet bilingual signage requirements specified herein
- .6 Ensure that all trades are made aware of above requirements.

**1.17 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions.

**1.18 ASBESTOS DISCOVERY**

- .1 Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of work, stop work and notify Departmental Representative immediately. Do not proceed with relevant work until written instructions have been received from Departmental Representative.

**1.19 CONTRACTOR'S SITE OFFICE**

- .1 Office space adjacent to the work site will be provided to the contractor for their use at no cost. Contractor to ensure space is kept clean and returned to CCGC in same condition. Contractor to provide own equipment. There is no space available for site trailer. Space can be made for tool crib if requested.

END

## 1.1 SUBMITTALS

- .1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
  - .1 Work Schedule as specified herein.
  - .2 Shop Drawing Submittal Schedule specified in section 01 33 00.
  - .3 Waste Management Plan specified inspection 01 74 21.
  - .4 Environmental Plan specified in section 01 35 43.
  - .5 Health and Safety Plan specified inspection 01 35 29.
  - .6 Hot Work Procedures specified in section 01 35 24.
  - .7 Lockout Procedures specified in section 01 35 25.
  - .8 Dust Control Plan specified in section 01 50 00.
  - .9 List of workers requiring security clearance and those to be placed on Site Security Control list as specified in section 01 35 54.
  - .10 Project cost breakdown.

## 1.2 WORK SCHEDULE

- .1 Upon acceptance of bid submit:
  - .1 Detailed work schedule within 7 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .4 Work schedule content to include as a minimum the following:
  - .1 Written narrative on key elements of work illustrated in bar chart, providing implementation plan for completion of project within designated time.
  - .2 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .5 Work Schedule must take into consideration and reflect the work phasing, required sequence of work, special conditions and operational restrictions as specified below and indicated on drawings.
- .6 Schedule work in cooperation with the Departmental Representative. Incorporate within Work Schedule, item identified by Departmental Representative during review of schedule.
- .7 Completed schedule shall be approved by Departmental representative. When approved, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.

- .8 Ensure that all subtrades and subcontractors are made aware of the work restraints and operational restrictions specified.
- .9 Schedule Updates:
  - .1 Submit on a when requested basis by Departmental Representative.
  - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
  - .3 Identify problem areas, anticipated delays, impact on schedule and proposed corrective measures to be taken.
- .10 Departmental Representative will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
- .11 In every instance, change or deviation from the Work Schedule, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.

### **1.3 PROJECT PHASING**

- .1 Contractor is to develop a construction schedule with Departmental Representative prior to performing work. Be aware that Facility and tenants must be kept operational for the full duration of work of this contract. Building services to areas under use by tenants must also be maintained at all times during the Facility's operational hours and as specifically defined in operational restrictions specified in this section.

### **1.4 OPERATIONAL RESTRICTIONS**

- .1 The Contractor must recognize that building occupants will be affected by implementation of this contract. The Contractor must perform the work with utmost regard to the safety and convenience of building occupants and users. All work activities must be planned and scheduled with this in mind. The Contractor will not be permitted to disturb any portion of the building without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise affected areas, unless directed otherwise by Departmental Representative.
- .2 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
- .3 Canadian Coast Guard College operates 24 hours a day, 7 days a week and 365 days a year. The campus houses classrooms, faculty and administration offices, residences, laboratories, food services, recreation facilities and marine facilities. In addition, the Canadian Coast Guard operates a Marine Communication and Traffic Service center on the campus, providing essential vessel safety services for the Gulf of St. Lawrence. Classroom hours are generally 8am until 4pm, Monday to Friday, excluding Statutory holidays. Shutdowns of any systems that impact operations of the campus must be scheduled and approved by the Departmental Representative two weeks in advance so that notices to CCGC staff and students can be circulated. Shutdowns will generally be

scheduled to occur after 5pm and before 7am on weekdays or anytime on weekends. Schedules must be updated weekly. Contractors' schedules will be weekly. Contractors' schedules will be circulated to CCGC security and DFO by PSPC when approved as notice of work anticipated for the following two weeks. To assure that construction work may proceed productively without risk to safety of the building occupants and the public, and due to the nature of the tenant's operation be aware that certain work of this contract must be carried out during "off-Hours".

- .4 Off Hours: means a period of time which is outside the daily operational hours of the tenants of the Facility. For purposes of this contract, off-Hours are defined as follows:
  - .1 Weeknights Off-Hours: between the hours of 17:00 and 07:00 for each weekday Monday to Thursday inclusive.
  - .2 Weekend Off-Hours: between the hours of 17:00 Friday to 07:00 Monday morning.
  - .3 Dependent on the nature and location of the construction activity and due to an unanticipated operational requirement of the Tenant, certain off-hour periods may be redefined by adjusting the start and end time periods or cancellation of a specific off-hour workshift during the course of the Work.
- .5 The following work shall be performed during Off-Hours:
  - .1 Work which requires the use of products controlled by WHIMIS and for which MSDS sheets indicate toxic or hazardous materials requiring special handling and application procedures;
  - .2 Use of materials having high solvent content or other content emitting strong noxious fumes or odors;
  - .3 Cleaning and preparing of occupied areas for daytime use by tenants immediately following an off-hour workshift;
  - .4 Work within a tenant occupied area including corridors, stairwells and other circulation routes under use.
  - .5 Work which requires the temporary disconnection of power and communication services to occupied areas,
  - .6 Testing of fire alarms and other emergency annunciating systems;
  - .7 Work which creates excessive noise or vibration creating interference with tenant operations.
- .6 Departmental Representative reserves the right to stop certain daytime work activities, if the nature of that activity generates excessive noise or duct and have Contractor re-schedule that particular work to be performed during the Off-Hour period.
- .7 Ensure that all are aware of the "Off-Hour" requirements of this contract and ensure that any extra costs incurred as a result is included in the Contractor's bid price for the work. No extra cost will be paid due to failure by General Contractor or is sub-contractors to recognize the off-hour requirements and other restrictions specified herein and to include all necessary allowances within their bids
- .8 See section 01 35 54 Site Security Requirements in regards to:
  - .1 Special security requirements which must be observed in the course of work.
  - .2 Provision of security personnel by contractor as part of the work.

- .9 Facility circulation maintained:
- .1 Ensure that entrances, corridors stairwells, fire exits and other circulation routes are maintained free and clear providing safe and uninterrupted passages for Facility users and public at all times during the entire work.
  - .2 Maintain those areas clean and free of construction materials and equipment. Provide temporary dust barriers and other suitable enclosures to ensure users are not exposed to construction activities and are protected from exposure to dust, noise and hazardous conditions.
  - .3 Maintain fire escape routes accessible and fire fighting access open all times for duration of the project.
  - .4 Do not under any circumstances block fire exit door. Do not leave construction materials or debris in corridors, stairwells, building entrances and exits.
- .10 Safety Signage:
- .1 Provide on site, and erect as required during progress of work, proper bilingual signage, mounted on self-supporting stands, warning the public and building occupants of construction activities in progress and alerting need to exercise caution in proceeding through disturbed areas of the facility, and directing building occupants through any detours which may be required.
  - .2 Signage to be professionally printed and mounted on wooden backing, coloured and to express messages as directed by the Departmental Representative.
  - .3 Generally maximum size of sign should be in the order of 1.0 square meters. Number of signs required will be dependent on number of areas in facility under renovation at any one time.
  - .4 Include costs for the supply and installation of these signs in the bid price.
- .11 Dust and Dirt Control:
- .1 See section 01 50 00 – Temporary Facilities and Control and 01 74 11 - Cleaning for dust control and cleaning requirements.
  - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental Representative before undertaking work, especially for major dust generating activities.
  - .3 Do not allow demolition debris and construction waste to accumulate on site and contribute to the propagation of dust.
  - .4 As work progresses, maintain construction areas in a tidy condition at all times. Remove gross dust accumulations by cleaning and vacuuming immediately following the completion of any major dust generating activity.
  - .5 Immediately remove all debris and dust from within occupied areas as generated by work therein during a given work shift.
  - .6 Disconnect and seal-off ductwork of HVAC servicing the construction area to stop spread of dust into other areas of Facility.
  - .7 Avoid situations and practises which results in dust and dirt being brought from the construction areas or from the exterior and tracked inside the building into occupied areas used by tenants and the public.
  - .8 Stop workers with soiled footwear from entering building. This includes roofing mechanics and heavy civil workers.

- .9 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
- .10 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.
- .12 Work in Occupied Areas:
  - .1 Where work must be carried out in an occupied area beyond the boundaries of the enclosed construction site, perform such work during the non-operational off-hour periods of the Facility.
  - .2 Ensure that all dust, dirt, debris, construction waste, materials, tools and equipment are completely removed at the end of each "off-hour" work shift. Clean and reinstate area ready for daytime use by tenant.
  - .3 Provide temporary dust barriers around immediate work areas and place fabric drop sheets over workstations, equipment and other furnishings located immediately adjacent to such work.
  - .4 Conduct work in such a way as to minimize the creation of dust and to avoid contaminating areas beyond the immediate location.
  - .5 Discuss and obtain Departmental Representative's approval beforehand on the type and extent of dust barriers, protective devices and measures needed.
  - .6 Be responsible for temporarily moving office furnishings, workstations, computer equipment and other objects as needed to gain access and conduct work. Reinstall all dislocated items at end of each work shift making the area operational again
  - .7 Disconnect and reconnect any power and communications systems feeding workstations as required
  - .8 Clean such areas as well as those corridors and routes used to gain entry and access.
- .13 Cleaning of tenant occupied areas used by Contractor:
  - .1 Clean lobbies, corridors, stairs and other circulation routes used by workers to gain access to work by conducting cleaning, vacuuming and washing of floors, walls another soiled surfaces.
  - .2 Meager attempts at controlling dust and ineffective unprofessional cleaning procedures will not be tolerated.
  - .3 Failure to provide effective dust control, allowing construction dust and dirt to escape beyond construction areas and contaminate occupied areas and building circulation areas will result in Contractor being ordered to immediately provide professional cleaning services without delay to remedy the situation and conduct all cleaning to the extent as determined by Departmental Representative. Alternatively, Departmental Representative may, at certain times and at own discretion, obtain the services of an independent building cleaning agency when cleaning being provided by Contractor is ineffective or tardy in response. Costs of such services will be charged against Contractor in the form of financial penalties or holdback assessments against the Contract.
- .14 Ensure that all sub-trades are made aware of and abide by the contents of this section and in particularly the work restrictions specified herein due to tenant operational requirements.

## **1.5 PROJECT MEETINGS.**

- .1 Schedule and administer project meetings, held on a minimum weekly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing 4 days in advance of meeting date..
  - .1 Ensure attendance of all subcontractors.
  - .2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.
- .5 Preside at meetings and record minutes
  - .1 Indicate significant proceedings and decisions. Identify action items by parties.
  - .2 Distribute to participants by email or in PDF format within 3 calendar days after each meeting.
  - .3 Make revisions as directed by Departmental representative.

## **1.6 WORK COORDINATION**

- .1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.
  - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
  - .1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
  - .2 Develop coordination drawings when deemed required illustrating potential interference between work of various trades and distribute to all affected parties including structural trade.
    - .1 Pay particular close attention to overhead work above ceilings and within or near to building structural elements.
    - .2 Coordination drawings to identify all buildings elements, services lines, rough-in points and indicate from where various services are coming.
  - .3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.
  - .4 Plan and coordinate work in such a way to minimize quantity of service line offsets.
  - .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.

- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
  - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
  - .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.
- .5 No extra costs to the Contract will be considered by the Departmental Representative as a result of Contractor's failure to effectively coordinate all portions of the Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor to be resolved at own cost.

## **1.7 OTHER CONTRACTS**

- .1 Another contract will be in progress at the site during the course of this work.
- .2 The project title and subject matter of these contracts are:
  - .1 Campus Roof Replacement.
  - .2 LSSL Solar Wall.
- .3 The General Contractors are to be determined.
- .4 Further contracts may be let during the period that this contract is in progress.
- .5 Cooperate with other Contractors in carrying out their respective works and carry out all instructions from the Departmental Representative in this regard.
- .6 Connect properly and coordinate work with that of other Contractors, if required. If any part of the work under this Contract depends for its proper execution or result upon the work of another Contractor, report promptly to the Departmental Representative, in writing, any defects in the work of such other Contractors as may interfere with the proper of this work.

END

**PART 1 GENERAL**

**1.1 GENERAL**

- .1 The Lump Sum prices are full compensation for the work necessary to complete each item in the Contract in the Form of Tender. The prices bid are complete and separate from other or related bid items.
- .2 In the case of a conflict between the instructions for measurement and payment contained in Section 01 22 00 and another Section of the Specifications, the requirements of Section 01 22 00 shall govern.
- .3 No separate payment will be made for:
  - .1 Unauthorized work beyond the limits shown.
  - .2 Contractor's specified Quality Control testing.
  - .3 Layout of work.

**1.2 LUMP SUM WORK**

- .1 The tendered price lump sum work includes all items listed within the specification and drawings. Price includes all labour, materials and equipment for complete supply and installation of the work.
- .2 Mobilization/Demolition including all equipment, temporary facilities, security, maintenance, cleaning of site, securing all necessary regulatory permits, insurance and bonding, and establishing health and safety protocol.
- .3 All demolition, material disconnection/reconnection, site excavation, construction, building renovation, repairs and improvements, and site restoration and landscaping, as contained in the specification.

**PART 2 PRODUCTS**

**2.1 NOT USED**

**PART 3 EXECUTION**

**3.1 NOT USED**

END

## **1.1 RELATED SECTIONS**

- .1 Section 01 45 00 - Testing and Quality Control.
- .2 Section 01 78 00 - Closeout Submittals.

## **1.2 SUBMITTAL GENERAL REQUIREMENTS**

- .1 Submit to Departmental Representative for review requested submittals specified in various sections of the specifications including shop drawings, samples, permits, compliance certificates, test reports, work management plans and other data required as part of the work.
- .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with work until relevant submissions have been reviewed.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, provide soft converted values.
- .6 Review submittals prior to submission. Ensure that necessary requirements have been determined and verified and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
  - .1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .9 Contractor's responsibility for errors, omissions or deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .10 Submittal format: a project SharePoint site has been developed by PSPC for DFO. Shop Drawings, Submittals, schedules, record drawings, commissioning reports, etc., will be uploaded by the contractor to the site, for review and approvals by designers, PSPC resources and DFO personnel. Non-legible submittals or facsimiles will not be accepted and be returned for resubmission. Electronic submittals are to be in Portable Document Format (PDF). Each submission is to be issued as a separate file. PDF submittals to be generated at a suitable scanned resolution so that it can be read easily and interpreted without ambiguity. Optimize the file size to allow for reasonable electronic transmission while maintaining clarity at the drawing.

- .11 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, identify in writing of any revisions other than those requested.
- .12 Keep one reviewed copy of each submittal document on site for duration of Work.

### **1.3 SHOP DRAWINGS AND PRODUCT DATA**

- .1 The term "shop drawings" means fabrication drawings, erection drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures, specifications, test reports installation instructions and other data which are to be provided by Contractor to illustrate compliance with specified materials and details of a portion of work.
- .2 Shop Drawing Quantities:
  - .1 Ensure sufficient hard copies are printed to enable one complete set to be included in each of the maintenance manuals specified in 01 78 00 – Closeout Submittals.
- .3 Shop Drawings Format:
  - .1 Opaque white scans of drawings, in PDF of original drawings or standard drawings to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x707 mm. PDF to be scanned at a resolution so that it can be easily interpreted.
  - .2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project. Scans are acceptable.
  - .3 Non or poorly legible drawings, files, scans, photocopies or facsimiles will not be accepted and returned not reviewed.
- .4 Shop Drawings Content:
  - .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work has been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
  - .2 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
  - .3 Delete information not applicable to project on all submittals.
  - .4 Equipment installation/start-up data: include manufacturer's recommended installation instructions, pre-start and start-up checklists for those pieces of equipment and systems designated to be commissioned as specified in section 01 91 13 –General Commissioning Requirements.
- .5 Allow 14 calendar days for Departmental Representative's review of each submission.

- .6 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
- .7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.
- .8 Be advised that costs and expenses incurred by Departmental Representative to conduct more than one review of incorrectly prepared shop drawing submittal for a particular material, equipment or component of work may be assessed against the Contractor in the form of a financial holdback to the Contract.
- .9 Accompany each submission with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and project number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .10 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and project 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 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
  - .6 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.
- .11 After Departmental Representative's review, distribute copies.

The review of shop drawings by the Departmental Representative or by an authorized Consultant or designate is for sole purpose of ascertaining conformance with general

concept. This review shall not mean that the client approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

#### **1.4 SAMPLES**

- .1 Submit for review samples as specified in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples to Departmental Representative's office or to other address as directed. Do not drop off samples at construction site except for pre-approved circumstances previously approved by 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 a full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments will result in a cost increase to the Contract notify Departmental representative in writing prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted sampled will become standard of workmanship and material against which installed work will be verified

END

## **1.1 RELATED SECTIONS**

- .1 Section 01 35 29: Health and Safety Requirements.

## **1.2 REFERENCES**

- .1 Fire Protection Standards issued by Fire Protection Services, Labour Program Division of Service Canada:
  - .1 FCC No. 301-June 1982 Standard for Construction Operations.
  - .2 FCC No. 302-June 1982 Standard for Welding and Cutting.
- .2 FCC standards may be viewed at: [http://www.hrsdc.gc.ca/eng/labour/fire\\_protection/policies\\_standards/commissioner/inde.shtml](http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/inde.shtml)
  - .1 Fire Protection Services - Atlantic Region office, Halifax, N.S, Tel. 902-426-6053.

## **1.3 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 Use of open flame torches such as for roofing work.

## **1.4 SUBMITTALS**

- .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.
- .2 Submit in accordance with section 01 33 00 – Submittal Procedures..

## **1.5 FIRE SAFETY REQUIREMENTS**

- .1 Implement and follow fire safety measures during Work. Comply with following:
  - .1 National Fire Code.
  - .2 Fire Protection Standards FCC 301 and FCC 302.
  - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

## **1.6 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 typewritten Hot Work Procedures to be followed on site as specified below.
  - .2 Description of the type and frequency of Hot Work required.
  - .3 Sample Hot Work Permit to be used.
- .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 a separately 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 tenant occupied Facility, coordinate performance of Hot Work with Facility 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.

## **1.7 HOT WORK PROCEDURES**

- .1 Develop and implement safety procedures and work practises 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 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. Label document as being the Hot Work Procedures for this contract.
- .4 Procedures shall clearly establish 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.

## **1.8 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 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 Wather'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.

## **1.9 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 fire fighting.
- .3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

**1.10 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.

END

## **1.1 RELATED SECTIONS**

- .1 Section 01 35 29: Health and Safety.

## **1.2 REFERENCES**

- .1 CSA C22.1-12, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .2 CAN/CSA-C22.3 No.1-06, Overhead Systems.
- .3 CSA C22.3 No.7-06, Underground Systems.
- .4 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.

## **1.3 DEFINITIONS**

- .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment has been isolated.
- .3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.
- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

## **1.4 COMPLIANCE REQUIREMENTS**

- .1 Comply with the following in regards to isolation and lockout of electrical facilities and equipment:
  - .1 Canadian Electrical Code.
  - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations.
  - .3 Regulations and code of practise as applicable to mechanical equipment or other machinery being de-energized.
  - .4 Procedures specified herein.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply.

## **1.5 SUBMITTALS**

- .1 Submit copy of lockout procedures, sample of lockout permit and lockout tags proposed for use in accordance with Section 01 33 00 – Submittal Procedures. Submit within 14 calendar days of acceptance of bid.

## **1.6 ISOLATION OF EXISTING SERVICES**

- .1 Obtain Departmental Representative's written authorization prior to working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.
- .2 To obtain authorization, submit to Departmental Representative the following documentation:
  - .1 Written request to isolate the particular service or facility and;
  - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, as follows:
  - .1 Fill-out standard form in current use at the Facility as provided by Departmental Representative or;
  - .2 Where no form exist, make written request indicating:
    - .1 The equipment, system or service to be isolated and it's location;
    - .2 Duration of isolation period (ie: start time & date and completion time & date).
    - .3 Voltage of service feed to system or equipment being isolated.
    - .4 Name of person making the request.
- .4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the work.
  - .1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.

- .5 Conduct safe, orderly shut down of equipment or facility. De-energize, isolate and lockout power and other sources of energy feeding the equipment or facility.
- .6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.
- .7 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of Facility operations. Follow Departmental Representative's directives in this regard.
- .8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified in Section 01 35 29.

## **1.7 LOCKOUTS**

- .1 De-energize, isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.
- .2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.
- .3 Prepare typed written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tagout it's sources of energy.
- .4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.
  - .1 A lockout permit shall be issued to specific worker providing a Guarantee of Isolation before each event when work must be performed on a live equipment or electrical facility.
  - .2 Duties of person managing the permit system to include:
    - .1 Issuance of permits and lockout tags to workers.
    - .2 Determining permit duration.
    - .3 Maintaining record of permits and tags issued.
    - .4 Making a Request for Isolation to Departmental Representative when required as specified above.
    - .5 Designating a Safety Watcher, when one is required based on type of work.
    - .6 Ensuring equipment or facility has been properly isolated.
    - .7 Collecting and safekeeping lockout tags returned by workers as a record of the event.

- .5 Clearly establish, describe and allocate responsibilities of:
  - .1 Workers.
  - .2 Person managing the lockout permit system.
  - .3 Safety Watcher.
  - .4 Subcontractor(s) and General Contractor.
- .6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.
  - .1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.
  - .2 Clearly label the document as being the Lockout procedures applicable to work of this contract.
- .7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .8 Use industry standard lockout tags.
- .9 Provide appropriate safety grounding and guards as required.

## **1.8 CONFORMANCE**

- .1 Brief all workers and subcontractors on requirements of this section. Stringently enforce use and compliance.

## **1.9 DOCUMENTS ON SITE**

- .1 Post Lockout Procedures on site in common location for viewing by workers.
- .2 Keep copies of Request for Isolation forms and lockout permits and tags issued to workers on site for full duration of Work.
- .3 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

END

## **1.1 GENERAL**

- .1 Perform all the Work activities in accordance with the applicable occupational health and safety legislation.

## **1.2 REFERNECE**

- .1 Province of Nova Scotia, Occupational Health and Safety Act S. N. S 1996, including latest amendments, and all regulations pursuant of this act.
- .2 Canada Labour Code, Part 2, including all regulations pursuant to the Code.

## **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 – Submittal procedures.
- .2 Submit site-specific Health and Safety Plan. The Plan must be submitted Five (5) days prior to commencement of site work. The Health and a Safety Plan must include:
  - .1 Results of site specific safety assessment of the hazards anticipated to be encountered.
  - .2 The corrective actions to be implemented by the Contractor to mitigate the hazards identified.
  - .3 Roles and responsibilities of the on-site personnel specific to health and safety, particularly the Health and Safety coordinator.
  - .4 Details of the Contractor s emergency response plan.
  - .5 Details of Personal Protective Equipment to be used.
  - .6 Provision for supervision of employees by a competent person.
  - .7 Provisions for training of employees.
  - .8 Identification of critical or hazardous tasks.
  - .9 Provisions for regular workplace inspections.
  - .10 Provisions incident reporting and investigation.
  - .11 Provisions for safety meetings.
  - .12 Name of Contractor’s designated Health and Safety Representative.
  - .13 Details of the Contractors On-Site Commutation Plan, as it related to the sharing of work related safety information to workers, subcontractors, and where applicable facility personnel.
- .3 Submit one (1) copy of Contractor’s site health and safety inspection reports to the Departmental Representative on a daily basis.
- .4 Submit to the Departmental Representative copies of reporters or directions issued by Provincial health and safety officers within 24 hours.
- .5 Submit copies of incident reports to the Departmental Representative within 24 hours of occurrence.
- .6 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding training, use, handling, labeling, storage and disposal of hazardous materials and maintain (onsite) WHMIS MSDS – Material Safety Data Sheets for all controlled products taken to the site by the Contractor.

- .7 The Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within five (5) days after receipt of plan. Revise the plan as deemed appropriate and resubmit plan to the Departmental Representative within three (3) days after receipt of comments Departmental Representative.
- .8 The Departmental Representative's review of Contractors 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.
- .9 The Departmental Representative make no representation and provides no warranty for the accuracy, completeness and legislative compliance of the Health and Safety Plan.
- .10 Responsibilities for errors and omissions in the Health and Safety Plan is not relieved by review of Health and Safety Plan by Departmental Representative.
- .11 Submit the name of the person assigned to the role of Health and Safety Coordinator along with the qualifications of this person.
- .12 Submit all building permits, compliance certificates and other permits required.
- .13 Submit proof of coverage from the Nova Scotia Workers Compensation Board (Worksafe Nova Scotia).

#### **1.4 FILING OF NOTICE**

- .1 File necessary "Notice of Project" with the applicable Provincial and Municipal authorities prior to beginning of work. Permits required by the above parties will be obtained at the Contractor's cost.

#### **1.5 SAFETY ASSESSMENT**

- .1 Upon arriving on the site, prior to conducting Work activities, perform a site specific hazard assessment of the actual hazards related to the project. This assessment must be submitted to the Departmental Representative within 24 hours of completion.
- .2 The Contractor will be provided with information on hazards within the facility that are not readily apparent. Such information is to be incorporated into the hazard assessment noted above. Information provided to the Contractor will not be construed as being complete and inclusive of the potential health and safety hazards encounters during Work.
- .3 Material Safety Data Sheets of pertinent hazardous and controlled products stored by the Owner on the site will be provided upon request.

#### **1.6 MEETINGS**

- .1 Schedule and administer a Health and Safety Meeting with the Departmental Representative prior to commencement of Work.
- .2 Conduct an orientation meeting with employees assigned to the site, outlining the site specific health and safety issues. Document this meeting and submit documentation to the Departmental Representative within 24 hours of occurrence.

- .3 Conduct daily safety briefings (toolbox talks) with their employees. Such meeting will be documented and made available to the Departmental Representative within 24 hours of occurrence.

## **1.7 REGULATORY COMPLIANCE**

- .1 Comply with the requirements contained in Nova Scotia Occupational Health and Safety Act, and all regulations pursuant to the Act.
- .2 Comply with the requirements of the Federal and Provincial Transportation of Dangerous Goods (TDG) Act and Regulations.
- .3 Comply with the requirements of the Canada Labour Code, Part II and Regulations, where the requirements are more stringent than those of the province of Nova Scotia.
- .4 Observe and comply with a construction safety measures set fourth in Part 8 of the National Building Code.

## **1.8 GENERAL REQUIREMENTS**

- .1 Implement appropriate measures of site control that adequately defines their workzone and provides the physical barricading necessary to prevent unauthorized access and prevent the migration of potentially harmful components and/or compounds form the work zone. Appropriate measures to include fencing, barricade, warning signage.
- .2 Implement a system for incident reporting and investigations. The following events require mandatory reporting to the Departmental Representative within 24 hours of occurrence:
  - .1 Work related fatality.
  - .2 Injury or illness requiring first aid or medical attention.
  - .3 Fire, explosion or electrical flash.
  - .4 Property damage in excess of \$1000.
  - .5 Incidents resulting in, or that could result in an investigation by regulatory agency.
- .3 Provide the Departmental Representative with all documents requested to support regulatory compliance within 24 hours of the request being made.
- .4 Provide a safety orientation to persons granted access to the work site.
- .5 Confirm and monitor persons granted access to the work site wear the prescribed PPE.
- .6 Secure the work site against entry during times of an activity to protect persons against harm. This may include the use of security guards where adequate protection cannot be achieved by other means.

## **1.9 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and of protection of persons adjacent to site and environment to extent that they may be affected by conducting of work.
- .2 Comply with and enforce compliance by their employees and subcontractors with safety requirements of Contractor Documents, applicable regulations, ordinances, and with the site-specific Health and Safety Plan
- .3 Develop site specific rules designed to aid in employee, facility personnel and public protection and implement a disciplinary process designed to correct employee behavior where safety infractions have occurred.

## **1.10 UNFORSEEN HAZARDS**

- .1 When an unforeseen or peculiar safety factor, hazard, or condition occurs during performance of work, stop Work and reassess the work method to ensure the safety and health of their employees, and that of facility users and facility employees. Where unforeseen hazards occur, the Departmental Representative will have the right to request the Contractors review and potentially amend their submitted health and safety Plan to address unforeseen hazards.

## **1.11 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ a Health and Safety Coordinator who will be on site full time and be responsible for the implementation and monitoring of the Health and Safety program and will have the authority to implement health and safety changes. The Health and Safety Coordinator will be given authority to stop and start work when, in the Health and Safety Coordinators discretion, it is necessary or advisable for reasons of health and safety. The health and safety Coordinator must:
  - .1 Have working knowledge of occupational safety and health regulations and the site related work being conducted.
  - .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .3 Be responsible for implementing, enforcing and monitoring the Contractor's Health and Safety Plan.
  - .4 Be on site during at all times during the execution of work. (Note: The Health and Safety Coordinator may perform other functions, provided such functions do not interfere with that of health and safety requirements).
- .2 The Departmental Representative reserves the right to reject the Contractor's Health and Safety Coordinator should he/she be inadequately trained or that persons' other assigned duties create conflict in exercising the duties of the Health and Safety Coordinator.

## **1.12 POSTING OF DOCUMENTS**

- .1 Applicable items, articles, notices and order are posted in conspicuous location on site in accordance with Acts and Regulations of the Province of Nova Scotia and in Consultation with Departmental Representatives.

## **1.13 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction, the Owner or by the Departmental Representative.
- .2 Provide the Departmental Representative with a written report of action taken to correct non-compliance of health and safety issues within 24 hours of notice of the non-compliance.
- .3 The Departmental Representative and/or the Owner may stop work if non-compliance of health and safety regulations is not corrected.
- .4 Periodic reviews of the Work may be carried out by the Departmental Representative to monitor compliance with the implementation of the Health and Safety Program. Inspections will include visual inspections as well as testing and sampling that may be required to ensure the highest possible level of health and safety at the site. The Departmental Representative will have the right to:
  - .1 Demand a higher level of safety if, in the opinion of the Departmental Representative, it is deemed necessary.
  - .2 Issue a stop work order immediately for any work which is considered, in the opinion of the Departmental Representative, to be an Immediate Danger to Life and Health (IDLH) or of imminent risk to the environment.
  - .3 The Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

## **1.14 WORK STOPPAGE**

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

## **1.15 POWDER ACTUATED DEVICES**

- .1 Use of powder actuated devices requires receipt of permission from the Departmental Representative.

END

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**PART 1 GENERAL**

**1.1 RELATED SECTIONS**

- .1 Waste Management and Disposal: Section 01 74 21.

**1.2 DEFINITIONS**

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 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.
- .3 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .4 Reference Standards:
- .1 U.S. Environmental Protection Agency (EPA)/Office of Water.
    - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
    - .2 Canadian Council of Ministers of the Environment (CCME), Environment Quality Guidelines.
    - .3 Environment Canada, Section 36 (3) of the Fisheries Act – prohibits the planned or accidental discharge of deleterious substances to waters frequented by fish.
    - .4 Environment Canada, migratory Birds Convention Act – prohibits the deposit of oil, oil wastes, or other substances harmful to migratory birds or in any area frequented by birds.
    - .5 Any provincial Standards and Federal requirements.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review by Departmental Representative.
- .3 Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental; issues to be addressed during construction.

- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 Include Environmental Protection Plan:
  - .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
  - .2 Names and qualification of person responsible for manifesting hazardous waste to be removed from site, and the name and location of the wastes destination (disposal facility).
  - .3 Name(s) and qualifications of person(s) responsible for training program.
  - .4 Descriptions of environmental protection personnel training program.
  - .5 Spill Control Plan including procedures, instructions, and reports to be used in event of an unforeseen spill of a regulated substance.
  - .6 Non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
  - .7 Air Pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
  - .8 Containment Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water or ground; and detailing provisions for compliance with federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
  - .9 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

#### **1.4 FIRES**

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

#### **1.5 HAZARDOUS MATERIAL HANDLING**

- .1 Transport and handle hazardous materials in accordance with applicable federal and laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment.
- .2 Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.
- .3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.
- .4 Store and handle flammable and combustible materials in accordance with National Fire Code.
- .5 Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.

## **1.6 DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site. Dispose in accordance with project waste management requirements specified in section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.
- .3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

## **1.7 SITE AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m. as indicated or directed by Departmental Representative
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Departmental Representative.

## **1.8 WORK ADJACENT TO WATERWAYS**

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material without Departmental Representative's approval.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial federal environmental regulations.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Do not blast under water or within 100 m of spawning beds.

- .8 Do not refuel any type of equipment within 100 meters of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

## **1.9 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.
- .5 Have appropriate emergency spill response equipment and rapid clean-up kit on site located adjacent to hazardous materials storage area. Provide personal protective equipment required for clean-up.
- .6 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.
  - .1 Immediately notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

## **1.10 WILDLIFE PROTECTION**

- .1 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.
  - .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
  - .2 Minimize work immediately adjacent to such areas until nesting is completed.
  - .3 Protect these areas by following recommendations of Canadian Wildlife Service.

## **1.11 HISTORICAL ARCHAEOLOGICAL CONTROL**

- .1 Provide archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area discovered during construction.
- .2 Plan: include methods to assure; protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

## **1.12 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
  - .1 Do not take action until after receipt of written approval by Departmental Representative.
- .3 Departmental Representative may issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

## **PART 3 EXECUTION**

### **3.1 CLEANING**

- .1 Ensure public waterways, storms and sanitary sewers remain free of waste and volatile materials disposal.
- .2 Perform final decontamination of construction facilities, equipment and materials which may have come in contact with potentially contaminated materials prior to removal from site.
  - .1 Perform decontamination as specified and to satisfaction of Departmental Representative and in accordance with regulatory requirements.

### **3.2 MITIGATION OF IMPACTS**

- .1 The proponent must ensure that a copy of these "Environmental Requirements" will be readily available on site for inspection and reference purposes during construction phase of the project and that all contractors and their agents will be made aware of and respect the following requirements where applicable to their direct involvement in the work.

- .2 Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 100 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment should be on site. All spills or leaks should be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).
- .3 Fuel level must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.
- .4 All construction waste material will be disposed of in a provincially approved manner.
- .5 All equipment must be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products.
- .6 All waste materials will be disposed of according to Provincial Waste Management Regulations so as to mitigate potential effects generated by leachate entering soils.
- .7 Existing potentially hazardous materials are listed in Section 01 35 29 – Health and Safety Requirements.
- .8 Engines must not be allowed to idle between work periods.
- .9 All machinery must be well muffled. If necessary, trucks may be required to avoid the use of “hammer” braking along specific sections of the route.
- .10 Contractors must ensure that food scraps and garbage are not left at the work site.

END

## 1.1 GENERAL

- .1 Due to nature of this Facility, and client operations therein, security regulations pertaining to site will be in place during the work resulting in need for:
  - .1 Control and limit movement of construction workers at the site and inside the building; each day all contractors, sub-contractors, and delivery personnel will be required to sign in and sign out of the main security desk of Alert and receive an ID card.
  - .2 Escort and continuous supervision of workers by security personnel; DFO will provide and pay for security escorts for all interior work.
  - .3 Workers must undergo a security clearance process;
  - .4 Specific rules and regulations as specified in this section and as directed by the 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 workers;
  - .2 Become familiar with and abide by security rules and regulations;
  - .3 Brief all workers and sub-contractors in respect of the security regulations and ensure that they abide by all rules and directives.
- .3 The Departmental Representative will coordinate a pre-construction meeting between Contractor, Facility Management and Security Personnel who will provide details and directives on control and movement on site.
- .4 Any infraction of site security regulations on the part of the Contractor, members of work force or any Subcontractor in his employ, could result in:
  - .1 Financial penalties in the form of progress payment reduction or holdback assessments being levied against the Contractor and;
  - .2 Demand immediate removal of offending party from the site.

## 1.2 SECURITY PERSONNEL

- .1 DFO will provide and pay for security (commissionaires) for all interior work.
- .2 One (1) Commissionaire to be on site at all time when work is carried out, having the following responsibilities:
  - .1 Limit movement of workers to within the boundaries established by the Departmental Representative for each work phase;
  - .2 Maintain security to be on site as determined by Contractor and the Departmental Representative;
  - .3 Manage the distribution and control of worker ID tags;
  - .4 Escort workers who need to circulate on site beyond the established boundaries of work, including the corridors, stairwells and elevators used for 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.

- .3 Commissionaire (s) will be present onsite for entire workshifts including work breaks and time period after workshifts until all workers have left site.
- .4 Commissionaire will stay within actual construction area and provide surveillance of all workers ensuring that security rules and requirements are obeyed and to limit movement to approved work areas of site.
- .5 Commissionaire must also escort workers from approved entrance doors and work area.
- .6 Escort and supervision of workers by Commissionaire is required at all times regardless as to whether workshifts are in the daytime or during Facility off hours.
- .7 Commissionaire shall report directly to the Departmental Representative and to the Facility security personnel 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.

### **1.3 SECURITY PASSES**

- .1 Visitor or work ID Tags are required for all personnel requiring access.

- .2 ID Tags will be provided by the Facility Security, issued to Contractor for distribution to authorized workers which shall also be placed on the Security Control List specified below.
- .3 All persons while on site, must wear the ID Tag issued to him regardless of daytime or nighttime work.
- .4 Be responsible to obtain ID Tag before work commences, including those required by subcontractors, and continually control their distribution and use by workers. Submit request for tags as early as possible prior to commencement of work.
- .5 For the duration of this contract, anyone not in possession of the ID Tag will not be allowed on site.
- .6 At end of project, return to Departmental Representative all tags issued to workers and to subcontractors.
  - .1 The Departmental Representative will levy a financial penalty in the form of a holdback assessment against the Contractor for each pass not returned regardless of the reason the pass is not returned.
- .7 Immediately report any lost, stolen or destroyed ID Tags to Departmental Representative.

#### **1.4 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.
- .3 Submit copy of list to Departmental Representative and to Security Commissionaire for control of workers.
- .4 Update list as work progresses.
- .5 Ensure that each worker can provide proof of identity upon demand, when requested by Facility's Security Personnel, Departmental Representative or by Facility Management.

#### **1.5 BUILDING ACCESS**

- .1 Keys and door security access cards necessary for access cards necessary for access to restricted areas may be issued at the discretion of the Departmental Representative. Follow all instructions in regards to use, care and disposition of all 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. Departmental Representative will deduct from final payment, \$25.00 for each item not return, regardless of the reason.

- .5 Immediately report to Departmental Representative any lost, stolen or destroyed keys and door security access cards.

## **1.6 SITE SECURITY**

- .1 Where work of this contract requires use of a permanently locked door, it is Contractor's responsibility to ensure that door is unlocked and locked after each use or provide a competent security guard, posted at door, when door must remain open for an elongated period of time during a particular workshift.
  - .1 Notify Building Security or Departmental Representative when security doors will be used and stringently follow all directives to ensure building security is effectively maintained.
- .2 Where work of this contract results in removal of doors or walls (providing security to the exterior or between spaces suites), erect temporary security hoarding over openings constructed in such a way to provide the same degree of security as doors/walls removed.
- .3 When work must be carried out during Off-Hours or beyond the work hours previously agreed upon at start of work, provide notice within 48 hours beforehand to minimize impact in Facility's security and tenant operations.
- .4 Off-Hours are defined in section 01 14 10 – Scheduling and Management of Work.

END

## **1.1 INSPECTION**

- .1 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .2 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed.
- .4 Pay costs to uncover and make good work disturbed by inspections and tests.

## **1.2 TESTING**

- .1 Tests on materials, equipment and building systems as specified in various sections of the Specifications is the responsibility of the Contractor except where stipulated otherwise.
  - .1 Provide all necessary instruments, equipment and qualified personnel to perform tests.
- .2 At completion of tests, turn over 2 sets of fully documented tests reports to the Departmental Representative. Submit in accordance with Section 01 33 00 – Submittal Procedures.
  - .1 Obtain additional copies for inclusion of a complete set in each of the maintenance manuals specified in Section 01 78 00- Closeout Procedures.
- .3 Unspecified tests may also be made by Departmental Representative, at the discretion of the Departmental Representative. The costs of these tests will be paid for by the Departmental Representative.
- .4 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests and inspections incurred by Departmental Representative as required to verify acceptability of corrected work.
- .5 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work.

## **1.3 REJECTED WORK**

- .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.

- .2 Make good damages to new and existing construction and finishes resulting from removal or replacement of defective work.

#### **1.4 ACCESS TO WORK**

- .1 Allow inspection /testing agencies access to Work.
- .2 Co-operate to provide reasonable facilities for such access.

#### **1.5 PROCEDURES**

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

END

## **1.1 SITE ACCESS AND PARKING**

- .1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers.
- .2 Maintain existing roads and parking areas at site, where used by Contractor, for duration of contract.
  - .1 Keep clean and free of mud and dirt by washing on a regular basis.
  - .2 Provide snow removal in areas located within construction site or enclosed by work.
  - .3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.

## **1.2 BUILDING ACCESS**

- .1 Use only access doors, and circulation routes and elevators within building as designated by Departmental Representative to access interior work.

## **1.3 CONTRACTOR'S SITE OFFICE**

- .1 Space will be provided at the college for a non-site office and lunch room. Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

## **1.4 MATERIAL STORAGE**

- .1 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.

## **1.5 SITE ENCLOSURES**

- .1 Provide temporary fence to enclose various construction areas of work site as required.
- .2 Erect steel fence using new 1200 mm high galvanized steel wire fence fabric supported by steel posts spaced at maximum 2.4 m oc.
  - .1 Provide one pedestrian gate.
  - .2 Maintain fence in good repair.
- .3 Make all gates lockable and provide keyed padlocks.
- .4 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.
- .5 Provide battery powered lanterns around the perimeter of the site enclosure to clearly mark its location at night.
- .6 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.

- .7 Do not construct fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.

## **1.6 INTERIOR HOARDING**

- .1 Erect hoarding inside building to isolate construction areas and protect occupants for duration of work.
- .2 Construct hoarding as follows:
  - .1 Height: to underside of floor or roof above.
  - .2 Framing type: 92mm steel studs spaced at 400mm oc.
  - .3 Covering: 12 mm thick drywall sheathing.
  - .4 Sealed to abutting surfaces so that hoarding is dust tight and sound sealed. Provide acoustic insulation.
  - .5 Access Doors: two (2) quantity, steel, pedestrian doors, sound sealed, dust tight and lockable.
  - .6 Scribed to underside and profile of ceiling above.

## **1.7 INTERIOR DUST CONTROL AND DUST BARRIERS**

- .1 Control creation and spread of dust and dirt to building interior and in particular to areas within premises still under use by occupants.

## **1.8 SANITARY FACILITIES**

- .1 Sanitary facilities are available at the site and may be used by Contractor's work force. Make arrangements for the use of such facilities through the Departmental representative.

## **1.9 ENCLOSURE OF STRUCTURE**

- .1 Provide temporary weathertight enclosures protection for exterior openings until permanently enclosed.
- .2 Provide weathertight and heated enclosures to conduct exterior work during winter and other inclement weather conditions. Erect to allow accessibility for installation of materials and working inside of enclosure.
- .3 Design enclosures to withstand wind pressure and snow loading.

## **1.10 POWER**

- .1 Power supply is available and will be provided for construction usage at no cost.
  - .1 Make arrangements for the use of such services through the Departmental Representative.
- .2 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the Canadian Electrical Code,

in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 29 and to lock out requirements specified in section 01 35 25.

- .3 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162lux in all locations.
- .4 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage. Replace lamps which have been used over period of 3 months.

### **1.11 WATER SUPPLY**

- .1 Water supply is available in existign buildign and will be provided for construction usage at no cost. Make arrangements for the use and transportation of such services to work area through the Departmental Representative.
- .2 Permanent water supply system installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

### **1.12 SCAFFOLDING**

- .1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87 (R2003).
- .2 Erect scaffolding independent of walls. Remove when no longer required.

### **1.13 HEATING AND VENTILATION**

- .1 Supply, install and pay costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work area will not be permitted.
- .2 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.
- .3 Maintain minimum temperature of 10 degree C, or higher where specified, as soon as finishing work is commenced and maintain until acceptance of structure by Departmental Representative.
  - .1 Maintain ambient temperature and humidity levels as required for comfort of office personnel.

- .4 Ventilating:
  - .1 Prevent accumulation of dust, fumes, mists, vapours or gases on area occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4 Ventilate storage spaces containing hazardous or volatile materials.
  - .5 Ventilate temporary sanitary facilities.
  - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .5 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.
  - .5 Vent direct-fired combustion units to outside.
- .6 Submit bid assuming existing equipment and system will not be used for temporary heating and ventilating.
- .7 Upon acceptance of bid, Departmental representative may permit use of permanent system providing agreement can be reached on:
  - .1 Conditions of use, special equipment, protection and maintenance.
  - .2 Saving on Contract price.
  - .3 Provisions relating to warranties on equipment.

#### **1.14 CONSTRUCTION SIGN AND NOTICES**

- .1 Upon request by Departmental Representative, erect a self supporting project sign in location indicated.
- .2 Departmental Representative will provide a vinyl sign facing for installation by Contractor on Sign framework. Sign frame to be plywood face of approximately 1200 x 2400 mm in size complete with required wood framing at 400 mm o.c. and support posts.
- .3 Install sign plumb and level in neat wood framework and securely anchor in ground by posts to withstand wind pressure of 160 km/h.
- .4 Contractor or subcontractor advertisement signboards are not permitted on site.
- .5 Safety and Instruction Signs and Notices:
  - .1 Signs and Notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321-96 (R2006).

- .6 Maintenance and Disposal of Site Signs:
  - .1 Maintain approved signs and notices on good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental representative.

**1.15 REMOVAL OF TEMPORARY FACILITIES**

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

END

## **1.1 GENERAL**

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
  - .1 Name and address of manufacturer.
  - .2 Trade name, model and catalogue number.
  - .3 Performance, descriptive and test data.
  - .4 Compliance to specified standards.
  - .5 Manufacturer's installation or application instructions.
  - .6 Evidence of arrangements to procure.
  - .7 Evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

## **1.2 PRODUCT QUALITY**

- .1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.
- .2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions of the Contract.

## **1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES**

- .1 **Acceptable Materials:** When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.
- .2 **Alternative Materials:** Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 **Substitutions:** After contract award, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

#### **1.4 MANUFACTURERS INSTRUCTIONS**

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions, so that Departmental Representative will designate which document is to be followed.

#### **1.5 AVAILABILITY**

- .1 Immediately notify Departmental Representative in writing of unforeseen or unanticipated material delivery problems by manufacturer. Provide support documentation as per clause 1.1.2 above.

#### **1.6 WORKMANSHIP**

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in the General Conditions of the Contract.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors. See section 01 14 10 – Scheduling and Management of Work in this regard.
- .5 Coordinate placement of openings, sleeves and accessories.

#### **1.7 FASTENINGS - GENERAL**

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.
- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.
- .3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.

- .5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See section on Health and Safety Requirements in this regard.

## **1.8 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.
- .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 and, use resilient washers with stainless steel.

## **1.9 STORAGE, HANDLING AND PROTECTION**

- .1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled materials in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work. Provide additional cover where manufacturer's packaging is insufficient to provide adequate protection.
- .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 Immediately remove damaged or rejected materials from site.
- .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.

**1.10 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 of there os interference. Install as directed by Departmental Representative.

**1.11 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate 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.

**1.12 EXISTING UTLITIES**

- .1 When breaking into or connecting to existing services or utilities, execute Work at time s directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.
- .2 Protect, relocate or maintain existing active service. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

END

## **1.1 GENERAL**

- .1 Conduct cleaning and disposal operations to comply with local ordinances and antipollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

## **1.2 MATERIALS**

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

## **1.3 CLEANING DURING CONSTRUCTION**

- .1 Maintain work areas in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Keep building entrances, corridors, stairwells and tenant occupied areas of building in a clean dust free condition at all times. Conduct thorough cleaning of these areas at end of each workshift when used by workers or affected by the Work.
- .3 Provide on-site containers for collection of waste materials and debris.
- .4 Use separate collection bins, clearly marked as to purpose, for source separation and recycling of waste and debris in accordance with waste management requirements specified.
- .5 Remove waste materials, and debris from site on a daily basis.
- .6 Provide dust barriers, dividers, seals on doors and employ other dust control measures as required to ensure that dust and dirt, generated by work, are not transmitted to other existing areas of building. Should dust migrate into tenant occupied and public areas of building, employ such means as may be necessary to immediately clean all contaminated surfaces to the satisfaction of the Departmental Representative.
  - .1 See Section 01 50 00 for requirements on dust control and for erection of dust partitions.

- .7 Immediately clean all dust, dirt, smears, scuffs and soiled surfaces in lobbies, corridors, stairwells and within tenant occupied areas resulting from the Work.
  - .1 Perform cleaning, dusting and washing operations, carpet vacuuming (including shampooing if deemed required by Departmental Representative) and floor washing as necessary to thoroughly clean all soiled surfaces.
- .8 Remove snow and ice from access doors used by workforce. Be responsible for snow removal from areas of work site and as required to access work site area.

#### **1.4 FINAL CLEANING**

- .1 In preparation for acceptance of the completed work perform final cleaning.
- .2 Replace items with broken pieces, scratches or disfigured.
- .3 Clean lighting reflectors, lenses, and other lighting surfaces.
- .4 Vacuum clean and dust building interiors, behind grilles, louvers and screens.
- .5 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.
- .6 Broom clean and wash exterior paved surfaces and walks; rake clean other surfaces of grounds.
- .7 Remove debris and surplus materials from crawl areas, roof areas and other accessible concealed spaces.

END

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**PART 1 GENERAL**

**1.1 DEFINITIONS**

- .1 Deconstruction: systematic dismantling of structure in a manner that achieves safe removal/disposal of hazardous materials.
- .2 Demolition: rapid destruction of structure with or without prior removals of hazardous materials.
- .3 Hazardous materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, including, but not limited to, asbestos-containing materials, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other of handled improperly.
- .4 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .5 Inert fill: inert waste – exclusively asphalt and concrete.
- .6 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

**1.2 WASTE MANAGEMENT**

- .1 Incorporate environmental and sustainable practices in managing waste resulting from work.
- .2 Divert as much waste as possible from landfill.
- .3 Coordinate work of subtrades and subcontractors to ensure all possible waste reduction and recycling opportunities are taken. Follow waste management requirements specified in trade sections of the Specifications.
- .4 Reduce waste during installation of new materials. Undertake practices which will optimize full use of materials and minimize waste.
- .5 Develop innovative procedures to reduce quantity of waste generated by construction such as by delivering materials to site with minimal packaging etc.
- .6 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.

- .7 During demolition and removal work separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
  - .1 Reinstallation into the work where indicated.
  - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties.
  - .3 Sending as many items as possible to locally available recycling facility.
  - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.
- .8 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.
- .9 Send leftover material resulting from installation work for recycling whenever possible.
- .10 Establish methods whereby hazardous and toxic materials, and their containers used on site are properly handled, stored and disposed in accordance with applicable federal, provincial and municipal laws and regulations.

### **1.3 DISPOSAL REQUIREMENTS**

- .1 Burying or burning of rubbish and waste materials is prohibited.
- .2 Disposal of volatile materials, mineral spirits, oil, paint, and other hazardous materials into waterways, storm, or sanitary sewers is prohibited.
- .3 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.
- .4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.
- .5 Transport and dispose of waste intended for waste processing plant or landfill facility in separated condition and to Operator's rules and recommendations in support of their effort to recycle, reduce and divert certain waste stream from general landfill.
- .6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.
- .7 Sale of salvaged items by Contractor to other parties not permitted on site.

## **1.4 REFERENCE STANDARDS**

- .1 Canadian Standards Association (CSA International):
  - .1 CSA S350-R2003, Code of Practice for Safety in Demolition of Structures.
- .2 Federal Legislation:
  - .1 Canadian Environmental Assessment Act (CEAAQ), 1995, c. 37.
  - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .3 National Building Code 2010, Part 8, - Safety measures at Construction and Demolition Sites.

## **1.5 DOCUMENTS**

- .1 Maintain at job, one copy of the following:
  - .1 Site Specific Health and Safety Plan.
  - .2 Environment Protection Plan.
  - .3 Materials removal log.

## **1.6 SUBMITTALS**

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

## **1.7 STORAGE HANDLING AND PROTECTION**

- .1 Unless specified otherwise, materials for removal become Contractor's property
- .2 Prevent contamination of materials to be recycled and handle material in accordance with requirements for acceptance by designated facilities.

## **1.8 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil into waterways, storms, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

## **1.9 DELIVERY, STORAGE AND HANDLING**

- .1 Transport hazardous materials and wastes, in accordance with Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
  - .1 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
  - .2 Use licensed carrier authorized by provincial authorities to accept subject material.
  - .3 Before shipping material obtain written notice from intended material and it is licensed to accept this material. Provide photocopy of notice to the Departmental Representative.
  - .4 Label container(s) with legible, visible safety marks as prescribed by federal and provincial regulations.
  - .5 Only trained personnel handle, offer for transport, or transport dangerous goods.
  - .6 Provide photocopy of shipping documents and waste manifests to the Departmental Representative.
  - .7 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Departmental Representative.

## **PART 2 PRODUCTS**

### **2.1 NOT USED**

## **PART 3 EXECUTION**

### **3.1 APPLICATION**

- .1 Complete removal of all hazardous materials prior to undertaking deconstruction/demolition activities.

### **3.2 REMOVAL OF HAZARDOUS MATERIALS**

- .1 Remove existing perchloric fume hoods and associated fans and ductwork after specialized cleaning procedures have been completed and tested.
- .2 Remove existing redundant fume hoods, fume hood fans and ductwork after proper cleaning and decontamination procedures.

### **3.3 DEMOLITION AND DECONSTRUCTION**

- .1 On site sale of salvaged, reusable, recyclable, materials is not permitted.

- .2 Ensure workers and subcontractors are trained to carry out work in accordance with appropriate deconstruction techniques.

### **3.4 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

END

## **1.1 RELATED SECTIONS**

- .1 Section 01 78 00: Closeout Submittals.

## **1.2 INSPECTION AND DECLARATION**

- .1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.
  - .1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's inspection of the completed work.
- .2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the Work.
  - .1 Address defects, faults and outstanding items of work identified by such inspections.
  - .2 Advise Departmental Representative when all deficiencies identified have been rectified.
- .3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:
  - .1 Project record as-built documents;
  - .2 Final Operations and Maintenance manuals;
  - .3 Maintenance materials, parts and tools;
  - .4 Compliance certificates from applicable authorities;
  - .5 Reports resulting from designated tests;
  - .6 Demonstration and training complete with user manuals;
  - .7 Manufacturer's Guarantee certificates.
  - .8 Testing, adjusting and balancing of equipment and systems complete with submission of test reports.
  - .9 Commissioning of equipment and systems specified.
- .4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

END

## 1.1 RELATED SECTIONS

- .1 Section 01 79 00: Demonstration and Training.

## 1.2 PROJECT RECORD DOCUMENTS

- .1 Departmental Representative will provide 2 white print sets of contract drawings and 2 copies of Specifications Manual specifically for "As-Built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual As-Built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative upon request.
- .4 As-Built Drawings:
  - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of work, neatly transfer notations to second set (also by use of red ink).
  - .2 Submit both sets to Departmental Representative prior to application for Certificate of Substantial Performance.
  - .3 Stamp all drawings with "As-Built". Label and place Contractor's signature and date.
  - .4 Show all modifications, substitutions and deviations from what is shown on the contract drawings.
  - .5 Record following information:
    - .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
    - .2 Field changes of dimension and detail;
    - .3 Location of all capped or terminated services and utilities.
    - .4 Chases for mechanical, electrical and other services;
    - .5 Ceiling and floor elevations;
    - .6 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices;
    - .7 Plumbing, heating, air conditioning and ventilation, sprinkler and electrical service installation locations; all to be dimensioned and referenced to building columns or load bearing walls;
    - .8 All structural steel installations to be fully dimensioned;
    - .9 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions;
    - .10 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
    - .11 All change orders issued over the course of the contract must be documented on the finished As-Built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

- .6 Maintain As-Built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.
- .7 Submit on paper and in electronic format as pdf files. Forward pdf and in the native program format, NMS Edit Professional spp, MS Word, MS Excel, MS Project Autocad dwg, and photograph jpg files on USB compatible with PSPC encryption requirements or through email or alternate electronic file sharing service such as Sharepoint, as directed by Departmental Representative.

### **1.3 REVIEWED SHOP DRAWINGS**

- .1 Provide a complete set of all shop drawings reviewed for project to incorporate into each copy of the Operations and Maintenance Manuals.
- .2 Submit full sets at same time and as part of the contents of the Operation and Maintenance Manuals specified.

### **1.4 UPDATING OF DIGITAL DRAWINGS**

- .1 Obtain and pay for the services of a qualified drafting firm to update the digital files which were used to produce the contract drawings.
  - .1 Update the digital drawing files with the same As-Built information as specified for the paper As-Built drawings.
  - .2 Supply of digital documents does not replace the requirement to provide marked-up white prints specified above.
- .2 The Departmental Representative will provide a copy of the digital drawing files.
- .3 Incorporate the as-built changes to the digital drawings by following the standards specified in the latest version of the PSPC National CADD Standard. A copy of this manual will be provided by the Departmental Representative.
- .4 Make revisions to electronic files found to be in non-conformance with the PSPC National CADD Standard as directed by Departmental Representative.
- .5 In regards to updating the digital files to reflect changes resulting from Change Orders, the change in cost of completing the As-Built documentation of changes is to be included in the amount for each Change Order issued. The amount included will constitute only the increase or decrease in CADD related costs resulting directly from the change. In determining the cost difference, full consideration will be given to the fact that other clauses of this section require As-Built CADD updates to the drawings irrespective of any Change Orders.

- .6 Deliver the digital As-Built information in same format and sequence as the contract drawings and specifications.
  - .1 Submit on PSPC encrypted USB.
  - .2 Provide 1 full set of paper plots.
  - .3 Submit the digital As-Built at the same time as the marked-up paper white prints.

## 1.5 OPERATIONS & MAINTENANCE MANUAL

- .1 O&M Manual - Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.
- .2 Manual Language: final manuals to be in both English and French languages.
  - .1 Upon review and acceptance by Departmental Representative, submit 3 final copies and one digital copy in PDF format. Interim copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version. PDF Copy should be indexed and bookmarked.
- .3 Submission Date: submit complete operation and maintenance manual to Departmental Representative 3 weeks prior to application for Certificate of Substantial Performance of the work.
- .4 Binding:
  - .1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.
  - .2 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine pocket.
  - .3 Where multiple binders are needed, correlate data into related consistent groupings.
  - .4 Identify contents of each binder on spine.
  - .5 Organize and divide data following same numerical system as the section numbers of the Specification Manual.
  - .6 Dividers: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each individual product and system and give description of product or component.
  - .7 Type lists and notes. Do not hand write.
  - .8 Drawings, diagrams and manufacturers' literature must be legible. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .5 Manual Contents:
  - .1 Cover sheet containing:
    - .1 Date submitted.
    - .2 Project title, location and project number.

- .3 Names and addresses of Contractor, and all Sub-Contractors.
- .2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.
- .3 List of maintenance materials.
- .4 List of spare parts.
- .5 List of special tools.
- .6 Original or certified copy of warranties and product guarantees.
- .7 Copy of approval documents and certificates issued by Inspection Authorities.
- .8 Copy of reports and test results performed by Contractor as specified.
- .9 Product Information (PI Data) on materials, equipment and systems as specified in various sections of the specifications. Data to include:
  - .1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.
  - .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.
  - .7 Maintenance instructions for finishes.
- .6 Shop drawings:
  - .1 Include complete set of reviewed shop drawings into each copy of the operations and maintenance manual.
  - .2 Fold and bind material professionally in a manner that corresponds with the specification section numbering system.
  - .3 When large quantity of data is submitted, place into separate binders of same size as O&M binders.
- .7 Equipment and Systems Data: the following list indicates the type of data and extent of information required to be included for each item of equipment and for each system:
  - .1 Description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
  - .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
  - .3 Include installed colour coded wiring diagrams.
  - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
  - .5 Maintenance Requirements: include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
  - .6 Servicing and lubrication schedule, and list of lubricants required.

- .7 Manufacturer's printed operation and maintenance instructions.
  - .8 Sequence of operation by controls manufacturer.
  - .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
  - .10 Provide installed control diagrams by controls manufacturer.
  - .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
  - .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
  - .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
  - .14 Include test and balancing reports.
  - .15 Additional requirements as specified in individual specification sections.
- .8 Materials and Finishes Maintenance Data:
- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
  - .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.

## **1.6 SPARE PARTS, TOOLS AND MAINTENANCE MATERIALS**

- .1 Provide spare parts, special tools and extra materials for maintenance purposes in quantities specified in individual specification sections.
- .2 Tag all items with associated function or equipment.
- .3 Provide items of same manufacture and quality as items in Work.
- .4 Deliver to site in well packaged condition. Store in location as directed by Departmental Representative.
- .5 Clearly mark as to contents indicating:
  - .1 Part number.
  - .2 Identification of equipment or system for which parts are applicable.
  - .3 Installation instructions or intended use as applicable.
  - .4 Name, address and telephone number of nearest supplier.
- .6 Prepare and submit complete inventory list of items supplied. Include list within Maintenance Manual.

END

## **1.1 RELATED SECTIONS**

- .1 Operations and Maintenance Manual: Section 01 78 00.

## **1.2 DESCRIPTION**

- .1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel prior to date of final inspection.
- .2 Departmental Representative will provide a list of Owner's personnel to receive instructions,
- .3 Cooperate with Departmental Representative in coordinating time and attendance of Owner's personnel with manufacturer's training Representative(s).

## **1.3 QUALITY CONTROL**

- .1 Ensure that only personnel from own forces, Subcontractors or Suppliers competent and fully knowledgeable in the particular material component, equipment or system installation are used to provide training and demonstrations.
- .2 When specified in individual Sections, obtain the manufacturers authorized Representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.
- .3 Upon request, provide evidence to Departmental Representative of individual Trainor's knowledge and qualifications.

## **1.4 SUBMITTALS**

- .1 Submit schedule of time, date and complete list of equipment and systems for which demonstration and training sessions will be provided. Submit schedule a minimum of 2 weeks prior to designated dates, for Departmental Representative's approval.
- .2 Submit report within 1 week after completion of demonstration, that demonstration and instructions have been satisfactorily completed. Provide time and date of when each demonstration was actually given, with list of persons present.

## **1.5 CONDITIONS FOR DEMONSTRATIONS**

- .1 Prior to carrying out demonstration and training, ensure that equipment has been inspected and tested, is fully operational, has been performance verified and TAB has been carried out.

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

## **1.6 PREPARATION**

- .1 Verify that conditions for demonstration and instructions comply with requirements.
- .2 Verify that designated personnel are present.

## **1.7 DEMONSTRATION AND INSTRUCTIONS**

- .1 Include the following items within the demonstration and training:
  - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each of equipment.
  - .2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.
  - .3 Review contents of manual in detail to explain all aspects of operation and maintenance.
  - .4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.
  - .5 Provide other specific training and instructions as specified in trade sections.

## **1.8 TIME ALLOCATED FOR INSTRUCTIONS**

- .1 Observe the allocated time period specified in trade sections. Provide additional time when required to ensure all personnel fully understand all aspects of the information and instructions being provided. Allow for questions by participants.

END