

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work covered by this contract includes the improvement of the ventilation systems in the chlorine room and at the pumping station at the Sainte-Anne-des-Plaines penitentiary complex.

1.3 COORDINATING WORK

- .1 During construction, the Owner may allow other contractors or workers to travel or work near the areas covered by this mandate.
- .2 The contractor shall coordinate its own work as well as his signs so they do not conflict with other contractors or workers and carry out the instructions of the Ministerial Representative.

1.4 WORK SEQUENCE

- .1 During construction, coordinate the progress schedule according to the occupancy by the Owner.
- .2 Execute work by phases, so that the Owner can use the premises continuously during construction. Maintain the site traffic lanes available at all times.
- .3 Maintain access for the fire fighters as well as a means to fight fires.
- .4 Delays in completion of the work are 8 weeks (56 calendar days) from the authorization to start the work.
- .5 To meet deadlines, the Contractor must provide the necessary working teams.

1.5 CONTRACTOR USE OF PREMISES

- .1 The use of the premises is restricted to areas needed for the work or storage and access to allow:
 - .1 The occupation of the premises by the Owner
 - .2 The performance of work by other contractors;

- .3 The use of the premises by the public;
- .2 Coordinate use of premises as directed by the Ministerial Representative.
- .3 Find an additional area for work or storage required for execution of work under this contract and pay the cost.
- .4 Removing or modify existing structures to prevent damage to the parts that must remain in place.
- .5 Repair or replace, as directed by the Ministerial Representative, for connection to the existing structure or an adjacent structure, or to harmonize with them, those parts of the existing structure that have been changed during construction.
- .6 Once the work is completed, the existing structure must be returned to its original or better condition.

1.6 OWNER OCCUPANCY

- .1 The building Owner will occupy the premises for the duration of the construction and will continue normal operations during this period.
- .2 Cooperate with the Owner of the facility for the scheduling of work, so as to reduce conflict and facilitate the operation of premises.

1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work in minimal disruption to the operation of the building occupants, the public and the normal use of the premises. Make arrangements with the Ministerial Representative to facilitate the work.

1.8 EXISTING SERVICES

- .1 Prior to cutting services to utilities, notify the Ministerial Representative at least 48 hours before the scheduled time of interruption, and the utility companies involved, and obtain the necessary permits.
- .2 If performing connections on existing utility lines, give the Ministerial Representative prior notice of 48 hours before the planned interruption of electrical and mechanical services. Ensure that the duration of interruptions is as short as possible. Perform the work hours set by local authorities in minimizing interference with pedestrian and vehicular traffic.
- .3 Before work begins, define the extent and location of utility lines that are in the work area and notify the Ministerial Representative.

- .4 Submit for approval by the Ministerial Representative a schedule for the shutdown or closure of facilities or assets of books, including the interruption of communications services or electricity supply. Respect the agreed timetable and inform the parties affected by these drawbacks.
- .5 Provide temporary utilities, as directed by the Ministerial Representative, so that critical systems are maintained to the building.
- .6 Where systems not listed are discovered, immediately notify the Ministerial Representative and write them down.

1.9 DOCUMENTS REQUIRED

- .1 Maintain on site a copy of each of the following documents.
 - .1 Contract Drawings;
 - .2 Work;
 - .3 Addenda;
 - .4 Shop Drawings reviewed;
 - .5 List of shop drawings unedited;
 - .6 Change Orders;
 - .7 Other changes to the contract;
 - .8 Reports of tests conducted on site;
 - .9 Copy of approved implementation schedule;
 - .10 Map of health and safety and other documents relating to safety;
 - .11 Schedule;
 - .12 Other documents indicated.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Ministerial Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work, provide temporary means to maintain security.
- .4 Provide and maintain sanitary facilities and allow access for Ministerial Representative.
- .5 The work carried out at the Regional Reception Centre (zone of maximum security) must always allow traffic on the way to the perimeter and access to the entrance of the CRR. Provide temporary planning in accordingly.

1.3 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. Make arrangements with the Ministerial Representative to facilitate work as stated.

1.4 EXISTING SERVICES

- .1 Advise the Ministerial Representative and the utility companies from any interruption of services and obtain the required authorisation.
- .2 Notify the Ministerial Representative at least 48 hours before stitching on existing networks. Ensure that the duration of interruptions is as short as possible. Make interruptions after normal working hours, preferably on weekends.
- .3 Ensure the movement of personnel, pedestrians and vehicles.

1.5 SPECIAL REQUIREMENTS

- .1 Sequencing work based on achieving the following constraints:

- .1 The full access to technical rooms must be maintained at all times during the construction.
- .2 Work must be executed as specified in Section 01 35 13 – Safety requirements.
- .2 Submit a work schedule according to the method of work scheduling - Bar (GANTT).
- .3 Ensure that staff working on site is aware of and comply with regulations, including regulations for fire safety, traffic and safety.
- .4 The vehicle access to the site of the entrepreneur is limited to the planned construction trailers and parking areas.
- .5 In times of work on the access road that require lane restrictions, ensuring that traffic is ensured by flaggers during peak hours between 7:15 and 8:15 and between 15:30 and 16:15.
- .6 Ensure that materials/equipment is delivered outside peak hours, between 7:15 and 8:15 and between 15:30 and 16:15, unless otherwise directed by the Representative the Department.
- .7 In the area of Regional Reception Centre (RRC), a maximum of two (2) teams work is allowed: one inside the security perimeter and the other one outside. In any case, the Contractor will be allowed to operate two (2) teams working in the same security zone in the area of RRC.
- .8 The drinkable water supply must be maintained during all the works except for the works done on the main water supply pipe. When the drinking water supply must be interrupted, the Contractor shall do the work between 23h00 and 6h00.

1.6 SECURITY

- .1 In addition to the section 01 35 13.
- .2 Provide temporary means to maintain security if it was reduced because of the work covered by this contract.
- .3 Security clearances:
 - .1 Personnel employed on this project will be subject to security check.
 - .2 Obtain the required authorization from the Ministry, as indicated, for those who must be present on the work site.
 - .3 Within the secure area, the workers and staff members will be monitored daily at the beginning of the work period, and we will give a pass they must carry with them at all times and return at the end of the work period after checkout.

- .4 The Contractor personnel must pass a security check before they go on site to perform the work. The form to be filled will be provided to the contractor and should be given at least seven days before the scheduled start of work.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 ADMINISTRATIVE

- .1 Submit to Ministerial Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of contract time and thus no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI metric units.
- .4 Where items or information is not produced in SI metric units converted values are acceptable.
- .5 Review submittals prior to submission to Ministerial Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Ministerial Representative, in writing at time of submission, identifying deviations from requirements of contract documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Ministerial Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Ministerial Representative's review.
- .10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by contractor to illustrate details of a portion of work.
- .2 Submit drawings stamped and signed by a professional engineer member of Ordre des ingénieurs du Québec.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of section under which

- adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 10 days for Ministerial Representative's review of each submission.
 - .5 Adjustments made on shop drawings by Ministerial Departmental are not intended to change contract price. If adjustments affect value of work, state such in writing to Ministerial Representative prior to proceeding with work.
 - .6 Make changes in shop drawings as Ministerial Representative may require, consistent with contract documents. When resubmitting, notify Ministerial Representative in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .9 After Ministerial Representative's review, distribute copies.

- .10 Submit six (6) paper copies of shop drawings for each requirement requested in specification Sections and as Ministerial Representative may reasonably request.
- .11 Submit six (6) paper copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Ministerial Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit six (6) paper copies of test reports for requirements requested in specification Sections and as requested by Ministerial Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit six (6) paper copies of certificates for requirements requested in specification Sections and as requested by Ministerial Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit six (6) paper copies of manufacturers instructions for requirements requested in specification Sections and as requested by Ministerial Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and material safety data sheets concerning impedances, hazards and safety precautions.
- .15 Submit six (6) paper copies of manufacturer's field reports for requirements requested in specification Sections and as requested by Ministerial Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit six (6) paper copies of operation and maintenance data for requirements requested in specification Sections and as requested by Ministerial Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Ministerial Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of work may proceed.

1.4 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Ministerial Representative's business address.

- .3 Notify Ministerial Representative in writing, at time of submission of deviations in samples from requirements of contract documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Ministerial Representative are not intended to change contract price. If adjustments affect value of work, state such in writing to Ministerial Representative prior to proceeding with work.
- .6 Make changes in samples Ministerial Representative may require, consistent with contract documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of contract, submit Workers' Compensation Board status.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.
- .2 Ensure that both the construction project and institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

1.2 DEFINITIONS

- .1 "Contraband" means:
 - .1 a) an intoxicant, including alcoholic beverages, drugs and narcotics,
 - .2 b) a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization,
 - .3 c) an explosive or a bomb or a component thereof,
 - .4 d) currency over any applicable prescribed limit (\$25.00),
 - .5 e) and any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Director" means Director or Warden of the Institution as applicable or their representative.
- .6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .7 "Ministerial Representative" means the Public Works and Government Services Canada (PWGSC) or the Correctional Service Canada (CSC) project manager depending on project.
- .8 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.
- .9 "Construction zone" means the area as shown on the contract drawings where the contractor will be allowed to work. This area may or may not be isolated from the security area of the institution.

1.3 PRELIMINARY PROCEEDINGS

- .1 Prior to the commencement of work, the contractor shall meet with the Director to:
 - .1 Discuss the nature and extent of all activities involved in the Project.
 - .2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.
- .2 The Contractor will:
 - .1 Ensure that all construction employees are aware of the CSC security requirements.
 - .2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.
 - .3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

1.4 CONSTRUCTION EMPLOYEES

- .1 Submit to the Director a list of the names with date of birth of all construction employees to be employed on the construction site and a security clearance form for each employee.
- .2 Allow two (2) weeks for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at the institution where the project is taking place.
- .3 The Director may require that facial photographs may be taken of construction employees and these photographs may be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all construction workers. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the construction employees clothing at all time while employees are at the institution.
- .4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
 - .1 appear to be under the influence of alcohol, drugs or narcotics.
 - .2 behave in an unusual or disorderly manner.
 - .3 are in possession of contraband.

1.5 VEHICLES

- .1 All unattended vehicles on CSC property shall have windows closed; doors and trunks shall be locked and keys removed. The keys shall be securely in the possession of the owner or an employee of the company that owns the vehicle.
- .2 The director may limit at any time the number and type of vehicles allowed within the Institution.

- .3 Drivers of delivery vehicles for material required by the project shall not require security clearances but must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or Commissionaires while in the Institution.
- .4 If the Director permits trailers to be left inside the secure perimeter of the Institution, these trailer doors will be locked at all times. All windows will be securely locked when left unoccupied. All trailer windows shall be covered with expanded metal mesh. All storage trailers inside and outside the perimeter must be locked when not in use.

1.6 PARKING

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

1.7 SHIPMENTS

- .1 All shipments of project material, equipment and tools shall be addressed in the Contractor's name to avoid confusion with the institution's own shipments. The contractor must have his own employees on site to receive any deliveries or shipments. CSC staff will **NOT** accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

1.8 TELEPHONES

- .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the institution unless prior approval of the Director.
- .2 The Director will ensure that approved telephones, Facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.
- .3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, iPhone, BlackBerries, telephone used as 2-way radios, and MP3 players, are not permitted within the perimeter of the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.
- .4 The Director may approve but limit the use of two way radios.

1.9 WORK HOURS

- .1 Work hours within the Institution are: Monday to Friday from 07:30 to 16:00 daily. Work may be permitted until 17:00 if they have no chance of causing damage to existing facilities. The management of working hours will be coordinated on meeting.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Director.

1.10 OVERTIME WORK

- .1 No overtime work will be allowed without permission of the Director. Give a minimum forty-eight (48) hours advance notice when overtime work on the construction project is necessary and approved. If overtime work is required because of an emergency such the completion of a concrete pour or work to make the construction safe and secure, the contractor shall advise the Director as soon as this condition is known and follow the directions given by the Director. Costs to Canada for such events may be attributed to the contractor.
- .2 When overtime work, weekend statutory holiday work is required and approved by the Director, extra staff members may be posted by the Director or his designate, to maintain the security surveillance. The actual cost of this extra staff may be attributed to the contractor.

1.11 TOOLS AND EQUIPMENT

- .1 Maintain on site a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required.
- .2 Throughout the construction project maintain an up-to-date list of tools and equipment specified above.
- .3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device (jacks, cylinders, etc.).
- .4 Store all tools and equipment in approved secure locations.
- .5 Lock all tool boxes when not in use. Employees of the contractor shall keep the keys with them at all times. Set and lock scaffolding unorganized: when erected, scaffolding must be secured safely to the satisfaction of the representative of the institution
- .6 Scaffolding shall be secured and locked when not erected and when erected, shall be secured in a manner agreed upon with the director.
- .7 All missing or lost tools or equipment shall be reported immediately to the Director.
- .8 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
 - .1 At the beginning and conclusion of every construction project.
 - .2 Weekly, when the construction project extends longer than a one week period.
- .9 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day.
- .10 If propane or natural gas is used for heating the construction, the institution will require that an employee of the contractor supervise the construction site during non-working hours.

1.12 KEYS

- .1 Security Hardware Keys
 - .1 The Contractor shall arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).
 - .2 The SMO will provide a receipt to the Contractor for security hardware keys.
 - .3 The Contractor will provide a copy of the above-mentioned receipt to the Departmental Representative.
- .2 Other Keys
 - .1 The Contractor will use standard construction cylinders for locks for his use during the construction period.
 - .2 The Contractor will issue instructions to his employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.
 - .3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:
 - .1 Prepare an operational keying schedule;
 - .2 Accept the operational keys and cylinders directly from the lock manufacturer;
 - .3 Arrange for removal and return of the construction cores and install the operational core in all locks.
 - .4 Upon putting operational security keys into use, the CSC construction escort shall obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the CSC construction escort.

1.13 SECURITY HARDWARE

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

1.14 PRESCRIPTION DRUGS

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

1.15 SMOKING RESTRICTIONS

- .1 Contractors and construction employees are not permitted to smoke inside correctional facilities or outdoors within the perimeter of a correctional facility and must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Contractors and construction employees who are in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist, will be directed to leave the institution.

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

1.16 CONTRABAND

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.
- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.
- .3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
- .4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

1.17 SEARCHES

- .1 All vehicles and persons entering institutional property may be subject to search.
- .2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband or unauthorized items, he may order that person to be searched.
- .3 All employees entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

1.18 ACCESS TO AND REMOVAL FROM INSTITUTIONAL PROPERTY

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

1.19 MOVEMENT OF VEHICLES

- .1 Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:
 - .1 07:45 a.m. to 11:00 a.m.
 - .2 1:00 p.m. to 3:30 p.m.

Construction vehicles shall not leave the Institution until an inmate count is completed.

- .2 The contractor shall advise the Director twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.
- .3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or Commissionaires working under the authority of the Director.

- .4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.
- .5 Vehicles shall be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the institution.
- .6 Private vehicles of construction employees will not be allowed within the security perimeter of medium or maximum security institutions without the authorization of the Director.
- .7 With prior approval of the Director, a vehicle may be used in the morning and evening to transport a group of employees to the work site. This vehicle will not remain within the Institution the remainder of the day.
- .8 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Director may require that the equipment be secured with a chain and padlock to another fixed object.

1.20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

- .1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Director may:
 - .1 Prohibit or restrict access to any part of the institution.
 - .2 Require that in certain areas of the institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when escorted by a member of the CSC security staff or a commissionaire.
- .3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the officer's lounge or the dining room of the institution.

1.21 SURVEILLANCE AND INSPECTION

- .1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.
- .2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the construction project.

1.22 STOPPAGE OF WORK

- .1 The director may order at any time that the contractor, his employees, sub-contractors and their employees to not enter or to leave the work site immediately due to a security situation occurring within the Institution. The contractor's site supervisor shall note the

name of the CSC staff member giving this instruction, the time of the request and obey the order as quickly as possible.

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

1.23 CONTACT WITH INMATES

- .1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any construction employee doing any of the above will be removed from the site and his security clearance revoked.
- .2 It is to be noted that cameras are not allowed on CSC property.

SPECIAL NOTE : If the project involves the Corcan workforce and inmates, check with the institution's policy on contact with inmates.

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

1.24 COMPLETION OF CONSTRUCTION PROJECT

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 CONTENT

- .1 Contractor shall manage his operations so that safety and security of the public and of site workers always take precedence over cost and scheduling considerations.

1.3 REFERENCES

- .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA)
- .3 Workplace Hazardous Materials Information System (WHMIS)
- .4 Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1.
- .5 Construction Safety Code, S-2.1, r.6.

1.4 SUBMITTALS

- .1 Submit the documents required according to section 01 33 00 - Documents and samples to be submitted.
- .2 Submit to Ministerial Representative the site-specific safety program, as outlined in 1.9 at least 10 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or site conditions. The Ministerial Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site and activities. The Contractor must make the required changes before work begins.
- .3 Submit to Ministerial Representative the site inspection sheet, duly completed, at the intervals indicated in 1.13.1.
- .4 Submit to Ministerial Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .5 Submit to Ministerial Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

- .6 Submit to Ministerial Representative all safety data sheets for hazardous material to be used at the site at least three days before they are to be used.
- .7 Submit to Ministerial Representative copies of all training certificates required for application of the safety program, in particular:
 - .1 General construction site safety and health courses;
 - .2 Safety officer attestations;
 - .3 First aid in the workplace and cardiopulmonary resuscitation;
 - .4 Work likely to release asbestos dust;
 - .5 Work in confined spaces;
 - .6 Lockout procedures;
 - .7 Wearing and fitting of individual protective gear;
 - .8 Forklift truck;
 - .9 Positioning platform;
 - .10 Any other requirement of Regulations or the safety program.
- .8 Medical examinations: Wherever legislation, regulations, directives, specification or a safety program require medical examinations, Contractor must:
 - .1 Prior to start-up, submit to Ministerial Representative certificates of medical examination for all concerned supervisory staff and employees who will be on duty when the site opens.
 - .2 Thereafter, submit without delay certificates of medical examination for any newly hired concerned personnel as and when they start work at the site.
- .9 Emergency plan: The emergency plan, as defined in 1.9.3, shall be submitted to Ministerial Representative at the same time as the site-specific safety program.
- .10 Notice of site opening: Notice of site opening shall be submitted to the Commission *de la santé et de la sécurité du travail* (CSST) before work begins. A copy of such notice shall be submitted to Ministerial Representative at the same time and another posted in full view at the site. During demobilization, a notice of site closing shall be submitted to the CSST, with copy to Ministerial Representative.
- .11 Plans and certificates of compliance : Submit to the CSST and to Ministerial Representative a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the Construction Safety Code (S-2.1, r. 6), or by any other legislation or regulation or by any other clause in the specifications or in this contract. Copies of these documents must be on hand at the site at all times.

- .12 Certificate of compliance delivered by the CSST: The certificate of compliance is a document delivered by the CSST confirming that the contractor is in rule with the CSST, i.e. that he had pay out all the benefits concerning this contract. This document must be delivered to Departmental Representative at the end of the work.

1.5 HAZARDS ASSESSMENT

- .1 The Contractor must identify all hazards inherent in each task to be carried out at the site.
- .2 The Contractor must plan and organize work so as to eliminate hazards at source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard Can - CSA- Z-259.10 - M90. Safety belts shall not be used as protection against falling.
- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Ministerial Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Ministerial Representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

1.6 MEETINGS

- .1 Contractor decisional representative must attend any meetings at which site safety and health issues are to be discussed.
- .2 Set up a site safety committee, and convene meetings as required by the Construction Safety Code (S-2.1, r.6).

1.7 LEGAL AND REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the site and its related activities.
- .2 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .3 Regardless of the publication date shown in the construction safety code, always use the most recent version.

1.8 SITE-SPECIFIC CONDITIONS

- .1 At the site, the Contractor must take account of the following specific conditions:

- .1 Possibility to have other activities in proximity of the project; the Contractor should coordinate work with the other contractors.
- .2 Utilities cables and piping could be confined in the worksite, before starting any excavation; the Contractor should coordinate with the responsible of the establishment to verify the existing facilities.
- .3 Some work will be done in operational areas of the establishment; the Contractor should respect the security requirements.

1.9 SAFETY AND HEALTH MANAGEMENT

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .2 Develop a site-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take account of all information appearing in 1.7 and must be submitted to all parties concerned, in accordance with the provisions set forth in 1.4. At a minimum, the site-specific safety program must include:
 - .1 Company safety and health policy.
 - .2 A description of the work, total costs, schedule and projected workforce curve.
 - .3 Flow chart of safety and health responsibility.
 - .4 The physical and material layout of the site.
 - .5 First-aid and first-line treatment standards.
 - .6 Identification of site-specific hazards.
 - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them.
 - .8 Training requirements.
 - .9 Procedures in case of accident/injury
 - .10 Written commitment from all parties to comply with the prevention program.
 - .11 A site inspection schedule based on the preventive measures.
- .3 The Contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, pursuant to the provisions of 1.4. The emergency plan must include:
 - .1 Evacuation procedure;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);

- .3 Identification of persons in charge at the site;
- .4 Identification of those with first-aid training;
- .5 Training required for those responsible for applying the plan;
- .6 Any other information needed, in the light of the site characteristics.

1.10 RESPONSIBILITIES

- .1 No matter the size of the construction site or how many workers are present at the workplace, designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, applicable federal and provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the Commission de la santé et de la sécurité du travail.
- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work.

1.11 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the site. As they arrive on site, all workers must be informed of their rights and obligations pertaining to the site specific safety program. The Contractor must insist on their right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the site. The Contractor must keep and update a written record of all information transmitted with signatures of all affected workers.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
 - .1 Notice of site opening;
 - .2 Identification of principal Contractor;
 - .3 Company OSH policy;
 - .4 Site-specific safety program;
 - .5 Emergency plan;
 - .6 Data sheets for all hazardous material used at the site;
 - .7 Minutes of site committee meetings;

- .8 Names of site committee representatives;
- .9 Names of those with first-aid training;
- .10 Action reports and correction notices issued by the CSST.

1.12 UNFORESEEN CIRCUMSTANCES

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary site inspection arises as a result of or in the course of the work, immediately suspend work, take appropriate temporary measures to protect the workers and the public and notify Ministerial Representative, both verbally and in writing. Then the Contractor must modify or update the site specific safety program in order to resume work in safe conditions.

1.13 INSPECTION OF SITE AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Inspect the work site and complete the site inspection sheet at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Ministerial Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Ministerial Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of this section, Ministerial Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety or health of site personnel or the public or to the environment.

1.14 BLASTING

- .1 Blasting and other use of explosives are forbidden unless authorized in writing by Ministerial Representative.
- .2 Any operation involving explosives must be carried out under the supervision of a qualified shot firer.
- .3 The purchase, carriage, storage and use of explosives must comply with all applicable federal and provincial legislation:

- .1 Canada: Explosives Act (E-17), Explosives Regulations (C.R.C. CH. 599), Standard for Storage of Blasting Charges and Detonators, Transportation of Dangerous Goods Act and Regulations.
- .2 Quebec: Explosives Act (E-22), Explosives Regulations (E-22, r.1), Safety Code for the Construction Industry (S-2.1, r.6), Transportation of Dangerous Goods Regulations.
- .4 Contractor shall obtain all permits required pursuant to the legislation and regulations referred to above and keep copies on hand at the site.
- .5 Contractor shall facilitate inspection of the site, stored explosives and vehicles used to transport explosives by any government representatives or police officers whose jurisdiction encompasses explosives.

1.15 POWDER ACTUATED DEVICES

- .1 Use of power hammers and other explosive-actuated devices must be authorized by Ministerial Representative.
- .2 Any person using a power hammer shall hold a training certificate and meet all requirements of Section 7 of the Construction Safety Code (S-2.1, r. 6).
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

1.16 SPECIAL REQUIREMENTS IN HEALTH AND SAFETY SPECIFIC TO THE PROJECT

- .1 Excavating and trenching
 - .1 Contractor must follow the CSST guidelines on excavation.
- .2 Lockout
 - .1 For every work on energized equipment or equipment that may be started accidentally, the Contractor shall draw up and implement a lockout procedure and complete the Request for Electrical Isolation Form provided by the Manager in Charge of Worksite.
 - .2 Although the hereunder list is not exhaustive, here are some examples for which the use of the form is obligatory:
 - .1 main building power feeders;
 - .2 feeder supply panels and sub-panels;
 - .3 bus ducts;
 - .4 motor control centres;

- .5 emergency power circuits;
 - .6 fire alarm and fire protection equipment;
 - .7 mechanical protective equipment;
 - .8 alarm circuit for building services, including all heating, ventilating and air conditioning equipment;
 - .9 circuits supplying more than one (1) piece of equipment;
 - .10 circuits affecting one (1) single piece of equipment used in a cooling or heating system.
- .3 After having completed the form, the Contractor, shall have it countersigned by the Manager in Charge of Worksite before starting work.
 - .4 Notwithstanding the previous paragraphs, the Contractor shall, in emergency situation, receive an oral guarantee of isolation of the Manager in Charge of Worksite and immediately countersign the request of electrical isolation.
 - .5 The procedure requested at paragraph 1 must comply with the principles listed in the “Le cadenassage” pamphlet published by the Association paritaire pour la santé et la sécurité du travail secteur construction (ASP Construction).
 - .6 Supervisors and all workers concerned must have followed ASP Construction’s “Les techniques de cadenassage” course (514 355-6190 or 1 800 361-2061) or an equivalent course given by another firm.
 - .7 Identify every work that must absolutely be done on live equipment and establish the safety measures that will be applied, including the personal protective equipment.
- .3 Changing light bulbs and lighting tubes
 - .1 In addition to the other safety requirements set out in this document, the Contractor has to comply with the following requirements to prevent electric shock when changing light bulbs and lighting tubes:
 - .1 Ensure that the workers assigned to the work have received all of the information needed to carry out the work safely and that they at least apply the following safety measures.
 - .2 Check the condition of the work area before beginning the work. If the area is very humid, if there is water in the vicinity or if the electrical system is explosion-proof, do not carry out the work and notify the Ministerial Representative.
 - .3 Check the condition of the light bulbs and fluorescent tubes to be changed. If a light bulb or fluorescent tube shows signs of damage or wear, if it is difficult to remove or if there are traces of a ballast leak, do not carry out the work and notify the Ministerial Representative.

- .4 Wear leather gloves. Ensure that they do not show signs of damage or wear every time such work is to be performed.
 - .5 Wear safety goggles.
 - .6 The ladders and stepladders used have to be made of fiberglass.
 - .7 Block off areas where climbing equipment is being used.
 - .8 Insulate light switches whenever possible (switch off).
 - .9 Stick a danger label on the switch indicating that it should not be switched on.
 - .10 Replace the light bulbs and fluorescent tubes with the same type of bulbs and tubes of the same size and wattage. If there is a doubt, notify the Ministerial Representative.
- .4 Work in height
- .1 The Contractor must ensure that any person carrying out work that poses a risk of falling more than 2,4 m use fall protection equipment.
 - .2 Plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
 - .3 Every person using an elevating platform must have a training regarding this equipment.
 - .4 Wearing of safety harness is obligatory in any elevating platform with telescopic, articulated or rotary boom.
 - .5 Delimit a danger zone in any place where equipment for work in height is used.
- .5 Specific conditions for confined spaces
- .1 Class 1
 - .1 Regarding all class 1 (low-risk) confined spaces, all persons involved shall have followed a basic training. Though it is not necessary to implement special work practices in low-risk confined spaces, the Contractor shall implement methods that ensure the health and general safety of persons who must work in these spaces.
 - .2 Before having access to confined spaces, the manager responsible for the workplace shall be informed of the expected date and time of entry and exit.

- .3 Persons who have access to low-risk confined spaces must record the relevant information in the Confined Space Entry Log (ELF 103 form), i.e., all persons entering this class of confined space shall record each entry and each exit.
- .2 Class 2 and 3
 - .1 Regarding all class 2 and 3 confined spaces (medium- and high-risk), the following measures shall be strictly applied.
 - .2 The Contractor's prevention program shall include a written procedure which identifies:
 - .1 Necessary work tools;
 - .2 Instruments, installed or to be installed in the confined space, and measures to take for their installation, use, maintenance, protection and moving;
 - .3 Pipes and conduits entering the confined space;
 - .4 Risks and security measures to be taken depending on the work to be carried out;
 - .5 Hazardous material that may be found in the confined space;
 - .6 Appropriate rescue methods and equipment as well as emergency plan.
 - .3 The Contractor shall complete an access permit (ELF 101 form). The permit shall be valid for the duration of a work shift and shall take into account information contained in the assessment report and special conditions related to the work to be carried out. The Contractor may use his own form if it provides all the information that appears on the appended form.
 - .4 The Contractor shall complete a Hot Work Permit when the work to be carried out includes operations such as welding, cutting or any other activity that creates flames or sparks (ELF form 102).
 - .5 All persons having access to the confined space shall have the following training certificates:
 - .1 Safety for work in PWGSC confined spaces (ASP Construction or equivalent training);
 - .2 Workplace First Aid and CPR (organization recognized by the CSST);
 - .3 Use of ventilating equipment (ASP Construction or equivalent training);

- .4 Use of safety harness (ASP Construction or equivalent training);
 - .5 Use and maintenance of respiratory protection equipment (ASP Construction or equivalent training);
 - .6 Gas detection equipment (ASP Construction or equivalent training);
 - .7 When the use of air adduction equipment or autonomous respirators is planned for, thorough training in the preparation, maintenance and use of such equipment (Manufacturer, supplier or recognized organization);
 - .8 In remote areas where no local rescue and emergency intervention unit is available, the Contractor shall designate persons who are capable of carrying out rescue operations in confined spaces. First-aid attendant designated by the Contractor shall have relevant training in the use of rescue equipment.
-
- .6 All persons having access to a confined space shall present a medical certificate confirming that they are fit to work in a closed space. This certificate shall be valid for two years.
 - .7 Employees who are required to work in sewage collection systems or other similar systems shall be immunized against infectious diseases, in compliance with the immunization program prescribed by Health Canada, which is, against diphtheria and tetanus and for work to be done at the Correctional Service Canada, against hepatitis « B ».
 - .8 The antidiphtheria-tetanus vaccination is strongly recommended, though it is not mandatory.
 - .9 The Contractor shall establish emergency and rescue procedures in co-operation with municipal and ambulance services. These procedures, together with the relevant phone numbers and the whereabouts of the nearest phone shall be conspicuously posted near the work station.
 - .10 Before entry into a confined space, and every 15 minutes thereafter, the Contractor shall take readings of oxygen concentration, flammable gases and all toxic gases likely to be present, carbon monoxide and hydrogen sulphide in particular. These readings shall be recorded in a register, unless the detecting devices are equipped with an alarm and operate on a continuous basis. Detecting devices that are used shall be calibrated and adjusted by a competent person according to the manufacturer's directives, so that the alarms comply with the limits set out on the permit. NOTE: for welding and cutting tasks, readings of concentration must be done on a continuous basis.

- .11 The Contractor is responsible for the provision and maintenance of gas detecting devices. The Engineer may at any time require the Contractor's equipment to be checked for accuracy by a qualified person. In the event of failure of a detecting device, work shall be suspended immediately and all workers shall leave the confined space. In these circumstances, no claim for time lost shall be accepted.
- .12 If a detecting device alarm is set off, all workers shall leave the confined space. The Contractor shall then find the source of contamination, neutralize it, ventilate the confined space to eliminate contaminant residues and authorize access to the confined space only when concentrations of oxygen and gas have returned to normal.
- .13 Compressed gas cylinders or welding equipment shall not be brought into confined spaces: this equipment shall remain outside and shall not block entrances or exits; all cylinders shall be properly secured.
- .14 Tools and electrical devices used to gain access to confined spaces shall be grounded and, when necessary, designed to be explosion-proof. All equipment must be connected to a ground fault interrupter outlet or to a step-down transformer. The Contractor shall, at his own cost, hire a qualified electrician to adjust power receptacles and/or circuit breakers that he intends to use which do not meet these criteria.
- .15 The Contractor shall provide a ventilation system to keep concentrations of contaminants below admissible limits.
- .16 The Contractor shall put up posters to prevent unauthorized persons from entering the confined space.
- .17 When it is impossible to maintain the noise level under 85 dB, the Contractor shall provide all workers with ear protection adapted to the desired level of attenuation and work to be carried out.
- .18 The Contractor shall ensure that all workers wear the required personal protection equipment.
- .19 The Contractor shall assign a competent person to assume the function of safety guard. The safety guard shall:
 - .1 Be properly informed of work procedures in a confined space.
 - .2 Ensure constant communication with all workers in the confined space. The instructions that are applied shall be adapted to confined spaces. The Contractor shall choose means of communication according to identified risks and other relevant factors, which is the protection equipment the workers must wear, noise levels in confined spaces and surrounding areas, remoteness, lighting conditions, etc.

- .3 Be familiar with gas detecting devices and see to their proper functioning for the duration of the work.
- .4 Be familiar with auxiliary ventilation systems and see to their proper functioning for the duration of the work.
- .5 Be familiar with emergency procedures.
- .6 Ensure that:
 - .1 All workers who enter the confined space respect the Contractor's work procedure.
 - .2 The working conditions and the environment inside the confined space are in no way detrimental to workers' health and safety.
- .20 The safety guard shall, at all times, be posted at the entrance of the confined space and shall not leave his station as long as there is a worker inside the confined space.
- .21 The Contractor shall designate a person to be in charge of the safety of the confined space. This person shall be present at all times on the job site. The same person may act as a security guard and be responsible for the safety of confined spaces, provided all requirements of both functions are met.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 REFERENCES

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Ministerial Representative.
- .3 Environmental Protection Plan must include 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 in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.

- .5 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
- .6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- .7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .8 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .9 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .10 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .11 Contaminant 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.
- .12 Waste Water Management Plan identifying methods and procedures for management or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .13 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
- .14 Pesticide treatment plan to be included and updated, as required.
- .6 A plan for the management and disposal of contaminated soils, which defines how they will be stored, analyzed, transported, disposed type BC soil as defined in Section 31 00 00.01 and the way will be managed type AB soil as defined in Section 31 00 00.01 (storage, transport, placing embankment, drainage, etc.).

- .7 A management plan for disposal of drilling muds specifying the storage methods, analysis of transport and disposal of this sludge.

1.4 FIRES

- .1 Fires and burning of rubbish on site is not permitted.
- .2 Provide supervision, attendance and fire protection measures as directed.

1.5 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect 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 minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated by Ministerial Representative.

1.6 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Use waterway beds for borrow material only after written receipt of approval from Ministerial Representative.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Blasting is allowed only above water and 500 m minimum from indicated spawning beds.

1.7 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.

- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where indicated and directed by Ministerial Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.8 NOTIFICATION

- .1 Ministerial Representative will notify Contractor in writing of 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 Ministerial Representative of proposed corrective action and take such action for approval by Ministerial Representative.
 - .1 Take action only after receipt of written approval by Ministerial Representative
- .3 Ministerial Representative will 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 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Bury rubbish and waste materials on site where directed after receipt of written approval from Ministerial Representative.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .5 Waste Management: separate waste materials for reuse / reuse and recycling in accordance with Section 01 74 21 - Management and Disposal of construction / demolition.
 - .1 Remove bins and recycling bins from site and dispose of materials at appropriate facilities.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 MEASUREMENT FOR PAYMENT

- .1 The work related to quality control is not measurable for payment and must be included in the cost of work for which it is required.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Ministerial Representative for purpose of inspecting and/or testing portions of work. Cost of such services will be borne by Ministerial Representative except in the following cases:
 - .1 Inspection and testing required by various laws, ordinances, rules, regulations or public policy.
 - .2 Inspection and testing performed solely for the convenience of the contractor.
 - .3 Testing and maintenance of equipment.
 - .4 Factory tests and certificates of compliance.
 - .5 All tests to be performed by the contractor under the supervision of the Ministerial Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are identified during testing and/or inspections, the designated agency will require further inspection and/or additional testing to define the precise nature and extent of these defects. The contractor shall correct the defects as directed by the Ministerial Representative, at no additional cost to the Ministerial Representative, and pay the cost of retesting after the corrections are made.

1.4 CONTRACTOR RESPONSIBILITY

- .1 Advise the Ministerial Representative well in advance so to schedule the laboratory for testing.
- .2 Assume the cost of exposing or re-doing work that has been covered before being inspected and approved by the Ministerial Representative.

- .3 Send all samples of materials to be tested to the designated testing laboratory.
- .4 Additional tests: When inspections or tests conducted by the testing laboratory revealed non-compliance with the requirements of the contract, the contractor must pay the cost of additional tests or inspections that Ministerial Representative requires to verify if the corrections are acceptable.

1.5 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

- .1 Notify appropriate agency and Ministerial 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 sufficient space to store and cure test samples.

1.7 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in work or not, which has been rejected by Ministerial Representative as failing to conform to contract documents. Replace or re-execute in accordance with contract documents.
- .2 If in opinion of Ministerial Representative it is not expedient to correct defective Work or Work not performed in accordance with contract documents, owner will deduct from contract price difference in value between work performed and that called for by contract documents, amount of which will be determined by Ministerial Representative.

1.8 REPORTS

- .1 Submit 4 copies of inspection and test reports to Ministerial Representative.
- .2 Provide copies to subcontractor of work being inspected or tested and to manufacturer or fabricator of material being inspected or tested.

1.9 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Ministerial Representative.

1.10 MOCK-UPS

- .1 Prepare mock-ups for work specifically requested in the specifications. The requirements of this section apply to all sections of the specifications in which we are asked to provide mock-ups.
- .2 Construct in locations acceptable to Ministerial Representative as specified in specific Section.
- .3 Prepare mock-ups for Ministerial Representative's review with reasonable promptness and in orderly sequence, to not cause delays in work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of contract time and no claim for extension by reason of such default will be allowed.
- .5 Specification section identifies whether mock-up may remain as part of work or if it is to be removed and when.

1.11 MILL TESTS

- .1 Submit mill test certificates as required of specification sections.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 PRECEDENCE

- .1 For Federal Government Projects, Division 1 Sections take precedence over technical specifications in other divisions of this Project Manual.

1.3 CONTENT OF SECTION

- .1 This section includes specific environmental and sustainable development requirements for building materials, products and systems needed to ensure that this project complies with green design processes and clients' sustainable development plan.

1.4 SUBMITTALS

- .1 Provide submittals for work in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submittals required:
 - .1 Name, skills and experience of the person responsible for the design and compliance with the environmental protection plan to be submitted to the Ministerial Representative for approval.
 - .2 Compliance Report indicating requirement to purchase energy efficient and environmentally benign products.
 - .3 Compliance report with requirements concerning the use of materials, equipment and construction methods that will reduce energy consumption, water consumption and the possibility of formation of potentially toxic derivatives, the use of materials and recycled materials and reuse / recycling of materials and equipment recovered.
 - .4 Energy Report: to indicate EnerGuide ratings of new equipment and appliances.

1.5 ENVIRONMENT PROTECTION

- .1 Follow methods and procedures specified in section 01 35 43 – Environmental Procedures.

1.6 GENERAL CONSTRUCTION MATERIALS/PRACTICES

- .1 Materials and Resources
 - .1 Use uncontaminated demolition materials for fill and hardcore and/or granular base.

- .2 Incorporate reused building materials as indicated.
- .2 Storage and Collection of Recyclables
 - .1 Provide separate storage/handling facilities for consumer recyclables including used paper, newspaper, newsprint, cardboard, glass, metal and plastic.
- .3 Construction Waste Management
 - .1 Follow recommendations and requirements of this projects construction, renovation and demolition (CRD) waste management plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is of a general nature and provides information that could relate to all other sections of the contract documents.

1.2 SUBMITTALS

- .1 Provide submittals for work in accordance with Section 01 33 00 - Submittal Procedures.

1.3 INSTALLATION AND REMOVAL

- .1 The construction facility location will be provided at the first work meeting.
- .2 Prepare a plan showing the proposed construction facility location that will be fenced, including the number of trailers, access roads to the fenced area and details of installation of the fence.
- .3 Provide, establish or develop the site facilities necessary for carrying out the work as soon as possible.
- .4 Remove equipment from the site when no longer needed.
- .5 Rehabilitate the site used for construction facilities to its original or better condition.

1.4 HOISTING

- .1 Provide and install winches and cranes needed to move workers, materials and equipment, as well as ensure maintenance and operation. Make financial arrangements with sub-contractors for the use of lifting equipment.
- .2 The winches and cranes must be operated by a skilled worker.

1.5 SITE STORAGE/LOADING

- .1 Ensure that work is performed within the limits specified in the contract documents. Do not clutter the site unreasonably with material or equipment.
- .2 Do not overload or permit overloading any part of the work so as not to compromise its integrity.
- .3 Ensure that the equipment is locked at all times. CSC is not responsible in case of loss or theft.

1.6 CONSTRUCTION PARKING

- .1 Parking will be allowed on site, in the space provided for construction facilities

1.7 EQUIPMENT, TOOLS AND MATERIALS STORAGE

- .1 Provide lockable, weather resistant, storage for equipment and tools and keep it clean and in good order.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.8 SANITARY FACILITIES

- .1 Provide sanitary facilities for workers in accordance the regulations.
- .2 Display required notices and take all precautions required by local health authorities. Maintain the premises clean.

1.9 CLEAN-UP

- .1 Remove construction debris on a daily basis.
- .2 Keep hard surfaces free of dust.
- .3 Recupérate material during the demolition work.
- .4 Stack stored new or salvaged material not in construction facilities.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is of a general nature and provides information that could relate to all other sections of the contract documents.

1.2 INSTALLATION AND REMOVAL

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

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities.

1.4 FIRE ROUTES

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

1.5 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of work.
- .2 Be responsible for damage incurred.

1.6 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Ministerial Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is of a general nature and provides information that could relate to all other section of the contract documents.

1.2 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Ministerial Representative reserves right to have such products or systems tested to prove or disprove conformance.

1.3 QUALITY

- .1 Products, materials, equipment and articles incorporated in work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to reuse recoverable materials.
- .3 Defective products, whenever identified prior to completion of work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Ministerial Representative based upon requirements of contract documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

- .1 In event of failure to notify Ministerial Representative at commencement of work and should it subsequently appear that work may be delayed for such reason, Ministerial Representative reserves right to substitute more readily available products of similar character, at no increase in contract price or contract time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in a manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Replace damaged products at no cost and to satisfaction of Ministerial Representative.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of work.

1.7 MANUFACTURER'S INSTRUCTIONS

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

1.8 QUALITY OF WORK

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

1.9 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out work. Maintain efficient and continuous supervision.

- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 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.

1.11 EXISTING UTILITIES

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is of a general nature and provides information that could relate to all other section of the contract documents.

1.2 MEASUREMENT FOR PAYMENT

- .1 The work related to cleaning is not measurable for payment and must be included in the cost of work for which it is required.

1.3 SITE CLEANLINESS

- .1 Maintain the site in tidy condition, free from accumulation of waste and debris, including that caused by other entities.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Ministerial Representative. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site at designated dumping areas.
- .7 Store hazardous waste in appropriate containers and remove from premises at end of each working day.

1.4 FINAL CLEANING

- .1 At the point of substantial completion remove surplus products, tools and construction equipment not required for performance of remaining work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors when located in work area.

- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Ministerial Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Remove dirt and other disfiguration from exterior surfaces.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Execution

2.1 RESPONSABILITIES OF THE CONTRACTOR

- .1 Ensure the cleanliness of the work site and do all that is necessary to guarantee the site is safe and clean.
- .2 In the case of non-compliance, the Ministerial Representative will request corrective measure to be completed immediately or risk a stop work order.
- .3 Claims for financial compensation will not be accepted for work related to non-compliance and for operations related to this section.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 WASTE MANAGEMENT GOALS

- .1 Prior to start of work conduct meeting with Ministerial Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 PWGSC's Waste Management Goal: minimize total Project Waste to be diverted from landfill sites. Provide Ministerial Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.3 MEASUREMENT FOR PAYMENT

- .1 Unless otherwise indicated, the work related to construction/demolition waste management and disposal is not measurable for payment and must be included in the cost of work for which it is required.

1.4 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.
- .3 Demolition Waste Audit (DWA): relates to actual waste generated from project.
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

- .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate condition: refers to waste sorted into individual types.
- .12 Source separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .13 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .14 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials.

1.5 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Waste Reduction Workplan.
 - .2 Material Source Separation Plan.

1.6 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of completed Waste Reduction Workplan (WRW)
 - .2 Submit 2 copies of Materials Source Separation Program (MSSP) description.
- .3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.
 - .1 Failure to submit could result in hold back of final payment.

- .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.
- .3 For each material reused, sold or recycled from the project, include the quantity in tonnes identifying type, size and the destination.
- .4 For each material landfilled or incinerated from the project, include the quantity in tonnes and identity of landfill, incinerator or transfer station.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare WRW prior to project start-up.
- .2 WRW should include but not be limited to:
 - .1 Destination of materials listed.
 - .2 Deconstruction/disassembly techniques and sequencing.
 - .3 Schedule for deconstruction/disassembly.
 - .4 Location.
 - .5 Security.
 - .6 Protection.
 - .7 Clear labelling of storage areas.
 - .8 Details on materials handling and removal procedures.
 - .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.
- .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .4 Describe management of waste.
- .5 Post WRW or summary where workers at site are able to review content.
- .6 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.
- .7 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.8 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.

- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Ministerial Representative.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
 - .1 Transport to approved and authorized recycling facility to users of material for recycling.
- .8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
 - .1 Ship materials to a site operating under Certificate of Approval.
 - .2 Materials must be immediately separated into required categories for reuse or recycling.

1.9 WASTE TREATMENT SITES

- .1 Provide the Ministerial Representative, a list of treatment sites to which waste will be transported for recycling. The list must be given to the Ministerial Representative before starting work.

Part 2 Products

2.1 NOT USED

.1 NOT USED

Part 3 Execution

3.1 General

- .1 Do work in compliance with WRW.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 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.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.3 WASTE REDUCTION WORKPLAN (WRW)

- .1 Schedule B:

Material Category	Person(s) Responsible	Total Quantity of Waste (unit)	Reused Amount (units)		Recycled Amount (unit)		Material(s) Destination
			Projected	Actual	Projected	Actual	

**3.4 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY
FOR THE ENVIRONMENT**

- .1 Government Chief Responsibility for the Environment:

Ministère du Développement durable, de l'Environnement, de la faune et des
Parcs
850, boulevard Vanier
Laval (Québec)
H7C 2M7
450-661-2008

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 GENERAL REQUIREMENTS RELATED TO MATERIALS AND PRODUCTS

- .1 Conform to the requirements of section 01 61 00 – Common Product Requirements.
- .2 The instructions must be prepared by competent persons with the knowledge required for the operation and maintenance of the products described.
- .3 Two (2) weeks prior to substantial completion, submit to the Ministerial Representative four (4) final copies of operating and maintenance manuals, in English and French, when required.
- .4 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in work.
- .5 Upon request, provide documents confirming the type, source and quality of products supplied.
- .6 Defective products will be rejected, even if they have previously been inspected and they must be replaced at no additional cost.
- .7 Assume the cost of transporting products.

1.3 FORMAT

- .1 Organize data as an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by process flow, under Section numbers and sequence of table of contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
- .9 Provide 1:1 scaled CAO files in dwg format on CD.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of contents for each volume: provide title of project;
 - .1 Date of submission.
 - .2 Name, addresses, and telephone numbers of consultant and contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
 - .3 Product data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
 - .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - .5 Typewritten text: as required to supplement product data.
 - .6 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in section General Conditions, at site for Ministerial Representative, one record copy of:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change orders and other modifications to contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.

- .7 Inspection certificates.
- .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in list of contents of this project manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Ministerial Representative.

1.6 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system, include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 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.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance requirements: include routine procedures and guide for trouble-shooting; disassembly, repair and reassembly instructions and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.

- .8 Include 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 list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .12 Additional requirements: as specified in individual specification sections.

1.7 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in work.
 - .3 Deliver to location as directed by Ministerial Representative; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Ministerial Representative.
 - .2 Include approved listings in maintenance manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials and special tools in a manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Ministerial Representative.

1.9 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Ministerial Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.

- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Contractor's signature.

1.10 LIST OF WORKS

- .1 At each well and / or excavation trenches, make a precise statement of all accessories (elbow, tee, valve, service connection, plug, etc.), existing and abandoned pipes, all underground structures to allow the location of these elements after backfilling.
- .2 Give the Ministerial Representative three (3) hard copies and three (3) CDs of the statement.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Related requirements
 - .1 Section 01 91 33 - Commissioning Forms.
 - .2 Section 01 91 41 - Commissioning Training.
- .2 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.
 - .8 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.
- .4 AFD managed projects the term Departmental Representative in Cx specifications to be interpreted as AFD Service Provider.

1.3 COMMISSIONING OVERVIEW

- .1 Section 01 91 31 - Commissioning (Cx) Plan.
- .2 For Cx responsibilities refer to Section 01 91 31 - Commissioning (Cx) Plan.
- .3 Cx to be a line item of Contractor's cost breakdown.
- .4 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.
- .6 Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.
 - .2 Equipment, components and systems have been commissioned.
 - .3 O M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review contract documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
 - .1 Have completed Cx Plan up-to-date.

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

1.6 CONFLICTS

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

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than 4 weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 4 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Refer to section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms for requirements and instructions for use.
- .2 Departmental Representative to review and approve Cx documentation.
- .3 Provide completed and approved Cx documentation to Departmental Representative.

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with section 01 32 16.06 - Construction Progress Schedule - Critical Path Method (CPM).
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.10 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings: section 01 32 16.06 - Construction Progress Schedule - Critical Path Method (CPM) and as specified herein.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 At 60% construction completion stage. section 01 32 16.06 - Construction Progress Schedule - Critical Path Method (CPM), Departmental Representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Departmental Representative, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

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

1.12 WITNESSING OF STARTING AND TESTING

- .1 Provide 14 days notice prior to commencement.
- .2 Departmental Representative to witness of start-up and testing.

- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.13 MANUFACTURER'S INVOLVEMENT

- .1 Factory testing: manufacturer to:
 - .1 Coordinate time and location of testing.
 - .2 Provide testing documentation for approval by Departmental Representative.
 - .3 Arrange for Departmental Representative to witness tests.
 - .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site.
- .2 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
- .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.

- .3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.
- .4 Document require tests on approved PV forms.
- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.
 - .2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.
 - .3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.
 - .1 Rejected equipment to be remove from site and replace with new.
 - .2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.
- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports,
 - .5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

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

1.19 INSTRUMENTS / EQUIPMENT

- .1 Submit to Departmental Representative for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide the following equipment as required:
 - .1 2-way radios.
 - .2 Ladders.
 - .3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

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

1.22 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.

- .3 Provide copies to Departmental Representative within 5 days of test and with Cx report.

1.23 COMMISSIONING CONSTRAINTS

- .1 Since access into secure or sensitive areas will be very difficult after occupancy it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems in these areas before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.
- .2 The Contractor shall take all measures and precautions to finalize its patches, its trials, its settings and simulations at each stage of phasing required for this work. Floor areas of work completed by the phasing will then be occupied and prohibited to the Contractor.

1.24 EXTRAPOLATION OF RESULTS

- .1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF VERIFICATION

- .1 Laboratory areas:
 - .1 Provide manpower and instrumentation to verify up to 100 % of reported results.
- .2 Elsewhere:
 - .1 Provide manpower and instrumentation to verify up to 30 % of reported results, unless specified otherwise in other sections.
- .3 Number and location to be at discretion of Departmental Representative.
- .4 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .5 Review and repeat commissioning of systems if inconsistencies found in more than 20 % of reported results.
- .6 Perform additional commissioning until results are acceptable to Departmental Representative.

1.26 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:
 - .1 Verification of reported results fail to receive Departmental Representative's approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 Departmental Representative deems Contractor's request for second verification was premature.

1.27 SUNDRY CHECKS AND ADJUSTMENTS

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

1.28 DEFICIENCIES, FAULTS, DEFECTS

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

1.29 COMPLETION OF COMMISSIONING

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

1.30 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.31 TRAINING

- .1 In accordance with section 01 91 41 - Commissioning (Cx) - Training.

1.32 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.33 OCCUPANCY

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

1.34 INSTALLED INSTRUMENTATION

- .1 Use instruments installed under Contract for TAB and PV if:
 - .1 Accuracy complies with these specifications.
 - .2 Calibration certificates have been deposited with Departmental Representative.
- .2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.35 PERFORMANCE VERIFICATION TOLERANCES

- .1 Application tolerances:
 - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10% of specified values.
- .2 Instrument accuracy tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
 - .1 Unless otherwise specified actual values to be within +/- 2 % of recorded values.

1.36 OWNER'S PERFORMANCE TESTING

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 91 13 - General commissioning (CX) Requirements.

1.2 REFERENCES

- .1 American Water Works Association (AWWA)
- .2 National Fire Protection Association (NFPA)
 - .1 NFPA-13-02, Installation of Sprinkler Systems Handbook.
 - .2 NFPA-14-02, Automatic Sprinkler Systems Handbook.
 - .3 NFPA-20-03, Standard for the Installation of Stationary Fire Pumps for Fire Protection.
- .3 Public Works and Government Services Canada (PWGSC)
 - .1 PWGSC - Commissioning Guidelines CP.4 -3rd edition-03.
- .4 Underwriters' Laboratories of Canada (ULC)

1.3 GENERAL

- .1 Provide a fully functional facility:
 - .1 Systems, equipment and components must be operational in relation to the terms of phasing of work.
 - .2 Systems, equipment and components meet user's functional requirements before date of acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.
 - .3 Facility user and O M personnel have been fully trained in aspects of installed systems.
 - .4 Optimized life cycle costs.
 - .5 Complete documentation relating to installed equipment and systems.
- .2 Term "Cx" in this section means "Commissioning".
- .3 Use this Cx Plan as master planning document for Cx:
 - .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
 - .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.
 - .3 Sets out deliverables relating to O M, process and administration of Cx.
 - .4 Describes process of verification of how built works meet design requirements.
 - .5 Produces a complete functional system prior to issuance of Certificate of Occupancy.

- .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx.
 - .2 General description of elements that make up Cx Plan.
 - .3 Process and methodology for successful Cx.
- .4 Acronyms:
 - .1 Cx - Commissioning.
 - .2 BMM - Building Management Manual.
 - .3 EMCS - Energy Monitoring and Control Systems.
 - .4 MSDS - Material Safety Data Sheets.
 - .5 PI - Product Information.
 - .6 PV - Performance Verification.
 - .7 TAB - Testing, Adjusting and Balancing.
 - .8 WHMIS - Workplace Hazardous Materials Information System.
- .5 Commissioning terms used in this Section:
 - .1 Bumping: short term start-up to prove ability to start and prove correct rotation.
 - .2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.4 DEVELOPMENT OF 100% CX PLAN

- .1 Cx Plan to be 95% completed before added into Project Specifications.
- .2 Cx Plan to be 100% completed within 8 weeks of award of contract to take into account:
 - .1 Approved shop drawings and product data.
 - .2 Approved changes to contract.
 - .3 Contractor's project schedule.
 - .4 Cx schedule.
 - .5 Contractor's, sub-contractor's, suppliers' requirements.
 - .6 Project construction team's and Cx team's requirements.
- .3 Submit completed Cx Plan to Departmental Representative and obtain written approval.

1.5 REFINEMENT OF CX PLAN

- .1 During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from Client program modifications.
 - .2 Approved design and construction changes.
- .2 Revise, refine and update every 6 weeks during construction phase. At each revision, indicate revision number and date.
- .3 Submit each revised Cx Plan to Departmental Representative for review and obtain written approval.

- .4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

- .1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.
- .2 Project Manager will select Cx Team consisting of following members:
 - .1 Consultant Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.
 - .2 SNC O M Quality Assurance Commissioning Manager: ensures Cx activities are carried out to ensure delivery of a fully operational project including:
 - .1 Review of Cx documentation from operational perspective.
 - .2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.
 - .3 Protection of health, safety and comfort of occupants and O M personnel.
 - .4 Monitoring of Cx activities, training, development of Cx documentation will be updated when the contractor will have the contract .
 - .5 Work closely with members of Cx Team.
 - .3 Consultant is responsible for:
 - .1 Organizing Cx.
 - .2 Monitoring operations Cx activities.
 - .3 Witnessing, certifying accuracy of reported results.
 - .4 Witnessing and certifying TAB and other tests.
 - .5 Developing BMM.
 - .6 Ensuring implementation of final Cx Plan.
 - .7 Performing verification of performance of installed systems and equipment.
 - .8 Implementation of Training Plan.
 - .4 Construction Team: contractor, sub-contractors, suppliers and support disciplines, is responsible for construction/installation in accordance with contract documents, including:
 - .1 Testing.
 - .2 TAB.
 - .3 Performance of Cx activities.
 - .4 Delivery of training and Cx documentation.
 - .5 Assigning one person as point of contact with Consultant and PWGSC Cx Manager for administrative and coordination purposes.
 - .5 Contractor's Cx agent implements specified Cx activities including:
 - .1 Demonstrations.

- .2 Training.
- .3 Testing.
- .4 Preparation, submission of test reports.
- .6 Property Manager: represents lead role in Operation Phase and onwards and is responsible for:
 - .1 Receiving facility.
 - .2 Day-To-Day operation and maintenance of facility.

1.7 CX PARTICIPANTS

- .1 Employ the following Cx participants to verify performance of equipment and systems:
 - .1 Installation contractor/subcontractor:
 - .1 Equipment and systems except as noted.
 - .2 Equipment manufacturer: equipment specified to be installed and started by manufacturer.
 - .1 To include performance verification.
 - .3 Specialist subcontractor: equipment and systems supplied and installed by specialist subcontractor.
 - .4 Specialist Cx agency:
 - .1 Possessing specialist qualifications and installations providing environments essential to client's program but are outside scope or expertise of Cx specialists on this project.
 - .5 Client: responsible for intrusion and access security systems.
 - .6 Ensure that Cx participant:
 - .1 Could complete work within scheduled time frame.
 - .2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O M personnel, including:
 - .1 Modify ventilation rates to meet changes in off-gassing.
 - .2 Changes to heating or cooling loads beyond scope of EMCS.
 - .3 Changes to EMCS control strategies beyond level of training provided to O M personnel.
 - .4 Redistribution of electrical services.
 - .5 Modifications of fire alarm systems.
 - .6 Modifications to voice communications systems.
 - .7 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx 3 months prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

- .1 Commission mechanical systems and associated equipment:
 - .1 Plumbing systems:
 - .1 Domestic cold water system.
 - .2 Regular sanitary waste systems.
 - .2 HVAC systems:
 - .1 Existing system S-10/VE-11.
 - .2 System VA-2.
 - .3 Compressor/condenser CP-CD-1.
 - .4 Compressor/condenser CP-CD-2.
 - .5 Fresh air and exhaust systems.
 - .6 Modification and correction on existing air supply system VA-1/VE-1.
 - .3 Noise and vibration control systems for mechanical systems.
 - .4 Seismic restraint and control measures.
 - .5 IAQ environmental control systems:
 - .1 Indoor conditions in areas listed herein:
 - .2 Indoor air quality (IAQ) in areas listed herein:
 - .3 Environmental control systems in areas listed herein:
 - .6 EMCS:
 - .1 Building automation system
 - .2 Local network.
 - .3 Building controller.
 - .7 Energy metering systems for electricity.
- .2 Commission electrical systems and equipment:
 - .1 Low voltage below 750 V:
 - .1 Low voltage equipment.
 - .2 Low voltage distribution systems.
 - .2 Lighting systems:
 - .1 Lighting equipment.
 - .2 Distribution systems.
 - .3 Emergency lighting systems, including battery packs.
 - .4 Fire exit emergency signage.

1.9 DELIVERABLES RELATING TO O M PERSPECTIVES

- .1 General requirements:
 - .1 Compile French documentation.
 - .2 Documentation to be computer-compatible format ready for inputting for data management.

- .2 Provide deliverables:
 - .1 Warranties.
 - .2 Project record documentation.
 - .3 Inventory of spare parts, special tools and maintenance materials.
 - .4 Maintenance Management System (MMS) identification system used.
 - .5 WHMIS information.
 - .6 MSDS data sheets.
 - .7 Electrical Panel inventory containing detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

- .1 General:
 - .1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.
- .2 Definitions:
 - .1 Cx as used in this section includes:
 - .1 Cx of components, equipment, systems, subsystems, and integrated systems.
 - .2 Factory inspections and performance verification tests.
- .3 Deliverables: provide:
 - .1 Cx Specifications.
 - .2 Startup, pre-Cx activities and documentation for systems, and equipment.
 - .3 Completed installation checklists (ICL).
 - .4 Completed product information (PI) report forms.
 - .5 Completed performance verification (PV) report forms.
 - .6 Results of Performance Verification Tests and Inspections.
 - .7 Description of Cx activities and documentation.
 - .8 Description of Cx of integrated systems and documentation.
 - .9 Tests of following witnessed by PWGSC Design Quality Review Team:
 - .10 Tests performed by Owner/User.
 - .11 Training Plans.
 - .12 Cx Reports.
 - .13 Prescribed activities during warranty period.
- .4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.
- .5 Departmental Representative to participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Items listed in this Cx Plan include the following:

- .1 Pre-Start-Up inspections: by Departmental Representative prior to permission to start up and rectification of deficiencies to Departmental Representative's satisfaction.
- .2 Departmental Representative to use approved check lists.
- .3 Departmental Representative will monitor some of these pre-start-up inspections.
- .4 Include completed documentation with Cx report.
- .5 Conduct pre-start-up tests: conduct pressure, static, flushing, cleaning, and "bumping" during construction as specified in technical sections. To be witnessed and certified by Departmental Representative and does not form part of Cx specifications.
- .6 Departmental Representative will monitor some of these inspections and tests.
- .7 Include completed documentation in Cx report.
- .2 Pre-Cx activities - MECHANICAL:
 - .1 Plumbing systems:
 - .1 "Bump" each item of equipment in its "stand-alone" mode.
 - .2 Complete pre-start-up checks and complete relevant documentation.
 - .3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.
 - .2 HVAC equipment and systems:
 - .1 "Bump" each item of equipment in its "stand-alone" mode.
 - .2 At this time, complete pre-start-up checks and complete relevant documentation.
 - .3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.
 - .4 Perform TAB on systems. TAB reports to be approved by Departmental Representative.
 - .3 EMCS:
 - .1 EMCS trending to be available as supporting documentation for performance verification.
 - .2 Perform point-by-point testing in parallel with start-up.
 - .3 Carry out point-by-point verification.
 - .4 Demonstrate performance of systems, to be witnessed by Departmental Representative prior to start of 30 day Final Acceptance Test period.
 - .5 Perform final Cx and operational tests during demonstration period and 30 day test period.
 - .6 Only additional testing after foregoing have been successfully completed to be "Off-Season Tests".
- .3 Pre-Cx activities - ELECTRICAL:
 - .1 Low voltage distribution systems under 750 V:

- .1 Requires independent testing agency to perform pre- energization and post-energization tests.
- .2 Lighting systems:
 - .1 Emergency lighting systems:
 - .1 Tests to include verification of lighting levels and coverage, initially by disrupting normal power.

1.12 START-UP

- .1 Start up components, equipment and systems.
- .2 Equipment manufacturer, supplier, installing specialist sub-contractor, as appropriate, to start-up, under Contractor's direction, following equipment, systems:
- .3 Departmental Representative to monitor some of these start-up activities.
 - .1 Rectify start-up deficiencies to satisfaction of Departmental Representative.
- .4 Performance Verification (PV):
 - .1 Approved Cx Agent to perform.
 - .1 Repeat when necessary until results are acceptable to Departmental Representative.
 - .2 Use procedures modified generic procedures to suit project requirements.
 - .3 Departmental Representative to witness and certify reported results using approved PI and PV forms.
 - .4 Departmental Representative to approve completed PV reports and provide to Departmental Representative.
 - .5 Departmental Representative reserves right to verify up to 30% of reported results at random.
 - .6 Departmental Representative reserves the right to verify redundant systems to complete the results presented.
 - .7 Failure of randomly selected item shall result in rejection of PV report or report of system start-up and testing.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Perform Cx by specified Cx agency using procedures developed by Departmental Representative and approved by Departmental Representative.
- .2 Departmental Representative to monitor Cx activities.
- .3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.
- .4 Departmental Representative to witness, certify reported results of, Cx activities and forward to Departmental Representative.
- .5 Departmental Representative reserves right to verify a percentage of reported results at no cost to contract.

1.14 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

- .1 Cx to be performed by specified Cx specialist, using procedures developed by Departmental Representative and approved by Departmental Representative.
- .2 Tests to be witnessed by Departmental Representative and documented on approved report forms.
- .3 Upon satisfactory completion, Cx specialist to prepare Cx Report, to be certified by Departmental Representative and submitted to Departmental Representative for review.
- .4 Departmental Representative reserves right to verify percentage of reported results.
- .5 Integrated systems to include:
 - .1 HVAC and associated systems forming part of integrated HVAC systems.
 - .2 Indoor air quality.
 - .3 Environmental space conditions.
 - .4 Emergency lighting systems.
- .6 Identification:
 - .1 In later stages of Cx, before hand-over and acceptance Departmental Representative, Contractor, and Cx Manager to co-operate to complete inventory data sheets and provide assistance to PWGSC in full implementation of MMS identification system of components, equipment, sub-systems, systems.

1.15 INSTALLATION CHECK LISTS (ICL)

- .1 Refer to section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.16 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Refer to section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.17 PERFORMANCE VERIFICATION (PV) REPORT

- .1 Refer to section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.18 DELIVERABLES RELATING TO ADMINISTRATION OF CX

- .1 General:
 - .1 Because of risk assessment, complete Cx of occupancy, weather and seasonal-sensitive equipment and systems in these areas before building is occupied.
 - .2 The proper functioning of redundant for safe functional operation equipment.

1.19 CX SCHEDULES

- .1 Prepare detailed critical path Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule.

- .2 Cx schedule must take in account the phasing of work as presented in architecture documents. The following steps must be repeated for each phase. Training must be provided in the final phase.
- .3 Include:
 - .1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:
 - .1 Design criteria, design intents.
 - .2 Pre-TAB review: 28 days after contract award, and before construction starts.
 - .3 Cx agents' credentials: 30 days before start of Cx.
 - .4 Cx procedures: 1 month after award of contract.
 - .5 Cx Report format: 1 month after contract award.
 - .6 Discussion of heating/cooling loads for Cx: 1 month before start-up.
 - .7 Submission of list of instrumentation with relevant certificates: 14 days before start of Cx.
 - .8 Notification of intention to start TAB: 14 days before start of TAB.
 - .9 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.
 - .10 Notification of intention to start Cx: 14 days before start of Cx.
 - .11 Notification of intention to start Cx of integrated systems: after Cx of related systems is completed 7 days before start of integrated system Cx.
 - .12 Identification of deferred Cx.
 - .13 Implementation of training plans.
 - .14 Cx reports: immediately upon successful completion of Cx.
 - .15 Emergency evacuation exercises: after 80% occupancy.
 - .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to Property Manager.
 - .3 6 months in Cx schedule for verification of performance in all seasons and wear conditions.
- .4 After approval, incorporate Cx Schedule into Construction Schedule.
- .5 Consultant, Contractor, Contractor's Cx agent, and Departmental Representative will monitor progress of Cx against this schedule.

1.20 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by Departmental Representative to Departmental Representative who will verify reported results.
- .2 Include completed and certified PV reports in properly formatted Cx Reports.
- .3 Before reports are accepted, reported results to be subject to verification by Departmental Representative.

1.21 ACTIVITIES DURING WARRANTY PERIOD

- .1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period, including:
 - .1 Fine tuning of HVAC systems.
 - .2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.
 - .3 Full-scale emergency evacuation exercises.

1.22 TESTS TO BE PERFORMED BY OWNER/USER

- .1 None is anticipated on this project.

1.23 TRAINING PLANS

- .1 Refer to section 01 91 41 - Commissioning (Cx) - Training.

1.24 FINAL SETTINGS

- .1 Upon completion of Cx to satisfaction of Departmental Representative lock control devices in their final positions, indelibly mark settings marked and include in Cx Reports.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 91 13 - General commissioning (CX) Requirements.

1.2 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
- .2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
- .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
- .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
- .5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

- .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.

- .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
- .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.

1.5 SAMPLES OF COMMISSIONING FORMS

- .1 Revise items on Commissioning forms to suit project requirements.
- .2 Samples of Commissioning forms and a complete index of produced to date will be attached to this section.

1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

- .1 When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
 - .1 Additional commissioning forms to be in same format as provided by Departmental Representative

1.7 COMMISSIONING FORMS

- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
- .2 Strategy for Use:
 - .1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.
 - .2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
 - .3 Confirm operation as per design criteria and intent.
 - .4 Identify variances between design and operation and reasons for variances.
 - .5 Verify operation in specified normal and emergency modes and under specified load conditions.
 - .6 Record analytical and substantiating data.
 - .7 Verify reported results.
 - .8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative.
 - .9 Submit immediately after tests are performed.
 - .10 Reported results in true measured SI unit values.
 - .11 Provide Departmental Representative with originals of completed forms.
 - .12 Maintain copy on site during start-up, testing and commissioning period.
 - .13 Forms to be both hard copy and electronic format with typed written results in Building Management Manual in accordance with Section 01 91 51 - Building Management Manual (BMM).

1.8 LANGUAGE

- .1 To suit the language profile of the awarded contract.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 91 13 - General commissioning (CX) Requirements.

1.2 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Property Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.3 INSTRUCTORS

- .1 Departmental Representative will provide:
 - .1 Descriptions of systems.
 - .2 Instruction on design philosophy, design criteria, and design intent.
- .2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
 - .1 Start-Up, operation, shut-down of equipment, components and systems.
 - .2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
 - .3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .3 Contractor and equipment manufacturer to provide instruction on:
 - .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.4 TRAINING OBJECTIVES

- .1 Training to be detailed and duration to ensure:
 - .1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
 - .2 Effective on-going inspection, measurements of system performance.
 - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
 - .4 Ability to update documentation.
 - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.5 TRAINING MATERIALS

- .1 Instructors to be responsible for content and quality.
- .2 Training materials to include:
 - .1 "As-Built" Contract Documents.
 - .2 Operating Manual.
 - .3 Maintenance Manual.
 - .4 Management Manual.
 - .5 TAB and PV Reports.
- .3 Project Manager, Commissioning Manager and Property Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .5 Supplement training materials:
 - .1 Transparencies for overhead projectors.
 - .2 Multimedia presentations.
 - .3 Manufacturer's training videos.
 - .4 Equipment models.

1.6 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours, training sessions to be three (3) hours in length.
- .3 Training to be completed prior to acceptance of facility.

1.7 RESPONSIBILITIES

- .1 Be responsible for:
 - .1 Implementation of training activities,
 - .2 Coordination among instructors,
 - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

1.8 TRAINING CONTENT

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
 - .1 Review of facility and occupancy profile.

- .2 Functional requirements.
- .3 System philosophy, limitations of systems and emergency procedures.
- .4 Review of system layout, equipment, components and controls.
- .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
- .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
- .7 Maintenance and servicing.
- .8 Trouble-shooting diagnosis.
- .9 Inter-Action among systems during integrated operation.
- .10 Review of O M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.9

VIDEO-BASED TRAINING

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 1 month prior to commencement of scheduled training.
- .2 On-Site training videos:
 - .1 Videotape training sessions for use during future training.
 - .2 To be performed after systems are fully commissioned.
 - .3 Organize into several short modules to permit incorporation of changes.
- .3 Production methods to be high quality.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 91 13 - General commissioning (CX) Requirements.

1.2 ACRONYMS

- .1 BMM - Building Management Manual.
- .2 Cx - Commissioning.
- .3 HVAC - Heating, Ventilation and Air Conditioning.
- .4 PI - Product Information.
- .5 PV - Performance Verification.
- .6 TAB - Testing, Adjusting and Balancing.
- .7 WHMIS - Workplace Hazardous Materials Information System.

1.3 GENERAL REQUIREMENTS

- .1 Standard letter size paper 216 mm x 279 mm.
- .2 Methodology used to facilitate updating.
- .3 Drawings, diagrams and schematics to be professionally developed.
- .4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.4 APPROVALS

- .1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Departmental Representative.

1.5 GENERAL INFORMATION

- .1 Provide Departmental Representative the following for insertion into appropriate Part and Section of BMM:
 - .1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of BMM.
 - .2 Summary of fire protection, mechanical and electrical systems installed and commissioned - as indicated in Section 1.4 of BMM.
 - .1 Including sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of BMM.
 - .3 Description of building operation under conditions of heightened security and emergencies as indicated in Section 2.0 of BMM.
 - .4 System, equipment and components Maintenance Management System (MMS) identification - Section 2.1 of BMM.

- .5 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of BMM.
- .6 Information on operation and maintenance of mechanical systems and equipment installed and commissioned - Section 2.0 of BMM.
- .7 Operating and maintenance manual - Section 3.2 of BMM.
- .8 Final commissioning plan as actually implemented.
- .9 Completed commissioning checklists.
- .10 Commissioning test procedures employed.
- .11 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Departmental Representative.
- .12 Commissioning reports.

1.6 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

- .1 For detailed requirements refer to section 01 78 00 - Closeout Submittals.
- .2 Departmental Representative to review and approve format and organization within 12 weeks of award of contract.
- .3 Include original manufactures brochures and written information on products and equipment installed on this project.
- .4 Record and organize for easy access and retrieval of information contained in BMM.
- .5 Include completed PI report forms, data and information from other sources as required.
- .6 Inventory directory relating to information on installed systems, equipment and components.
- .7 Approved project shop-drawings, product and maintenance data.
- .8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O M, shutdown and training materials.
- .9 Inventory and location of spare parts, special tools and maintenance materials.
- .10 Warranty information.
- .11 Inspection certificates with expiration dates, which require on-going re-certification inspections.
- .12 Maintenance program supporting information including:
 - .1 Recommended maintenance procedures and schedule.
 - .2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.

1.7 LIFE SAFETY COMPLIANCE (LSC) MANUAL

- .1 Samples of LSC Manual will be available from Departmental Representative..
- .2 Content of Manual:
 - .1 All possible Emergency situations modes including: presence of fire and smoke, power failure, lose of water or pressure, chemical spills and refrigerant release.
 - .2 Failure of elevators and escalators.

- .3 HVAC emergencies and fuel supply failures.
- .4 Intrusion and security breach.
- .5 Emergency provisions for natural disasters, bomb threats and other disruptive situations.
- .6 Dedicated emergency generators for high security projects, medical facilities and computer systems.
- .7 Emergency control procedures for fire, power and major equipment failure.
- .8 Emergency contacts and numbers.
- .9 Manual to be readily available and comprehensible to non- technical readers.

1.8 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

- .1 Provide Departmental Representative supporting documentation relating to installed equipment and system, including:
 - .1 General:
 - .1 Finalized commissioning plan.
 - .2 WHMIS information manual.
 - .3 Approved "as-built" drawings and specifications.
 - .4 Procedures used during commissioning.
 - .5 Cross-Reference to specification sections.
 - .2 Architectural and structural:
 - .1 Inspection certificates, construction permits.
 - .2 PV reports.
 - .3 Fire prevention, suppression and protection:
 - .1 Test reports.
 - .2 Smoke test reports.
 - .3 PV reports.
 - .4 Mechanical:
 - .1 Installation permits, inspection certificates.
 - .2 Piping pressure test certificates.
 - .3 Ducting leakage test reports.
 - .4 TAB and PV reports.
 - .5 Charts of valves and steam traps.
 - .6 Copies of posted instructions.
 - .5 Electrical:
 - .1 Installation permits, inspection certificates.
 - .2 TAB and PV reports.
 - .3 Electrical work log book.
 - .4 Charts and schedules.
 - .5 Locations of cables and components.

- .6 Copies of posted instructions.
- .2 Assist Departmental Representative with preparation of BMM.

1.9 LANGUAGE

- .1 English and French Language to be in separate binders.

1.10 USE OF CURRENT TECHNOLOGY

- .1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.
- .2 Obtain Departmental Representative's approval before starting Work.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION