

# **CORRECTIONAL SERVICE CANADA DONNACONA INSTITUTION**

## **REPLACEMENT OF PERIMETER LIGHTING**

**Design project : 550-2-301-3506  
Contract : 550-2-321-3915**

**ELECTRICITY QUOTE  
REF TT : 34309TT**



**FOR TENDER  
DECEMBER 4, 2017**



**TETRA TECH INC.  
4655, boulevard Wilfrid-Hamel, Québec (Québec) G1P 2J7  
Tél : 418 871-3414 Téléc. : 418 871-9625**

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## **1 GENERAL**

### **1.01 REFERENCES**

- .1 National Building Code of Canada (NBC) 2015, including all amendments up to the date of bid closing.

### **1.02 DESCRIPTION OF THE WORK**

- .1 The project includes the following work. The list below is not necessarily exhaustive and in no way releases the Contractor from the obligation of carrying out the project in its entirety according to generally accepted practices as well as the intentions and general principles as described in these specifications and drawings.
  - .1 Supply and install :
    1. Underground cables;
    2. Concrete roofings;
    3. Streetlights;
    4. Luminaires.
  - .2 Perform trenching and backfilling.
  - .3 Adjust luminaires.
  - .4 Repair and reinstall the concrete bases.
  - .5 Replace control box.

### **1.03 SECURITY SCREENING**

- .1 All workers shall undergo security screening in order to be granted a security classification as required by the Correctional Service of Canada and Public Works and Government Services Canada.
- .2 Section 01 35 13 provides a detailed description of the procedures involved in the security screening.
- .3 At the start of work, a job-site special meeting will be held with institution representatives to define the instructions governing security and site operation in a correctional environment.

### **1.04 CODES**

- .1 The specifications will require that the work and materials comply with the National Building Code of Canada (NBC) and all other applicable provincial or local codes. The strictest requirements shall apply in case of contradiction or discrepancy.
- .2 The work shall be performed in a manner that meets or exceeds the following requirements:
  - .1 Contract documents.

- .2 Specified standards and codes as well as other documents cited as references.

## **1.05 REQUIRED DOCUMENTS**

- .1 A copy of the following documents shall be kept at the job site:
  - .1 Contract drawings.
  - .2 Specifications.
  - .3 Amendments.
  - .4 Amended shop drawings.
  - .5 Modification orders.
  - .6 Other contract amendments.
  - .7 On-site test reports.
  - .8 Approved work schedule.
  - .9 Manufacturer installation and start-up instructions.
  - .10 License to occupy public spaces.

## **1.06 WORK SCHEDULE**

- .1 The successful bidder shall initiate work [on DATE] [immediately upon receiving notice that the contract has been awarded]. The work covered by this document, including measures to correct construction deficiencies, must be completed within the schedule specified herein. Failure to comply with the schedule shall be dealt with as provided for in the Standard Acquisition Clauses and Conditions (SACC) Manual, Public Works and Government Services Canada (PWGSC).
- .2 Within [5] business days of contract award, submit a work schedule for the various project phases and the completion date, which must be within 25 weeks of contract award [or the date specified as construction start-up in paragraph 1.8.1].
- .3 Within [5] business days of contract award, submit shop drawings, technical data sheets, samples, and security screening applications for approval.
- .4 The work sequence is as follows:
  - .1 Start-up meeting and schedule submission, shop drawings, technical data sheets, samples, and security screening applications for approval.
  - .2 Approval of documents submitted.
  - .3 Construction start-up.
  - .4 Works order :
    - .1 Example: Outside work will be done before inside work.
    - .2 Begin the replacement with the end of each circuit in direction of the source.
  - .5 Submission of operating and maintenance manuals for approval.
  - .6 Provisional acceptance.
  - .7 Correction of deficiencies.

- .8 Final approval.
- .5 Within five (5) business days of contract award, the Contractor shall provide, in a format acceptable to the Project Manager, a work schedule indicating:
  - .1 Dates for submitting shop drawings, lists of materials, and samples.
  - .2 Delivery dates for the following pieces of equipment and materials:
    - .1 Concrete roofings;
    - .2 Frame;
    - .3 Luminaires.
  - .3 Start-up and completion dates for the work described in each section of the specifications.
  - .4 Final completion date with respect to the completion date stipulated in the contract documents.
- .6 Changes to milestones in the submitted schedule shall be at the discretion of the CSC Project Manager. The schedule shall be updated by the Contractor with the cooperation and approval of the CSC Project Manager.
- .7 The following work shall be performed outside normal working hours: Final adjustment of the luminaire. This work must be coordinated with the CSC Project Manager.
- .8 Note that the building will be kept in continuous operation during the works. Indeed, some residents are permanent 24 h/24 h.

#### **1.07 ACCEPTANCE OF EQUIVALENTS**

- .1 Firms suggesting substitutes or replacements for the products given in the specifications, plans, or other contractual clauses must include to relevant technical data sheets for approval by the assessment committee. These substitutes or replacements must be equal or superior to those in the specifications or the bid will be rejected. The financial proposal must reflect the substitutions and replacements.
- .2 The Contractor shall be responsible for providing supporting data of equivalence. The substitution request must be presented clearly and include all the details required to analyze it properly.
- .3 The main criteria for accepting substitutions are: construction, performance, capacity, dimensions, arrangement of connections, availability of replacement parts, ease of maintenance, delivery times, the existence of similar equipment in service for some time.
- .4 If a proposed substitution requires changes to installations shown on plans or in specifications, the General Contractor shall be responsible for such changes and shall also assume responsibility for the ensuing modifications that may be required to the work of specialized subcontractors.

**1.08 COST BREAKDOWN**

- .1 With the bid, the Contractor shall present an itemized breakdown of the costs related to this contract, including the overall contract value, on the bid summary provided as an attachment. Once approved, the cost breakdown will be used as a baseline for calculating progress payments.

**1.09 PAYMENT**

- .1 Payments shall be made monthly on a pro rata basis according to work progress. Before submitting an invoice, the Contractor shall submit an itemized request for payment, as per the bid summary, for approval with the percent of progress for each item. Ten percent of the total amount of the request for payment, before tax deductions, will be held back. The hold back is payable upon final acceptance of the work.

**1.10 MEASUREMENTS FOR PAYMENT PURPOSES**

- .1 The Engineer must be informed sufficiently prior to the start of work so that he or she can make the measurements required for payment purposes.

**1.11 CONTRACTOR'S USE OF THE SITE**

- .1 The institution must remain fully operational during construction. With this end in view, the CSC Project Manager or the institution's head of security can require the Contractor to halt work immediately on a temporary basis to prevent institution activities from being compromised.
- .2 Use of premises; limited access to the job site. Work and affected engineering structures outside the construction site must be carried out by a crew accompanied by an escort provided by CSC (see section 01 35 13).
- .3 In five business day, the Contractor must provide an implantation plan of the site located outside the building.
- .4 Obtaining the occupation licence of public area is the Contractor's responsibility.
- .5 The Contractor shall perform the work so as to disturb the occupants as little as possible and, to the degree possible, ensure that normal use can be made of the facilities. The Contractor shall also cooperate with the CSC Project Manager to facilitate performance of the work. The inside works will be authorized at one place at a time or according to a planned sequence and authorized by the CSC Responsible.
- .6 Existing services in the buildings must be maintained during the project.

**1.12 NOISY ENVIRONMENT AND CELL-PHONE USE**

- .1 No radios or "boom boxes" shall be tolerated at the job site.
- .2 Cell phones are prohibited within the perimeter of the penitentiary unless an exemption permitted by the Director.

**1.13 JOB-SITE MEETINGS**

- .1 Job-site meetings shall be held at times and places subject to the approval of the CSC Project Manager.
- .2 The Engineer shall organize job-site meetings, set their dates and times, and ensure that minutes are drafted and distributed.

**1.14 LOCATION OF EQUIPMENT AND VARIOUS PIECES OF EQUIPMENT**

- .1 The location of various devices and pieces of equipment as well as the electrical outlets indicated on the drawings and in the specifications must be considered approximate.
- .2 The Contractor shall install equipment and devices as well as distribution networks so as to limit hindrances and keep the largest amount of useful space possible while complying with manufacturer recommendations related to safety, access, and maintenance.

**1.15 CONCEALED WORK**

- .1 Unless indicated otherwise, pipes, conduits, ducts, and wiring in floors, walls, and ceilings in finished areas shall be concealed.

**1.16 DRILLING AND SEALING**

- .1 The Engineer's approval shall be obtained before cutting or drilling in bearing members or inserting sleeves.
- .2 Drilling and sealing shall be performed so as to ensure that connections are exact and with no play.
- .3 Holes and openings must be clean, straight, and smooth.
- .4 When the addition of a new structure requires modifications to an existing one, all required drilling, sealing, and other repairs shall be carried out to restore the existing structure to its condition prior to the work.

**1.17 EXISTING SYSTEMS**

- .1 Should installations be discovered during the course of work, the Engineer shall be immediately informed and a written report containing the observations provided to him.
- .2 If non-detected installation were discovered throughout the works, notify immediately the Project Manager and forward written report on the observations.

**1.18 MODIFICATIONS, ADDITIONS, OR RENOVATION OF EXISTING BUILDINGS**

- .1 The Contractor shall perform the work so as to disturb the occupants as little as possible and, to the degree possible, ensure that normal use can be made of the facilities. The Contractor shall also cooperate with the CSC Project Manager to facilitate performance of the work.



- .2 At no time shall the safety measures be relaxed because of the work to be carried out under this contract. The Contractor shall take the steps required to ensure the level of safety required.
- .3 The Contractor shall use only those elevators, freight elevators, conveyors, and escalators reserved for his or her use to move materials and personnel. Before the Contractor uses an elevator, the cabin walls shall be protected as directed by the Engineer. The Contractor accepts liability for any damage to such devices, for their safe and proper use, and for any overloading of the existing equipment.
- .4 When work is to be carried out in occupied spaces, the Contractor shall provide and install whatever is required to protect the furnishings, equipment, and finish work; install dust barriers, partitions, and temporary notices; and clean the area at the end of each work day.

#### **1.19 SUPPLEMENTAL DRAWINGS**

- .1 The Engineer may provide supplemental drawings for clarification such supplemental drawings shall be considered to have the same meaning and scope as the contract documents.

#### **1.20 REMAINS AND ANTIQUES**

- .1 Remains, antiques, and other items of historical or scientific interest, such as cornerstones and their contents, commemorative plaques, and other objects bearing inscriptions discovered during the project.
- .2 The CSC Project Manager shall be informed immediately; authorization in writing is required before work can be resumed.
- .3 Remains, antiques, and other items of historical or scientific interest are the property of the Crown.

#### **1.21 RESTRICTIONS RELATED TO TOBACCO USE**

- .1 Restrictions regarding the use of tobacco inside buildings shall be complied with the Crown. Smoking inside the building is strictly forbidden.

#### **1.22 OPERATING MANUAL**

- .1 The Contractor shall submit, for approval, one copie of an operating manual containing the following items:
  - Table of contents
  - List of suppliers and their contact information
  - Warranties
  - Approved shop drawings
  - Operating and maintenance guides
  - As-built drawings

**1.23 OWNER STAKEHOLDERS**

- .1 Correctional Service Canada, also referred to as "the Department" for the purposes of this document.
- .2 The Engineer, also referred to as "the Departmental Representative" for the purposes of this document.

**2 PRODUCTS**

**2.01 NOT APPLICABLE**

- .1 Not applicable.

**3 EXECUTION**

**3.01 NOT APPLICABLE**

- .1 Not applicable.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 52 00 – Site installation.
- .2 Section 01 56 00 – Access and temporary protection structures.

### **1.02 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.

### **1.03 CONSTRUCTION CONSTRAINT**

- .1 The work must be carried out with construction constraint:
  - .1 availability of access according to weather conditions;
  - .2 site availability for site facilities;
  - .3 environmental constraints;
  - .4 security constraints.

### **1.04 SPECIAL REQUIREMENTS**

- .1 Carry out noise generating Work Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays.
- .2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.
- .5 Access to the Contractor's vehicle site is limited to the access and the area indicated on the plans.
- .6 Conduct topographic and photographic survey of infrastructure prior to construction.
- .7 The Contractor shall be responsible for repairing or replacing at his own expense and to the satisfaction of the Departmental Representative if he causes damage to neighboring roads and facilities.

#### **1.05 CLEANING AND SITE KEEPING AND PROTECTION OF THE ENVIRONMENT**

- .1 The Contractor shall at all times keep the site free from all accumulations of material, waste, garbage and debris and shall perform complete and final cleaning to the satisfaction of the Departmental Representative during and at the end of its work.
- .2 Contractor is responsible for transporting waste, waste and debris to appropriate locations.

#### **1.06 WINTER CONDITIONS**

- .1 The Contractor shall be responsible for the snow removal of the construction zone. The Contractor is also responsible for clearing all of its accesses except existing roads.

#### **1.07 WEEK END WORKS**

- .1 For work scheduled on Sundays, holidays or night, the Contractor shall provide written notice to the Departmental Representative at least five (5) working days prior to the work. The Departmental Representative retains the right to approve or not to approve the application or to impose certain conditions.

#### **1.08 SECURITY**

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

#### **1.09 ENVIRONMENTAL CONSTRAINTS**

- .1 Environmental constraint are presented in Section 01 35 43 – Environmental Protection.

#### **1.10 SURVEYS**

- .1 It is the responsibility of the Contractor to install the various works according to the plans of the Departmental. He must make a survey of the existing structures to validate the connection between new and actual structures. In addition, he must notify the Departmental Representative of any unforeseen or anomaly detected. It must also provide for the time required for a verification by the Departmental.

#### **1.11 MATERIALS TRANSPORTATIONS**

- .1 The materials transportation on public roads to the site of work may be carried out from Monday to Saturday inclusive unless otherwise notified by the appropriate authorities. Transportation will be prohibited on Sundays and legal holidays.

- .2 Transportation of materials through the Municipality will begin at 7:00 am and end at 5:00 pm. Transportation outside these hours will not be permitted. The Contractor must obtain written authorization from the Municipality for transportation outside of these hours.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under sections 01 45 00 - Quality Control and the specific requirements described in sections 02 to 35 for the Contractor.

### **1.02 APPOINTMENT AND PAYMENT**

- .1 Departmental Representative will appoint and pay for services of testing laboratory except follows:
  - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .2 Inspection and testing performed exclusively for Contractor's convenience.
  - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
  - .4 Mill tests and certificates of compliance.
  - .5 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

### **1.03 CONTRACTOR'S RESPONSIBILITIES**

- .1 Provide labour, equipment and facilities to:
  - .1 Provide access to Work for inspection and testing.
  - .2 Facilitate inspections and tests.
  - .3 Make good Work disturbed by inspection and test.
  - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative 72 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

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**2 PRODUCTS**

**2.01 NOT USED**

.1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 ADMINISTRATIVE**

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Provide physical space and make arrangements for meetings.
- .3 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

### **1.02 PRECONSTRUCTION MEETING**

- .1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental, Departmental Representative, Contractor, major Subcontractors, field inspectors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
  - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
  - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .7 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
  - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
  - .10 Appointment of inspection and testing agencies or firms.
  - .11 Insurances, transcript of policies.
  - .12 Work supervision modalities.
  - .13 Environmental restrictions.
  - .14 Operations continuity.
  - .15 Legal and Environmental Requirements.



### **1.03 PROGRESS MEETINGS**

- .1 During course of Work meetings will be held every 2 weeks or more often if needed and as asked by Departmental Representative.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 .Other business.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 ROLE OF INVOLVED PEOPLE**

- .1 The Departmental Representative will convene the meeting.
- .2 The Departmental Representative will prepare the agenda.
- .3 The Departmental Representative will lead the meeting.
- .4 The Departmental Representative will prepare the meeting report and distribute it within 5 days of the meeting.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Documents and Samples.
- .2 Section 01 14 00 – Restrictions on Work.
- Sections 01 35 43 – Environmental Protection.

### **1.02 DEFINITIONS**

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

### **1.03 REQUIREMENTS**

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 The working activities start immediately after providing the insurance certificate to the satisfaction of the contracting authority.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

### **1.05 PROJECT MILESTONES**

- .1 Project milestones form interim targets for Project Schedule.

### **1.06 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

### **1.07 PROJECT SCHEDULE**

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.

- .2 Identification of materials whose delivery is critical to the timetable including:
  - .1 Date of Issue and Approval of Drawings.
  - .2 Date of order.
  - .3 Delivery dates.
- .3 Shop Drawings, Samples.
- .4 Permits.
- .5 Mobilization.
- .6 Lighting.
- .7 Testing and Commissioning.

#### **1.08 PROJECT SCHEDULE REPORTING**

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

#### **1.09 PROJECT MEETINGS**

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

### **2 PRODUCTS**

#### **2.01 NOT USED**

- .1 Not used.

### **3 EXECUTION**

#### **3.01 NOT USED**

- .1 Not used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 45 00 – Quality control.

### **1.02 ADMINISTRATIVE**

- .1 Submit to Departmental 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 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 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and 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.
- .5 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work are co-ordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .9 Keep one reviewed copy of each submission on site.
- .10 Documents submitted must be accompanied by a transmittal letter containing the following information:
  - .1 The date;
  - .2 project title and project number;
  - .3 The name and the address of the Contractor;
  - .4 The title of each document and the number submitted;
  - .5 Any other relevant data.
- .11 Submit Material Safety Data Sheets (MSDS) in accordance with the Workplace Hazardous Materials Information System (WHMIS).

### **1.03 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 Quality: shop drawings must be provided by e-mail as an original in electronic PDF format. No shop drawings will be accepted by fax.
- .3 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Québec.
- .4 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.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 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.
  - .6 The Contractor shall be responsible for the reproduction of the shop drawings in sufficient quantity for all subcontractors and their suppliers, an additional copy for the Departmental Representative and additional copies for operation and maintenance booklets.
- .7 No shop drawings will be considered if not submitted as described.
- .8 Before submitting the shop drawings to the Departmental Representative, for verification, the Contractor shall:
  - .1 Number each page.
  - .2 Point all equipment and/or accessories that are part of the shop drawings.
  - .3 Checking whether shop drawings conform to plans and specifications for quality, characteristics and space requirements.
- .9 The Departmental Representative will have 10 working days to verify workshop drawings from the day of reception of documents at his office.

- .10 The review of shop drawings by the Departmental Representative is an intermediate quality control step and should not constitute an order to change contract documents.
  - .1 The Departmental Representative will verify the Contractor's drawings in accordance with the general layout of the equipment only. The examination of this document does not, in any way, relieve the Contractor or the supplier of his responsibility as to the accuracy of this document or its conformity with the contractual documents and the conditions of site. In addition, the markings made by the Departmental Representative on the drawings are not exhaustive.
- .11 The 4 annotations on the Departmental Representative's review stamp are:
  - .1 "NO REPORTED CORRECTION" means that the contractor may proceed in accordance with his design.
  - .2 "MAKE CORRECTIONS" means that the Contractor may proceed according to his drawing and in accordance with the annotations added by the Representative of the Ministry; The copy of the design becomes the official copy and the Contractor does not have to resubmit the design.
  - .3 "RE-SUBMIT" means that the information contained in the drawing is incomplete or that the design is incomplete, illegible, etc., and that this information does not permit the Departmental Representative to make a judgment on compliance with the Plans and specifications; the Representative of the Ministry may indicate on the drawing the points which the Contractor must specify or complete before resubmitting the drawing.
  - .4 "REFUSED" means that the design relates to materials or works is not in accordance with the plans and specifications; the Contractor shall transmit to the Departmental Representative another design in accordance with the plans and specifications.
- .12 Make corrections requested by the Departmental Representative in accordance with the requirements of the contract documents. When resubmitting, notify the Departmental Representative in writing of any changes that have been made in addition to those required.
- .13 Submit 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .14 Keep 1 annotated copy of shop drawings on site, and ensure that they can always be accessed for reference purposes.
- .15 Submit 1 electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental 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 accordance with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.

- .16 Submit 1 electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental 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.
- .17 Submit 1 electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental 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.
- .18 Submit 6 electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .19 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .20 Submit 1 electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .21 Submit test reports and verifications that have been completed by the Manufacturer's Departmental Representative to confirm the conformity of the products, materials, equipment or systems installed.
- .22 Submit 1 electronic copy of the operating and maintenance records prescribed in the technical sections of the specification as required by the Departmental Representative.
- .23 Delete information not applicable to project.
- .24 Supplement standard information to provide details applicable to project.
- .25 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, [transparency] [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.
- .26 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.



- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.
- .27 Upon receipt of the Letter of Intent from the Departmental Representative, the successful bidder will have thirty (30) working days to provide all shop drawings for approval.

#### **1.04 SAMPLES**

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Provides the specified samples of complex or sized products and elements.
- .3 No order, purchase or production of products or materials shall take place until written approval of the samples required in the specifications has been obtained.
- .4 Products and works are similar to approved samples.
- .5 Carry out samples of required work in accordance with Section 01 45 00 - Quality Control

#### **1.05 TEST AND MIX DESIGN**

- .1 The Contractor shall provide the results of the tests and the dosage of the mixtures that the Departmental Representative may requested.
- .2 No concrete casting or laying of paving shall be permitted until the Contractor has proved the perfect conformity of the materials.

#### **1.06 FINAL DRAWINGS**

- .1 On site documents.
  - .1 Provide one (1) set of drawings and indicate any changes made during the course of the work.
  - .2 Report weekly the information on the copy of the reproducible drawings so that it shows how it is actually installed.
  - .3 Keep these drawings on site and make them available for verification reference purposes
- .2 After execution drawings.
  - .1 Before beginning the tests, balance and adjustment of the systems, complete the drawings according to execution.
  - .2 Identify each drawings in the lower right corner, in letters at least 12 mm high, as follows: AFTER EXECUTION DRAWINGS: THIS DRAWING HAS BEEN REVISED AND INDICATES WORKS AND SYSTEMS AS INSTALLED (Signature of Contractor) (Date)).

- .3 Submit drawings to Departmental Representative for approval and make corrections as required.
- .4 Submit reproducible copies, completed with after execution drawings and Operations and Maintenance Manual.
- .5 Submit one copy of each completed design and incorporate it into the final report on testing, balancing and adjustment of systems and installations.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 PURPOSE**

- .1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

### **1.02 DEFINITIONS**

- .1 "Contraband" means:
  - .1 an intoxicant, including alcoholic beverages, drugs and narcotics;
  - .2 a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization;
  - .3 an explosive or a bomb or a component thereof;
  - .4 currency over any applicable prescribed limit \$50.00;
  - .5 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 "Departmental 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.

### **1.03 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.

### **1.04 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 with a photo of the driving licence or an identity card with a photo.
- .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.

### **1.05 VEHICLES**

- .1 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.

- .2 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.
- .3 Neither trailers must be permitted to stay inside the secure perimeter of the Institution after hours of construction.
- .4 The director may limit at any time the number and type of vehicles allowed within the Institution.

#### **1.06 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.

#### **1.07 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.

#### **1.08 WORK HOURS**

- .1 Work hours within the Institution are: Monday to Friday 7:30 a.m. to 4:00 p.m. Verify to the Institute director before the work start.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Director. A minimum of three 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.

#### **1.09 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.

#### **1.10 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.
- .4 Store all tools and equipment in approved secure locations.
- .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor.
- .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 At the frequency of the Institution director.
- .9 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.

#### **1.11 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.

#### **1.12 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.

#### **1.13 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.

#### **1.14 ELECTRONIC DEVICES**

- .1 USB sticks, laptops, cell phones are not permitted within the perimeter of the Institution unless approved by the Director. If these devices are permitted, the user will not permit their use by any inmate.

#### **1.15 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.

#### **1.16 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.

#### **1.17 MOVEMENT OF VEHICLES**

- .1 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.
- .2 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.
- .3 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.
- .4 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.

#### **1.18 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.

#### **1.19 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.

#### **1.20 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.

The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

#### **1.21 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.
- .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.



**1.22 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.

**2 PRODUCTS**

**2.01 NOT APPLICABLE**

- .1 Not applicable.

**3 EXECUTION**

**3.01 NOT APPLICABLE**

- .1 Not applicable.

**END OF SECTION**

## **1 GENERAL**

### **1.01 CONTENT**

- .1 The general contractor must make sure that during his activities, the public and his employees' health and safety and the protection of the environment will always prevail on cost or schedule issues.

### **1.02 REFERENCES**

- .1 Canada Labour Code, part II, Canada Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA).
- .3 Workplace Hazardous Materials Information System (WHMIS)/Health Canada.
  - .1 Data sheet.
- .4 "Loi sur la santé et la sécurité du travail, L.R.Q. Chapitre S-2.1 2002."
- .5 Safety Code for the construction industry, S-2.1, r.6 2001.

### **1.03 DOCUMENTS/SAMPLES**

- .1 Submit all documents and samples in conformity with the section 01 33 00 – Submittal procedures.
- .2 10 days before construction start, transmit to the CSC representative and to the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) the health and safety program specific to the construction activity as described in the section 1.8. If necessary, the general contractor must update his prevention program to reflect any changes to the initial plans. Following the reception of the prevention program and at any time during the work, the CSC representative can ask for its modification or completing to adapt it to the work on site. The general contractor will have to proceed with the required modifications before work start.
- .3 Transmit to the CSC representative a copy of any federal or provincial inspector's inspection reports, notice of corrections or recommendations within 24 hours of their reception.
- .4 Transmit to the CSC representative an investigation report concerning any accident with injury or pointing out any potential hazard for health and safety within 24 hours of their reception.
- .5 Transmit to the CSC representative the data sheet for all controlled product at least three (3) days before they are used on site.
- .6 Transmit to the CSC representative a copy of the formation certificates required for the application of the prevention program including :
  - .1 General health and safety course on work sites;
  - .2 Security agent certificate;

- .3 First-aid and CPR on work sites;
  - .4 Work subject to asbestos conditions;
  - .5 Work in enclosed spaces;
  - .6 Locking/securing procedures;
  - .7 Wearing and adjustment of individual protection equipments;
  - .8 Forklift truck safe use;
  - .9 Working platform lift;
  - .10 And any other formation required by regulations or by the prevention program.
- .7 Medical examinations : when required by law, regulation, directive, specification or by a prevention program, the general contractor must :
- .1 Before mobilisation, transmit to the CSC representative the medical examination certificate for all surveillance employees and any other employee attending the first site meeting concerned by this article's first paragraph.
  - .2 Afterwards, transmit as one goes along and without any delays all medical examination certificates of any new incoming worker concerned by this article's first paragraph.
- .8 Emergency plan : the emergency plan, as described in the article 1.8.3, must be transmitted to the CSC representative with the prevention program.
- .9 Notice of work start : the notice of work start must be transmitted to Commission de la santé et de la sécurité du travail before the work start and copied to the CSC representative. A copy of this notice must be available and visible on site at all time. During demobilisation, the notice of end of work must be transmitted to the CNESST with a copy to the CSC representative.
- .10 Engineer's plans and notice of conformity : the general contractor must transmit to the CNESST and to the CSC representative an engineer' signed and sealed copy of all the plans and notice of conformity required in virtue of the Safety Code for the construction industry (S-2.1, r. 6), of any other law, rules or any clause from the specifications or the contract. A copy of those documents must be available at all time on the work site.
- .11 Certificate of conformity delivered by the CNESST : the certificate of conformity is a document delivered by the CNESST and confirms that the general contractor complies with the CNESST requirements, that he has paid all amount due in relation with the awarded contract. This document must be transmitted to the CSC representative at the end of work.

#### **1.04 EVALUATION OF THE RISKS**

- .1 The general contractor must identify all related risks to the various tasks on site.
- .2 The general contractor must plan and organize his work in order to favour the elimination of the danger at the source or the collective protection and minimize the use of individual protection equipments. When the use of individual protection equipment is required in situations of falling hazards, the workers must use a safety harness in conformity with the norm CAN/CSA-Z-259.10-M90. The safety belt must not be used as a falling protection.

- .3 Any equipment, tool or mean of protection that cannot be installed or used without compromising the health and safety of the workers is considered inadequate for the work.
- .4 All mechanical equipments must be inspected before their delivery on site. Before using a mechanical equipment, the general contractor must transmit to the CSC representative a certificate of conformity signed by an approved mechanic. At any time, if the CSC representative suspects a defect or a risk of accident, he can order the immediate shutdown of the machine and require a second inspection performed by a specialist of his choice.

#### **1.05 MEETINGS**

- .1 A decision-making representative of the general contractor must attend all meetings about job site health and safety issues.

#### **1.06 RULING AGENCY REQUIREMENTS**

- .1 Comply with all rules, regulations and applicable norms for the execution of the work.
- .2 Follow the prescribed norms and rules in order to assure a normal course of events in the work progress in situations of contaminated grounds by toxic products.
- .3 Despite the publication date of the indicated norms in the Safety Code for the construction industry, always use its most recent and applicable version during work.

#### **1.07 FIELD CONDITIONS/IMPLEMENTATION**

- .1 The general contractor must take the following features on the job site :
  - .1 Fences and barbed wires are present in the area working.

#### **1.08 HEALTH AND SAFETY MANAGEMENT**

- .1 Accept and assume all tasks and obligations normally assigned to the master-builder in accordance with the Loi sur la santé et la sécurité du travail (L.R.Q., chapitre S-2.1) and the Safety Code for the construction industry (S-2.1, r.6).
- .2 Develop a prevention program specific for the work based on identification of the risks and put this program in application from the beginning of work to its demobilization. The prevention program must take into account the information in the article 1.7. It must be transmitted to all person involved in conformity with the article 1.2. The prevention program must include :
  - .1 The business policy regarding health and safety;
  - .2 The description of the work, the total cost of the work, the schedule with its workforce chart;
  - .3 A flowchart of the health and safety's responsibilities;
  - .4 The physical and material organization of the job site;
  - .5 The first-aid norms;
  - .6 The identified risks on the job site;

- .7 The identification of the risks related to the work to be executed, including the prevention program and their applicability modality;
  - .8 The required formation;
  - .9 The procedures in situation of accident/injuries;
  - .10 A written commitment from all stakeholders to comply with this prevention program;
  - .11 A job site inspection schedule based on the prevention measures.
- .3 The general contractor must develop an efficient emergency plan, in relation with the job site characteristics and conditions. The emergency plan must be transmitted to all involved stakeholders, in conformity with the article 1.2. The emergency plan must include :
- .1 The evacuation procedure;
  - .2 The identification of the ressources (police, firefighter, ambulance, etc.);
  - .3 The identification of the persons in charge of the job site;
  - .4 The identification of the first-aiders;
  - .5 The required formation for the persons in charge of its application;
  - .6 And any other information necessary related to the job site characteristics.

#### **1.09 RESPONSABILITIES**

- .1 No matter what is the size of the job site or the number of workers on site, always have an identified competent supervisor responsible of the health and safety. Take all necessary measures to assure the health and safety of peoples and goods on and in the proximity of the job site that could be affected by the execution of the work.
- .2 Take all necessary measures to assure the application and the respect of all health and safety requirements indicated in the contractual documents, the federal and provincial regulations, the applicable norms and the prevention program specific for the job site and comply immediately to any prescription or notice of correction issued by the CNESST.
- .3 Take all necessary measures to maintain the job site clean and in good order during the work.

#### **1.10 COMMUNICATION AND SIGNAGE**

- .1 Take all necessary measures to assure an efficient communication of the health and safety information on the job site. As soon as they arrive on the job site, all workers must be informed of the particularities of the prevention program, of their obligations and rights. The general contractor must insist on the worker's right to refuse to execute a work if they believe this work could imperil their health, their safety, their own physical integrity or the one of the other persons on the job site. The general contractor must maintain on the job site an updated register with the information transmitted and the signature of all the workers who received this formation.
- .2 The following information and documents must be displayed in an easily accessible place for the workers :
  - .1 Notice of work start;

- .2 Identification of the master-builder;
- .3 The business policy regarding health and safety at work;
- .4 The prevention program specific to the job site;
- .5 The emergency plan;
- .6 Data sheet of all controlled products used on the job site;
- .7 Minutes of meeting of the construction site committee;
- .8 Name of the first-aiders;
- .9 Intervention and correction reports published by the CNESST.

#### **1.11 UNFORSEENS**

- .1 When a source of danger not specified in the specifications and not identified during the preliminary inspection of the job site occurs during the execution of the work, the general contractor must immediately stop the work, set up temporary protection measures for the workers and the public and warn the CSC representative verbally and by writing.

The general contractor must afterwards proceed with the necessary modifications to the prevention program for the work to resume safely.

#### **1.12 DYNAMITING**

- .1 Dynamiting and the use of explosives is forbidden, unless authorized by written by the CSC representative.
- .2 Any operation involving explosives must be executed under the immediate supervision of a qualified blaster.
- .3 The acquisition, the transport, the storage and the use of explosives must respect all applicable federal and provincial rules and regulations.:
  - .1 Canada: Explosives Act (E-17), Explosives regulations (C.R.C. CH. 599), norm related to the storage of explosives and detonators, TDG Act & Regulations.
  - .2 Quebec: Act respecting explosives (E-22), Regulation under the Act respecting explosives (E-22, r.1), Safety Code for the construction industry (S-2.1, r.6), Regulation on the transportation of dangerous substances.
- .4 The general contractor must secure all required permits in accordance with the above mentionned rules and regulations and he must keep a copy easily accessible on the job site.
- .5 The general contractor must facilitate the visit of the job site, of the explosives deposits and the inspection of the vehicles used for their transportation to all governmental representatives and police officers accredited to supervise explosives.

**1.13 CAULKING GUNS AND OTHER CARTRIDGE DEVICES**

- .1 Caulking guns or any other cartridge devices are forbidden on the CSC property. Refer to the section 01 35 13.

**END OF SECTION**

## **1 GENERAL**

### **1.01 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.
- .2 Reference Standards:
  - .1 Canadian Council of Ministers of the Environment (CCME)
  - .2 Canadian Environmental Protection Act (CEPA)
  - .3 Environment Quality Act (L.R.Q., Ch. Q-2)

### **1.02 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 Departmental 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.



- .7 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
  - .1 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 and 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.

### **1.03 FIRES**

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

### **1.04 DRAINAGE**

- .1 Develop and submit erosion and Sediment Control Plan (ESC).
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

### **1.05 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 Provide temporary enclosures where directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

#### **1.06 NOTIFICATION**

- .1 Departmental 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 Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Take action only after receipt of written approval by Departmental Representative.
- .4 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .5 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

#### **2 PRODUCTS**

##### **2.01 NOT USED**

- .1 Not Used.

#### **3 EXECUTION**

##### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 REFERENCES AND CODES**

- .1 Perform Work in accordance with (most recent edition) Canadian General Standards Board (CGSB), Canadian Standards association (CAN/CSA), National Building Code of Canada (NBC), American society for testing Materials (ASTM), American Concrete Institute (ACI), Cahier des charges et devis généraux (CCDG) of the Ministère des Transports du Québec and to other standards including in the other parts of this specifications.amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 In case of conflict or discrepancy, more stringent requirements apply.
- .3 When the specification refers to the standards, it will be the last revised edition, independently of the editions currently designated.
- .4 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

### **1.02 LAWS, REGULATIONS AND ORDERS**

- .1 respect the rights and privileges of others and comply with all federal, provincial and municipal laws, regulations and orders and ensure that his employees and subcontractors also respect that.
- .2 Applicable permits and approvals must be obtained by the Contractor prior to commencement of work.

### **1.03 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

### **1.04 RIGHTS, PERMITS AND TAXES**

- .1 Give all notices and obtain and pay construction permits for all excavation, construction and other works as may be required by the authorities having jurisdiction in the locality.
- .2 Costs and damages attributable to non-compliance with this clause shall be paid by the Contractor

**2 PRODUCTS**

**2.01 NOT USED**

.1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 29 83 – Payment procedure for testing laboratory.
- .2 Section 01 33 00 – Submittal procedures.
- .3 Section 26 05 00 – Common work results for electrical.

### **1.02 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC) :
  - .1 CCDC 2 Stipulated Price Contract.
- .2 Quality management ISO :
  - .1 ISO 90001 standard, 2008.
  - .2 ISO 14001 standard.

### **1.03 INSPECTION**

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

### **1.04 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative, unless otherwise specified in the other specification sections.
- .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 revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

#### **1.05 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.

#### **1.06 PROCEDURES**

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

#### **1.07 REJECTED WORK**

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

#### **1.08 REPORTS**

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

#### **1.09 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.

**1.10 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental 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 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.11 MILL TESTS**

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

**1.12 EQUIPMENT AND SYSTEMS**

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

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SITE LOCATION**

- .1 See project plans.

### **1.02 RESPONSABILITY**

- .1 The Contractor shall be responsible, without limitation :
  - .1 Construction site office;
  - .2 Departmental Representative's office;
  - .3 Premises for the storage of equipment;
  - .4 Storage area for equipment and materials;
  - .5 Temporary access;
  - .6 Construction site toilet;
  - .7 Compaction water and dust suppressant water;
  - .8 Equipment and worker security;
  - .9 Maintenance of access roads (cleaning in summer, leveling of gravel roads and installation of dust suppressant, snow removal of site access);
  - .10 Waste management;
  - .11 Telephone and internet access;
  - .12 Customs fee, if required;
  - .13 Fences and temporary fences;
  - .14 Night work lighting.

### **1.03 INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Provide construction facilities in order to execute work expeditiously.
- .3 Remove from site all such work after use.

### **1.04 HOISTING**

- .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists to be operated by qualified operator.

### **1.05 CONSTRUCTION PARKING**

- .1 It will be allowed to use the parking of the site.



- .2 Clean traffic lanes if it used for work.

#### **1.06 OFFICES**

- .1 No dedicated site office is requested.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

#### **1.07 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

#### **1.08 SANITARY FACILITIES**

- .1 Provide sanitary facilities for workers in accordance with relevant ordinances and regulations.
- .2 Post required notices and take all precautions required by local health authorities. Keep the area and the area clean.

#### **1.09 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic on perimeter road.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .4 Dust control: adequate to ensure safe operation at all times.
- .5 Provide snow removal during period of Work.

#### **1.10 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

**2 PRODUCTS**

**2.01 NOT USED**

.1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 REFERENCES**

- .1 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .4 If no specific date or edition is mentioned, comply with the most recent standards in force at the time of submission of the tender.

### **1.02 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 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

### **1.03 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

#### **1.04 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .5 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.05 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

#### **1.06 MANUFACTURER'S INSTRUCTIONS**

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

### **1.07 QUALITY OF WORK**

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

### **1.08 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.

### **1.09 CONCEALMENT**

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

### **1.10 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. 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 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

### **1.12 FASTENINGS**

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.

- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

### **1.13 FASTENINGS - EQUIPMENT**

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

### **1.14 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of the structure.

### **1.15 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 Work and 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.

**2 PRODUCTS**

**2.01 NOT USED**

.1 Not used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 EXISTING SERVICES**

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

### **1.02 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not used.

**END OF SECTION**



## **1 GENERAL**

### **1.01 REFERENCES**

- .1 Environment quality act (LRQ, ch. Q-2).
- .2 Regulation respecting hazardous materials (ch Q-2, r.32).
- .3 Regulation respecting the landfilling and incineration of residual materials (ch Q-2, r. 19).

### **1.02 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Departmental Representative or other Contractors.
- .2 Remove waste materials, hazardous material and material or machinery not required at the work site from site at daily regularly scheduled times and dispose according to the regulations in force. The bill of disposal at a site authorized by the Ministère du Développement durable, Environnement et lutte contre les changements climatique (MDDELCC) must be provided to the Departmental Representative.
- .3 Clear snow and ice from access to building, remove from site.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances.
- .8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

### **1.03 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

- .5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floor.
- .6 Clean lighting reflectors, lenses, and other lighting surfaces.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Sweep and wash clean paved areas.
- .11 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .12 Clean roofs, downspouts, and drainage systems.
- .13 Remove snow and ice from access to building.
- .14 The hazardous waste material must be disposed at a site authorized by MDDELCC. Disposition bill shall be provided to the Departmental Representative.
- .15 All residual materials (waste, recyclable materials, construction waste) must be disposed in accordance with current regulation.
- .16 The Contractor must dispose of its residual materials at a site authorized by the MDDELCC. Disposition bill shall be provided to the Departmental Representative.

#### **1.04 WASTE MANAGEMENT AND DISPOSAL**

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

#### **2 PRODUCTS**

##### **2.01 NOT USED**

- .1 Not Used.

#### **3 EXECUTION**

##### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's waste management goal and Contractor's proposed Waste Reduction Workplan for Construction, Renovation and /or Demolition (CRD) waste to be project generated.
- .2 PWGSC's waste management goal: to divert a minimum 50 percent of total Project Waste from landfill sites. Prior to project completion provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.
- .4 Protect environment and prevent environmental pollution damage.

### **1.02 REFERENCES**

- .1 Definitions:
  - .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
  - .2 Class III: non-hazardous waste - construction renovation and demolition waste.
  - .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities
  - .4 Inert Fill: inert waste - exclusively asphalt and concrete.
  - .5 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
  - .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: act of keeping different types of waste materials separate beginning from the point they became waste.
- .13 Waste Audit (WA): detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled. Refer to Schedule A.
- .14 Waste Diversion Report: detailed report of final results, quantifying cumulative weights and percentages of waste materials reused, recycled and landfilled over course of project. Measures success against Waste Reduction Workplan (WRW) goals and identifies lessons learned.
- .15 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.
- .16 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan (Schedule B) information acquired from Waste Audit.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Prepare and submit at intervals agreed to by Departmental Representative the following:
  - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.
- .2 Submit prior to final payment the following:
  - .1 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.

#### **1.04 USE OF SITE AND FACILITIES**

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by facility provide temporary security measures approved by Departmental Representative.

#### **1.05 WASTE PROCESSING SITES**

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

#### **1.06 STORAGE, HANDLING AND PROTECTION**

- .1 Salvaged materials should be stored in the same manner as new materials.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Use the following paragraph if material is to be turned over to Departmental Representative/DCC Representative/Consultant.
- .4 Protect, stockpile, store and catalogue salvaged items.
- .5 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .6 Protect structural components not removed and salvaged materials from movement or damage.
- .7 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .8 Protect surface drainage, mechanical and electrical from damage and blockage.
- .9 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .10 Separate and store materials produced during project in designated areas.
- .11 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off site processing facility for separation.
  - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.

- .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

## **1.07 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste volatile materials mineral spirits oil paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.
- .5 The Contractor must salvage all of its residual materials throughout his works. All residual materials must be sort and handled by the actual reglementation, as the Regulation respecting hazardous materials (Q-2, r. 32).
- .6 The Contractor must dispose of its residual materials at a site authorized by the MDDELCC. Disposition bill shall be provided to the Departmental Representative.
- .7 The Contractor must salvage all residual materials (waste, recyclable materials, construction waste) must be disposed in accordance with current regulation.
- .8 The hazardous waste material must be disposed at a site authorized by MDDELCC. Disposition bill shall be provided to the Departmental Representative.

## **1.08 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

### **3 EXECUTION**

#### **3.01 APPLICATION**

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

#### **3.02 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  - .2 Source separate materials to be reused/recycled into specified sort areas.

#### **3.03 DIVERSION OF MATERIALS**

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
  - .1 Mark containers or stockpile areas.
  - .2 Provide instruction on disposal practices.

**END OF SECTION**

## **1 GENERAL**

### **1.01 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
- .2 Departmental Representative's Inspection:
  - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
  - .2 Contractor to correct Work as directed.
- .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested and fully operational.
  - .4 Operation of systems: demonstrated to Departmental Representative's personnel.
  - .5 Work: complete and ready for final inspection.
- .4 Final Inspection:
  - .1 When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.
  - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

### **1.02 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not used.

**END OF SECTION**



## **1 GENERAL**

### **1.01 ADMINISTRATIVE REQUIREMENTS**

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

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, 1 final hard copy of the operation and maintenance manuals and 1 copy pdf.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

### **1.03 FORMAT**

- .1 Organize data as 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 systems, 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 CAD files in dxf, dwg format on CD.

#### **1.04 CONTENTS - PROJECT RECORD DOCUMENTS**

- .1 Table of Contents for Each Volume: provide title of project;
  - .1 Date of submission; names.
  - .2 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.
  - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

#### **1.05 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain, at site for Departmental 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 Departmental Representative.

#### **1.06 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information for each type.
- .3 Record information concurrently with construction progress.
  - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Changes made by Addenda and change orders.
  - .2 Details not on the original contract documents.
  - .3 Standards of shop drawings and related modifications.
- .6 Specifications: write all specifics that they might, including:
  - .1 Manufacturer's name, trademark and catalog number of each product installed, and in particular, optional details and replacement item.
  - .2 Addenda or modifications.
- .7 Other Documents: maintain manufacturer's certifications and field test records, required by individual specifications sections.
- .8 Provide digital photos, if requested, for site records.

## **1.07 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 Design-Builder's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .13 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .14 Additional requirements: as specified in individual specification sections.

## **1.08 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
  - .1 Provide information for re-ordering custom manufactured products.

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

#### **1.09 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.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Departmental Representative.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
  - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to location as directed.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Departmental Representative.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.
  - .3 Deliver to location as directed.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Departmental Representative.
    - .2 Include approved listings in Maintenance Manual.

#### **1.10 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in 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 paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

#### **1.11 WARRANTIES AND BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
  - .4 Verify that documents are in proper form, contain full information, and are notarized.
  - .5 Co-execute submittals when required.
  - .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Include information contained in warranty management plan as follows:
  - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
  - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.

- .3 Location where installed.
- .4 Name and phone numbers of manufacturers or suppliers.
- .5 Names, addresses and telephone numbers of sources of spare parts.
- .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
- .7 Cross-reference to warranty certificates as applicable.
- .8 Starting point and duration of warranty period.
- .9 Summary of maintenance procedures required to continue warranty in force.
- .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
- .11 Organization, names and phone numbers of persons to call for warranty service.
- .12 Typical response time and repair time expected for various warranted equipment.
- .3 Contractor's plans for attendance at post-construction warranty inspections.
- .4 Procedure and status of tagging of equipment covered by extended warranties.
- .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .9 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .10 Written verification to follow oral instructions.
  - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.

### **1.02 REFERENCES**

- .1 Canadian Standards Association (CSA International):
  - .1 CSA C22.1-F2010, Canadian Electrical Code, Part 1 with Quebec Amendments (21<sup>st</sup> Edition), Safety Standard for Electrical Installations.
  - .2 CAN3-C235-F83, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC):
  - .1 EEMAC 2Y-1, Light Gray Colour for Indoor Switch Gear.
- .3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC):
  - .1 IEEE SP1122-(2000), The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

### **1.03 DEFINITIONS**

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

### **1.04 DESIGN REQUIREMENTS**

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
  - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates and labels for control items in French.

### **1.05 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec of Canada.



- .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
- .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
- .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
- .5 Submit by sending PDF drawings and technical data at Departmental Representative.
- .6 If changes are required, notify Departmental Representative of these changes before they are made.
- .3 Quality Control: in accordance with Section 01 45 00 - Quality Control:
  - .1 Provide CSA certified equipment and material.
  - .2 Permits and fees: in accordance with the General Provisions of the contract.
- .4 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

#### **1.06 QUALITY ASSURANCE**

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Site Meetings:
  - .1 Site Meetings: as part of Manufacturer's Field Services described in Part 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
    - .1 After delivery and storage of products, and when preparatory Work is complete but before installation begins.
    - .2 Once during progress of Work at 25% and 60% complete.
    - .3 Upon completion of Work, after cleaning is carried out.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Material Delivery Schedule: provide Departmental Representative with schedule within 2 weeks after award of Contract.
- .2 Construction/Demolition Waste Management and Disposal: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Start-up:
  - .1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems, system equipment and components.
  - .2 If required, arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.
- .4 Start-up all of the systems. Make sure that they are operating properly and demonstrate that system performances meet the requirements of the plans and specifications.

#### **1.08 OPERATING AND MAINTENANCE INSTRUCTIONS**

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
  - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
  - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
  - .3 Safety precautions.
  - .4 Procedures to be followed in event of equipment failure.
  - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
  - .6 Instructions regarding maintenance, repairs and the operation and maintenance of each component.
  - .7 A maintenance schedule that includes the frequency and duration of the maintenance tasks, as well as the tools required to perform maintenance.
- .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
- .4 Post instructions where directed.
- .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.
- .7 Group all of the operating instructions in a binder, which will become the Operation and Maintenance Manual, and produce three (3) copies of this manual for the facilities' operating staff, who will receive them at the latest when they will receive training.
- .8 Submit one copy of the preliminary version of the Operation and Maintenance Manual to the Departmental Representative for approval. Make the requested changes to the said manual, if any, and re-submit to the Departmental Representative.

#### **1.09 FINAL DRAWINGS**

- .1 Provide one (1) series of electricity drawings, which will be updated as work progresses. Changes to the systems and wiring will be in accordance with the same procedure.

- .2 Report the information recorded on the reproducible drawing on a weekly basis in order to show the feeders and electric devices as installed.
- .3 Following the testing, balancing and tuning of the systems, indicate the modifications to the drawings and the control panel tables.
- .4 Submit the drawings to the Departmental Representative for approval and make changes as directed.
- .5 Identify each drawing as follows in the lower right corner, in letters at least 12 mm high:  
AS BUILT DRAWINGS: THIS DRAWING WAS REVISED AND INDICATES THE  
ELECTRIC DEVICES AS INSTALLED (Contractor's signature) (Date).
- .6 Submit the final reproducible as-built drawings along with the Operation and Maintenance Manual.
- .7 Warranty:
  - .1 All new devices, accessories, equipment supplied and installed in the context of this project will be guaranteed for parts and labour for a minimum of one (1) year after the final acceptance of the work

## **2 PRODUCTS**

### **2.01 MATERIALS AND EQUIPMENT**

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Material and equipment to be CSA certified or other accredited body.
- .3 Factory assemble control panels and component assemblies.

### **2.02 WIRING TERMINATIONS**

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

### **2.03 EQUIPMENT IDENTIFICATION**

- .1 Identify electrical equipment with nameplates and labels as follows:
  - .1 Nameplates: lamicoid 3 mm thick plastic engraving sheet white plate, black letters core, lettering accurately aligned and engraved into core mechanically attached with self-tapping screws.

.2 Sizes as follows:

**NAMEPLATE SIZES**

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

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per nameplate and label.
- .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .7 Terminal cabinets and pull boxes: indicate system and voltage.
- .8 Transformers: indicate capacity, primary and secondary voltages.

**2.04 WIRING IDENTIFICATION**

- .1 Identify wiring with permanent indelible identifying markings, numbered coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

**2.05 CONDUIT AND CABLE IDENTIFICATION**

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.

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

	<b>Prime</b>	<b>Auxiliary</b>
Up to 250 V	Yellow	
Up to 600 V	Yellow	Green
Up to 5 kV	Yellow	Blue
Up to 15 kV	Yellow	Red
Telephone	Green	
Other communication	Green	Bleu
Systems fire alarm	Red	
Emergency voice	Red	Bleu
Other security systems	Red	Yellow

- .4 Distribution panel (600 V or 120/208 volts or 120/240 volts):
- .1 Identification will designate the controlled device or equipment and identify its location. This identification is generally placed on the visible face of the protection devices.
  - .2 The information or identification will be typed. The page will then be plasticized and placed in the record holder installed for this purpose. An additional copy of this page will be provided to the Owner. The name of the device, the circuit it is associated with and its location will be indicated..

## **2.06 IDENTIFICATION IN ACCORDANCE WITH THE EXISTING NOMENCLATURE**

- .1 Devices added or improved upon will be identified in accordance with the existing nomenclature.
- .2 If the existing nomenclature does not include the new devices, the latter will be identified in accordance with the provisions of this section.

## **2.07 FINISHES**

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
  - .1 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1.

## **3 EXECUTION**

### **3.01 INSTALLATION**

- .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.
- .2 Unless otherwise indicated, installation will be executed in accordance with the Quebec construction code, chapter 5, 2010 ed.
- .3 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

### **3.02 NAMEPLATES AND LABELS**

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

### **3.03 TRAINING**

- .1 Provide the tools, material and qualified instructors required to train the operation and maintenance personnel on the operation, control, regulation, tuning, diagnostic, troubleshooting and maintenance of the devices, materials and systems before their acceptance. Training will take place during normal working hours.
- .2 For each training session, submit a training proposal and a detailed schedule that will include a summary of each subject to the Departmental Representative 30 days before the date of the scheduled training.
- .3 During training, provide three (3) hard copies of the Operation and Maintenance Manual previously approved by the Departmental Representative.

### **3.04 FIELD QUALITY CONTROL**

- .1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.
  - .1 Circuits originating from branch distribution panels.
  - .2 Lighting and its control.
  - .3 Insulation resistance testing:
    - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
    - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
    - .3 Check resistance to ground before energizing.
- .2 Carry out tests with the Departmental Representative in attendance and provide him with a written copy of the test results.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .4 Carry out the tests as indicated in each section of these specifications.

### **3.05 CLEANING**

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.
- .3 Clean all conduit networks and their boxes prior to the pulling of the conductors.
- .4 Just before the final acceptance of the facilities, clean and restore all devices and leave them in perfect working order.

**END OF SECTION**

## **1 GENERAL**

### **1.01 DEFINITIONS**

- .1 The Contractor signed a contract to execute all of the work shown on the plans and described in the specifications. The Contractor will provide, build, install and commission all of the items described in these specifications.
- .2 The Contractor retains the services of sub-contractors in order to execute some of the work. However, they work under the responsibility and supervision of the Contractor as if they were part of his organization. The Contractor is the sole party authorized to communicate with and make requests to the Departmental Representative.
- .3 The Contractor may also be referred to as “General Contractor”.
- .4 When the expressions “Electricity Contractor” or “Electricity Sub-contractor” are used, it is to be understood that this is the firm selected and hired by the Contractor to carry out some of the specialized work.

### **1.02 ELECTRICITY PLANS AND SPECIFICATIONS**

- .1 The general and technical specifications, related appendixes, labour laws and other bid documents are an integral part of this section and they govern the work.
- .2 The plans indicate the approximate locations of the equipment and pipes. Their exact locations will be determined on site by the Contractor, with the Departmental Representative in attendance. In addition, the Contractor will verify the space available on site before installing equipment and pipes. He will also coordinate the work and the use of the available space with the other trades.
- .3 The electricity plans will not be used as a source of information regarding architecture or structural engineering.
- .4 There will be no additional payment for the moving of pipes and equipment deemed necessary in terms of civil engineering, architecture or any other normal consideration.
- .5 Prior to submitting his bid, the Contractor will notify the Departmental Representative of any error or omission that he may have found in the plans and specifications, as well as any incompatibility with the architecture and structural engineering plans. There will be no additional payment related to this.
- .6 Detailed plans that may be provided to the Contractor during construction will also be part of the electricity plans and specifications. Should the Contractor need detailed plans, he will submit a written request to the Departmental Representative at least 15 business days in advance.

- .7 The Departmental Representative reserves the right to interpret the electricity plans and specifications. Should there be a conflict between the electricity plans and the specifications in terms of quantity, quality, and the nature and price of some works or materials, the Contractor will use the solution that is the most expensive for the preparation of his bid price and will submit the said bid accordingly. A credit will be issued if another solution is selected during construction.

### **1.03 SCOPE OF WORK**

- .1 Provide all materials, labour, tools and equipment necessary for the complete execution of all of the work described in the specifications and/or indicated on the plans.
- .2 Unless otherwise indicated in the description of the work, “installation” includes the supply of all equipment and materials, including all related accessories, required for a complete installation.
- .3 The list below is not exhaustive and any work described herein is included in the project. The list of work includes, without being limited to:
  - .1 Supply and installation or reinstallation of concrete bases.
  - .2 Repair of concrete bases.
  - .3 The supply and installation of TECK cables and RWU cables.
  - .4 Supply and installation of control boxes and contactors.
  - .5 The supply and installation of lighting structures.
  - .6 Supply and installation of fixtures.
  - .7 Connections of all equipment requiring electricity, whether supplied by the Contractor in this section, by Contractors in other sections or by others.
  - .8 Ensuring the continuity of all existing services.
  - .9 Verification and coordination of all existing and new services with Departmental Representative, utility companies and other relevant specialty services.
  - .10 The delivery to the Ministry of the equipment described in the plans and specifications as to be recovered. The Contractor will clear the premises of anything that is not recovered.
- .4 The following work, related to the installation of electrical equipment, will be carried out by the general Contractor:
  - .1 All excavation work, backfilling, compaction and earthworks.

### **1.04 RESPONSIBILITY FOR THE WORK**

- .1 Any change to the plans and specifications by the Contractor without the written authorization of the Departmental Representative will make the former solely responsible for any system malfunction. The Contractor will be responsible for any defect that may arise within one year after the final acceptance of the work.



### **1.05 PROCEDURES AND WORK SCHEDULE**

- .1 The Contractor will refer to and follow the construction sequence identified in the work schedule, as well as in the work procedures.
- .2 The price for the execution of all of the work in accordance with the work procedures, and for the execution of all work paid overtime, i.e. in the evening, at night and during week-ends, will be included in the bid. Additional payments will not be made.

### **1.06 CONTINUITY OF SERVICES**

- .1 The Contractor will ensure that the existing services will continue uninterrupted during the installation of new equipment and the modification of existing equipment.
- .2 Should the Contractor be obligated to shut off power to occupied buildings when connecting equipment, the work will be carried out outside of normal business hours.
- .3 The time allowed to shut off power at night will be confirmed by the owner of the building affected by the power interruption. The Contractor will submit a request to the Departmental Representative for a temporary power shut off at least ten (10) days in advance.
- .4 The price for the execution of all of the work requiring service and power interruptions during paid overtime periods will be included in the bid price. The price for the temporary connections will also be included in the bid price. Additional payments will not be made.

### **1.07 REQUESTS TO THE OWNER**

- .1 For all work that may hinder the activities of the owner, the Contractor will submit a written request, which will describe the nature of the work to be performed, the time required to execute the work and the date when the work will take place. The Contractor will wait for a written authorization from the Departmental Representative before proceeding with work.
- .2 The Contractor will submit a written request for authorization to the Departmental Representative ten (10) days in advance every time an interruption of services or power is required.

### **1.08 WORK INSIDE AND OUTSIDE OF OCCUPIED BUILDINGS**

- .1 The Contractor will not proceed with work inside an occupied building without a written authorization from the Departmental Representative.

### **1.09 EXISTING UTILITIES**

- .1 The location of some existing utilities if indicated on the plans for information purposes only. At the beginning of construction, the Contractor will verify and locate all of the existing utilities with the owner.
- .2 Prior to construction, the Contractor will verify the existing plans, as well as the civil engineering, structural engineering and electricity plans, with the Departmental Representative.

- .3 Before the beginning of demolition, drilling and piercing work, the Contractor will make all of the required verifications in order to avoid damaging concealed utilities.

#### **1.10 EXISTING CONCEALED UTILITIES**

- .1 The Contractor is responsible for damages to existing concealed electric, telecommunication or other utilities resulting from drilling and cutting into concrete.
- .2 The Contractor will make all of the required verifications in order to avoid damaging the existing concealed utilities. To achieve this, the Contractor will consult:
  - .1 Plans of other disciplines of this contract.
  - .2 Mechanical plans, electricity, telecommunications and other specialties of the existing.
  - .3 The owner and / or maintenance personnel having knowledge of the premises.
  - .4 Specialized service companies with knowledge of the site and its facilities.
  - .5 Utility companies and info-excavation service.
- .3 The Contractor will seek and locate each conduit on site, in each area involved, using the appropriate equipment. The Contractor is responsible for the hiring of a specialized firm to look for concealed utilities, if necessary.

#### **1.11 EQUIPMENT TO BE PRESERVED**

- .1 The Contractor will re-build all of the existing conduit and wiring networks where marked for preservation.
- .2 The Contractor will ensure the continuity of the existing networks and utilities end-to-end for all equipment marked for preservation.

#### **1.12 REMOVED EXISTING EQUIPMENT TO BE HANDED TO THE OWNER**

- .1 Where indicated on the plans, the Contractor will remove the existing equipment marked for preservation, handle the equipment with care and store the equipment where indicated by the Departmental Representative.
- .2 The Contractor will remove from the site any material that is not marked for preservation by the Owner.
- .3 The Contractor will provide written records of the equipment that will be handed to the owner.

#### **1.13 REMOVAL OF OBSOLETE EXISTING EQUIPMENT**

- .1 Generally speaking and unless otherwise indicated, the Contractor will remove all obsolete existing equipment that cannot be reused and ensure the continuity of the existing networks and services end-to-end. The Contractor will verify all of the equipment to be removed and will proceed with removal in accordance with the established work procedures and construction sequences. The Contractor will plan and provide all services, electrical installations and temporary installations required for the existing equipment that must remain operational in accordance with the established work procedures and construction sequences. The Contractor will coordinate the removal of obsolete equipment with the Departmental Representative.

#### **1.14 INTER-TRADE COORDINATION**

- .1 The electricity contractor will coordinate the position of the bases, duct banks and other underground equipment with the Contractor, based on the position of the various civil engineering structures.
- .2 When the Contractor will provide and install equipment on bases built by other parties, he will be responsible for the coordination of the bases' dimentions in order to ensure that the latter are adjusted to the size of the supported equipment.
- .3 Compensation will not be paid for the moving of ducts, boxes, duct banks, etc., that may hinder the execution of other works or overall appearance.

### **2 PRODUCTS**

#### **2.01 MATERIALS AND EQUIPMENT**

- .1 Unless otherwise indicated, use new materials and equipment.
- .2 Unless otherwise required, use products from only one supplier regarding materials and equipment of the same type or class. The equipment provided will be from the same supplier in order to ensure the maximum level of interchangeability between the elements, especially for distribution panels, disconnectors, breakers, wiring devices and lighting fixtures.
- .3 Use products appropriate for the location, e.g. products in wet environments will be waterproof, dustproof in dusty areas, etc. In addition, duct ends entering boxes, panels and similar equipment will be sealed with appropriate sealing compounds.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 00.
- .3 Section 26 05 21.
- .4 Section 26 05 31.

### **1.02 REFERENCES**

- .1 Canadian Standards Association (CSA International):
  - .1 CAN/CSA-C22.2 No.18-F98(C2013), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
  - .2 CSA C22.2 No.65-F93(C2013), Wire Connectors.
- .2 National Electrical Manufacturers Association (NEMA).
- .3 Electrical and Electronic Manufacturers Association of Canada (EEMAC):
  - .1 Bushing Stud Connectors and Aluminum Adapters (1200 A)

### **1.03 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Divert unused wiring materials from landfill to metal recycling facility as approved by Departmental Representative.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Pressure type wire connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors as required.
- .2 Clamps or connectors for armoured cable, aluminum sheathed cable, flexible conduit, non-metallic sheathed cable as required to: CAN/CSA-C22.2 No.18.

### **3 EXECUTION**

#### **3.01 INSTALLATION**

- .1 Remove insulation carefully from ends of conductors and:
  - .1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.
  - .2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 00.
- .3 Section 26 05 20.

### **1.02 REFERENCES**

- .1 CSA C22.2 no 0.3-9(R2014).

### **1.03 PRODUCT DATA**

- .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 Packaging Waste Management: remove for reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **2 PRODUCTS**

### **2.01 UNDERGROUND AND BUILDING WIRES**

- .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE (above ground) and 1000 V insulation of cross-linked thermosetting polyethylene material rated V RWU90 XLPE (underground).

### **2.02 CABLES TECK 90**

- .1 Cables: In accordance with section 26 05 00 – Common Work Requirements - Electrical.
- .2 Conductors:
  - .1 Grounding conductor: Copper, as indicated.
  - .2 Power supply conductors: Copper, as indicated, size as indicated.
- .3 Insulation:
  - .1 Ethylene-propylene rubber (EP).
  - .2 Cross-linked polypropylene (XLPE).
  - .3 Rated voltage: 1 000 V.
- .4 Sleeve: PVC.

- .5 Metal armor: Galvanized steel flat sheet.
- .6 Outer casing: PVC, in accordance with the requirements of the National Building Code regarding the building class relevant to this project.
- .7 Anchors:
  - .1 One holed steel cable flange for apparent cables 50 mm or less. Two holed steel cable flange for cables 50 mm and over.
  - .2 U-shaped supports for two or several cables, installed as indicated.
  - .3 Threaded hanger rods: 6 mm in diameter for U-shaped supports.
- .8 Connectors:
  - .1 Approved watertight models suitable for TECK cables.

### **3 EXECUTION**

#### **3.01 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

#### **3.02 GENERAL CABLE INSTALLATION**

- .1 Install cables in trenches as indicated.
- .2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .3 Cable Colour Coding: to Section 26 05 00 Common Work Results for Electrical.
- .4 Place TECK cables in existing ducts in existing concrete bases after having thoroughly cleaned the ducts and in the ducts of the new bases.

#### **3.03 INSTALLATION OF BUILDING WIRES**

- .1 Install wiring as follows:
  - .1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
  - .2 In underground conduits, as indicated.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 01.

### **1.02 REFERENCES**

- .1 CSA C22.10-10, Quebec construction Code, chapter 5 – Electricity.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures:
  - .1 Provide drawings stamped and signed by professional engineer registered or licensed in Province Quebec, Canada.

### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 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.

## **2 PRODUCTS**

### **2.01 EQUIPMENT BOXES**

- .1 Construction: welded steel enclosure.
- .2 Covers Surface Mounted: screw-on flat covers, hinged, type NEMA 12.

## **3 EXECUTION**

### **3.01 INSTALLATION OF EQUIPMENT BOXES**

- .1 Install the boxes where indicated.

### **3.02 IDENTIFICATION**

- .1 Equipment Identification: to Section 26 05 00 - Common Work Results for Electrical.



- .2 Identification Labels: size 2 indicating system name voltage and phase or as indicated.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.

### **1.02 REFERENCES**

- .1 Canadian Standards Association (CSA International):
  - .1 CAN/CSA C22.2 No. 18-F98(C2013), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
  - .2 CSA C22.2 No. 45-FM1981(C2013), Rigid Metal Conduit.
  - .3 CSA C22.2 No. 56-F13, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .4 CSA C22.2 No. 83-FM1985(C2013), Electrical Metallic Tubing.
  - .5 CSA C22.2 No. 211.2-FM1984(C2013), Rigid PVC (Unplasticized) Conduit.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Datasheets: submit documents and samples required in accordance with Section 01 33 00 samples to be submitted.

### **1.04 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste according to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic waste in designated containers.

## **2 PRODUCTS**

### **2.01 CONDUITS**

- .1 Rigid PVC conduit: to CSA C22.2 No. 211.2 (exterior, pesticide area, wet environment, underground).

### **2.02 CONDUIT FITTINGS**

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.

### **2.03 FISH CORD**

- .1 Polypropylene, tension strength : 5 KN.

### **3 EXECUTION**

#### **3.01 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

#### **3.02 INSTALLATION**

- .1 Use rigid PVC conduit underground or in corrosive areas.
- .2 Install fish cord in empty conduits.
- .3 Remove and replace blocked conduit sections.
  - .1 Do not use liquids to clean out conduits.
- .4 Dry conduits out before installing wire.

#### **3.03 UNDERGROUND CONDUITS**

- .1 Slope conduits to provide drainage away from the buildings.
- .2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

#### **3.04 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 00.

### **1.02 REFERENCES**

- .1 Canadian Standards Association, (CSA International).
- .2 Insulated Cable Engineers Association, Inc. (ICEA).

### **1.03 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Place all packaging material in appropriate on-site bins in accordance with Waste Management Plan.
- .4 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .5 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.
- .6 Do not dispose of preservative treated wood through incineration.
- .7 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .8 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Departmental Representative.
- .9 Fold up metal banding, flatten and place in designated area for recycling.

## **2 PRODUCTS**

### **2.01 MARKERS**

- .1 Polypropylene tape with inscription "Danger", "Underground Power Line".

### **3 EXECUTION**

#### **3.01 CABLE INSTALLATION IN DUCTS**

- .1 Install cables in ducts or as indicated.
- .2 Install multiple cables in duct simultaneously.
- .3 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.
- .4 Before pulling the cables in ducts, and until they are connected permanently, seal the ends by means of a waterproof sealing tape.
- .5 Pulling spliced cables through ducts is prohibited.

#### **3.02 MARKERS**

- .1 Install the indicator strip indicating electrical conduit along the route of the pipes and at each change of direction.

#### **3.03 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .2 Perform tests using qualified personnel. Provide necessary instruments and equipment.
- .3 Check phase rotation and identify each phase conductor of each feeder.
- .4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.
- .5 Pre-acceptance tests :
  - .1 After installing cable but before splicing and terminating, perform insulation resistance test with megger on each phase conductor.
  - .2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.
- .6 Acceptance Tests :
  - .1 Ensure that terminations and accessory equipment are disconnected.
  - .2 Ground shields, ground wires, metallic armour and conductors not under test.
  - .3 High Potential (Hipot) Testing :
    - .1 Conduct hipot testing of original factory test voltage in accordance with manufacturer's recommendations.
  - .4 Leakage Current Testing :
    - .1 Raise voltage in steps from zero to maximum values as specified by manufacturer for type of cable being tested.
    - .2 Hold maximum voltage for specified time period by manufacturer.
    - .3 Record leakage current at each step.

- .7 Provide Departmental Representative with list of test results showing location at which each test was made, circuit tested and result of each test.
- .8 Remove and replace entire length of cable if cable fails to meet any of test criteria.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 00.

### **1.02 REFERENCES**

- .1 CSA C22.2 no 106-FM92(C2001), high breaking capacity fuse.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide fuse performance data characteristics for each fuse type and size above 100 A. Performance data to include: average melting time-current characteristics.
- .3 Shop Drawings:
  - .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.

### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 Ship fuses in original containers.
- .2 Do not ship fuses installed in switchboard.
- .3 Waste Management and Disposal:
  - .1 Separate waste, in accordance with Section 01 74 21.

### **1.05 EXTRA MATERIALS**

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Three spare fuses of each type and size installed above 600 A.
- .3 Six spare fuses of each type and size installed up to and including 600 A.

## **2 PRODUCTS**

### **2.01 FUSES - GENERAL**

- .1 The fuses designated type LT and JT, allowed to be used in the present work in compliance with CSA 22.2 No.106.
- .2 Fuses: product of one manufacturer.

### **2.02 FUSE TYPES**

- .1 HRC-1-J fuse:
  - .1 For motor circuits, type JT, time delay, which can withstand a current representing 500% of its rated current for a period of at least 10 seconds.
- .2 HRC-L fuse (formerly class L):
  - .1 For all other types of circuits, type LT, time delay, which can withstand a current representing 500% of its rated current for a period of at least 10 seconds.

## **3 EXECUTION**

### **3.01 INSTALLATION**

- .1 Install fuses in the fuse holder immediately before powering the circuit.
- .2 Ensure correct fuses fitted to physical matched mounting devices.
- .3 Ensure that the correct fuses are inserted in the appropriate place to protect the designated electrical circuit.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Drawings and general provisions of the contract, including the general requirements of Division 01, apply to this Section.
- .2 Section 26 05 00.

### **1.02 REFERENCES**

- .1 IES LM-79 and LM-80, lamp LED.
- .2 Canadian Standards Association (CSA International).
- .3 CSA C22.2 no 141-15, emergency lighting equipment.
- .4 Underwriters Laboratories (ULC).
- .5 American National Standards Institute (ANSI):
  - .1 ANSI C82.1-04, Lamp Ballasts-Line Frequency Fluorescent Lamp Ballast.
  - .2 ANSI C82.4-02 R2007, Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps Multi Supply Type.
- .6 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE):
  - .1 ANSI/IEEE C62.41-1991, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
- .7 Canadian Standards Association (CSA) / CSA International.
- .8 ICES-005-07, Radio Frequency Lighting Devices.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit complete photometric data of proposed luminaires for required photometric configuration and established by independent testing laboratory and have Departmental Representative approve.
  - .3 Manufacturer's instructions: provide manufacturer's written installation instructions and special handling criteria, installation sequence and cleaning procedures.

- .3 If a luminaire with different characteristics in terms of power, lumens delivered or photometric distribution is proposed, the contractor must provide a photometric study signed by an engineer member of the Ordre des Ingénieurs du Québec who demonstrates equivalence. performance of the luminaire in terms of floor lighting. The luminaire presented will then have an advantage in terms of efficiency (lumen / watt) by keeping the street light positions shown on the plans and achieving higher ground performance.

#### **1.04 QUALITY ASSURANCE**

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

#### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Management of packaging waste: collect the waste in accordance with Section 01 74 21 - Management and disposal of construction / demolition waste.
- .4 Divert unused metal materials from landfill to metal recycling facility.

### **2 PRODUCTS**

#### **2.01 GENERAL**

- .1 The finish and construction of the light fixtures will be ULC and CSA certified for the type of installation.

#### **2.02 L1 LIGHTING FIXTURE**

- .1 In accordance with IES LM-79 and LM-80: LED sources, 5,700 ° K, Type II Medium distribution, CRI 70 minimum, service life (L70) of more than 100,000 hours according to TM-21.
- .2 Power: 134 W at 700 mA, 12 678 lumens.
- .3 Minimum 10 years warranty on all fixture components and paint finish.
- .4 Molded, weatherproof aluminum housing tested for 3G vibration, IP66 waterproof and salt spray resistant finish.
- .5 Silver paint finish.
- .6 Ballast: 347 V.
- .7 Factory pre-installed luminaire with incorporated driver, ready to be connected by the terminal block.

- .8 Adjustable arm, see section 26 56 19. Adjusted at an angle of approximately 10 degrees. To be confirmed on site with the Departmental Representative.
- .9 Such as EDGE series from CREE or equivalent approved by the Departmental Representative.

### **2.03 DRIVERS**

- .1 CSA certified Drivers for LED with the following characteristics:
  - .1 Nominal voltage in accordance with the power supply indicated on the plans for the light fixture.
  - .2 Enclosed and designed for use in temperatures ranging between -40°C and 40°C.
  - .3 Thermal protection.
  - .4 Harmonic distortion rate: 20% or less.
  - .5 Lifespan longer than or equal to the lifespan of the fixture's LED modules.
  - .6 Equipped with protection against short circuits, open circuits and power surges.
  - .7 Noise level inaudible by humans.
  - .8 Power supply suitable for the light fixture.
  - .9 Power factor higher than 0.9.

## **3 EXECUTION**

### **3.01 INSTALLATION**

- .1 Locate and install luminaires as indicated.
- .2 The exact location of the light fixtures will be coordinated with the plans. In case of conflict, consult the Departmental Representative.

### **3.02 WIRING**

- .1 Connect luminaires to lighting circuits as indicated.

### **3.03 LUMINAIRE ALIGNMENT**

- .1 The luminaires must be aligned with each other perpendicular to the fence unless otherwise specified.

### **3.04 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste, in accordance with Section 01 74 21 Management and Disposal of Construction / Demolition Waste.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 26 05 00.
- .2 Section 26 50 00.

### **1.02 REFERENCES**

- .1 Canadian Standards Association (CSA International):
  - .1 CSA C22.2 No.206-F13, Lighting Poles.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit the required technical data sheets, as well as the road lighting manufacturer's instructions and documents. The technical data sheets will include product characteristics, performance criteria, sizes and finish.

### **1.04 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Divert unused metal and wiring materials from landfill to metal recycling facility approved by Departmental Representative.
- .4 Fold up metal banding, flatten and place in designated area for recycling.
- .5 Divert unused concrete materials from landfill to local quarry or a recycling facility approved by Departmental Representative.

## **2 PRODUCTS**

### **2.01 STEEL POLES**

- .1 Steel poles: to CSA C22.2 No.206 designed for underground wiring and:
  - .1 Mounting on concrete anchor base without transformer base. The anchor plate must be compatible with existing anchors projection.
  - .2 Style: monotube, minimum 3.04 mm thick, conical, tapered round.
  - .3 Straight shaft, with holes for anchoring the support for one or two luminaires as appropriate, see plan.
  - .4 Access handhole 500 mm above pole base for wiring connections, with welded-on reinforcing frame and bolted-on cover.
  - .5 Dimensions: allowing a mounting height of the luminaire of 9 meters.

- .6 Galvanized steel nuts and caps, diameter as required and compatible with existing bolts retained as.
- .7 Bolting circle indicated on the plans.
- .8 Finish: Unpainted galvanized steel.
- .9 Grounding lug.
- .10 Pole designed according to the requirements of Chapter 6, Volume III of the Road Works collection Norms of the Ministry of Transports, Sustainable Mobility and Transportation Electrification (MTMDET). Design calculations and shop drawings must be signed by an engineer member of the Ordre des ingénieurs du Québec.
- .11 Design for zone 2 wind overload according to the MTMDET standards.

## **2.02 LUMINAIRE MOUNTING BRACKETS**

- .1 Aluminium painted mounting brackets for specified luminaires:
  - .1 Single brackets as indicated.
  - .2 Short and articulated arm for fixing the luminaire directly on the barrel and an adjustment of the inclination of the luminaire between 0 and 15 degrees minimum.
  - .3 Attachment holes pre-drilled at the plant prior to galvanization and to match the brackets' mounting holes.
  - .4 Salt spray resistant finish of the same type and color as light fixture.

## **3 EXECUTION**

### **3.01 INSPECTION**

- .1 Verification of site conditions: Before installing the road lighting, the Contractor will make sure that the condition of the surfaces/supports installed by other trades based on the provisions of other sections of the specifications or contract are acceptable and permit the execution of the work in accordance with the written instructions of the manufacturer.
  - .1 Perform a visual inspection of the surfaces/supports with the Departmental Representative in attendance.
  - .2 The Departmental Representative will be notified immediately of any detected unacceptable condition.
  - .3 Begin installation only after the issues have been corrected and after the reception of a written approval from the Departmental Representative.

### **3.02 INSTALLATION**

- .1 Install poles true and plumb, complete with brackets, in accordance with manufacturer's instructions.
- .2 Install luminaires on poles.
- .3 Check luminaire orientation, level and tilt.
- .4 Connect luminaire to lighting circuit.

- .5      Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 35 43 – Environmental procedures.
- .3 Section 26 05 43.01 – Installation of cables in trenches and ducts.

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM) :
  - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422-63 2002, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf /ft) (600 kN-m/m).
  - .5 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf /ft) (2,700 kN-m/m).
  - .6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB) :
  - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

### **1.03 DEFINITIONS**

- .1 Excavation classes: 2 classes of excavation will be recognized; common excavation and rock excavation.
  - .1 Rock : solid material in excess of 1.00 m<sup>3</sup> and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m<sup>3</sup> bucket. Frozen material not classified as rock.
  - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil :
  - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

- .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials :
  - .1 Weak, chemically unstable, and compressible materials.
  - .2 Frost susceptible materials:
    - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C 136. Sieve sizes to CAN/CGSB-8.2.
    - .2 Table :

Sieve designation	% passing
2.00 mm	100
0.10 mm	45 – 100
0.02 mm	10 – 80
0.005 mm	0 – 45
    - .3 Coarse grained soils containing more than 20 % by mass passing 0.08 mm sieve.
- .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

#### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control :
  - .1 Submit condition survey of existing conditions, if requested by Departmental Representative.
  - .2 Submit for review by Departmental Representative proposed dewatering methods.
  - .3 Submit to Departmental Representative written notice when bottom of excavation is reached.
  - .4 Submit to Departmental Representative testing results and inspection reports.



- .3 Preconstruction Submittals :
  - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
  - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field and location plan of relocated and abandoned services, as required.
- .4 Samples :
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Inform Departmental Representative at least 4 weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.
  - .3 Submit 70 kg samples of type of fill specified including representative samples of excavated material.
  - .4 Ship samples to Departmental Representative, in tightly closed containers to prevent contamination and exposure to elements.

#### **1.05 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.
- .2 Divert excess aggregate materials from landfill for reuse as directed by Departmental Representative.

#### **1.06 EXISTING CONDITIONS**

- .1 Buried services :
  - .1 Before commencing work establish location of buried services on and adjacent to site.
  - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
  - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
  - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
  - .5 Prior to beginning excavation Work, notify applicable Departmental Representative [authorities having jurisdiction] establish location and state of use of buried utilities and structures. Departmental Representative to clearly mark such locations to prevent disturbance during Work.
  - .6 Confirm locations of buried utilities by careful test excavations.
  - .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
  - .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.
  - .9 Record location of maintained, re-routed and abandoned underground lines.
  - .10 Confirm locations of recent excavations adjacent to area of excavation.

- .2 Existing buildings and surface features :
  - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
  - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 CG-14 fill : in accordance with this specification document and BNQ 2560-114.
- .2 MG-20 fill : in accordance with this specification document, BNQ 2560-114 and Section 32 11 16.01 – Granular sub-base.
- .3 MG-112 fill : in accordance with this specification document, BNQ 2560-114 and Section 32 11 16.01 – Granular sub-base.
- .4 Excavation 0-300 mm or backfilling 0-300 mm material: non-frozen, non-contaminated material (if contaminated, only A-B level material is acceptable and only in locations specified in drawings and in Section 01 35 43 – Environmental Protection) and compactable from wharf excavation or new backfill material, approved by Departmental Representative for the proposed use and free of waste or other harmful material.
  - .1 The following grain size distribution must be met:

Dimension	% passing
Below 250 mm	85
Below 150 mm	50
Below 56 mm	15

### 2.02 CG 14, MG 20 AND MG 112 FILL GRAIN SIZE

- .1 According to this table :

Sieve designation	% passing		
	CG 14	MG 20	MG 112
112 mm	n/a	n/a	100
80 mm	n/a	n/a	n/a
56 mm	n/a	n/a	n/a
31.5 mm	n/a	100	n/a
20 mm	100	9 – 100	n/a
14 mm	n/a	68 – 93	n/a
5 mm	35 – 100	35 – 60	12 – 100
1.25 mm	n/a	19 – 38	n/a
0.315 mm	n/a	9 – 17	n/a
0.160 mm	n/a	n/a	n/a
0.080 mm	0 – 10	2 – 7	0 – 10

### **3 EXECUTION**

#### **3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

#### **3.02 SITE PREPARATION**

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

#### **3.03 PREPARATION/PROTECTION**

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.
- .3 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .4 Protect buried services that are required to remain undisturbed.

#### **3.04 STOCKPILING**

- .1 Stockpile fill materials in areas designated by Departmental Representative.
  - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

#### **3.05 DEWATERING AND HEAVE PREVENTION**

- .1 Protect open excavations against flooding and damage due to surface run-off.

- .2 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved in manner not detrimental to public and private property, or portion of Work completed or under construction.
  - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

### **3.06 EXCAVATION**

- .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Remove all obstructions encountered during excavation.
- .3 Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 40 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.
- .5 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .6 Restrict vehicle operations directly adjacent to open trenches.
- .7 Dispose of surplus and unsuitable excavated material off site.
- .8 Do not obstruct flow of surface drainage or natural watercourses.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .10 Notify Departmental Representative when bottom of excavation is reached.
- .11 Obtain Departmental Representative approval of completed excavation.
- .12 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .13 Hand trim, make firm and remove loose material and debris from excavations.
  - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
  - .2 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

### **3.07 FILL TYPES AND COMPACTION**

- .1 Use types of fill as indicated. Compaction densities are percentages of maximum densities obtained from CAN/BNQ 2501-255.

### **3.08 BEDDING AND SURROUND OF UNDERGROUND SERVICES**

- .1 Place and compact granular material for bedding and surround of underground services as indicated.
- .2 Place bedding and surround material in unfrozen condition.

### **3.09 BACKFILLING**

- .1 Do not proceed with backfilling operations until completion of following:
  - .1 Departmental Representative has inspected and approved installations.
  - .2 Departmental Representative has inspected and approved of construction below finish grade.
  - .3 Inspection, testing, approval, and recording location of underground utilities.
  - .4 Removal of concrete formwork.
  - .5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
  - .1 Place bedding and surround material as specified elsewhere.
  - .2 Do not backfill around or over cast-in-place concrete within 48 hours after placing of concrete.
  - .3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 0.3 m.
  - .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
    - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Departmental Representative.

### **3.10 RESTORATION**

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Reinstall pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .3 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

**END OF SECTION**