

**PUBLIC SERVICES AND PROCURMENT CANADA  
HERITAGE CLIENTS SERVICES TEAM  
QUEBEC REGION**

**ENVIRONMENT CANADA  
NWA CAP TOURMENTE**

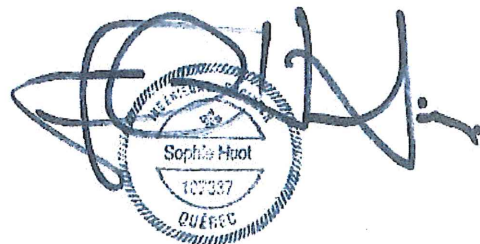
**CONSTRUCTION OF FALLS TRAIL  
SAINT-JOACHIM, QUÉBEC**



**Ref N°. : R.081101.001**

**FOR TENDER  
Date: MAY 2017**

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**Part 1 General**

**1.1 WORK BY OTHERS**

- .1 Not used

**1.2 WORK AS DEFINED IN CONTRACTUAL DOCUMENTS**

- .1 The work to be done as indicated in the current contract consists primarily, but is not limited to:
  - .1 Construction of the Falls trail including the construction of stairs, landings and belvederes.
- .2 Specifically, the work includes, but is not limited to, the provision of labor, materials and equipment, and all operations necessary to:
  - .1 Site Preparation for Work
  - .2 Installation of rock anchors;
  - .3 Construction of stairs, landings, and lookouts.
  - .4 Rehabilitation places

**1.3 WORK EXECUTION ORDER**

- .1 Coordinate the progress schedule of work according to occupancy;
- .2 Steps to provide for the completion of work, scheduling remains the responsibility of the contractor:
  - .1 Site installation;
  - .2 Site preparation, including removal of localized topsoil;
  - .3 Rock excavation when required;
  - .4 Installation of anchorages;
  - .5 Install columns and other structural elements;
  - .6 Construction of architectural elements, such as railing.
  - .7 Cleaning and restoring the premises to its original state.
- .3 Site Review: In order to become familiar with the terms of the project and to obtain all the information necessary for the proper performance of the contract, examine the work site. The ignorance of the conditions of the premises will in no way constitute a valid reason for claiming an additional payment.

**1.4 CONTRACTOR USE OF PREMISES**

- .1 The Contractor shall consider that the work is carried out in a National Wildlife Area. As such, only the licensed premises shall be used by the Contractor.
- .2 Site areas may be used without restriction until substantial completion of the work.
  - .1 Ensure work is performed within limits specified in contract documents. Do not clutter the premises unreasonably with materials and materials.
  - .2 At no time shall it be permitted to move, park equipment or any other vehicle and store material on areas of vegetation.

- .3 Do not overload or allow any part of the structure to be overloaded in order not to compromise its integrity.
- .4 Find and pay for additional work areas or warehouses required to perform work under this Contract.
- .5 Parking: See section 01 52 00 - Site installation

## 1.5 ACCESS PATH

- .1 Only the vehicles, machinery, and equipment necessary for the execution of the work are authorized on the site, in the area permitted for the usage of the premises is limited to the areas necessary for the execution of the work, storage, and access in order to:
  - .1 The use of the premises by the public for the zones on the outside of the construction site.
  - .2 Maintain fire access/control
- .2 The Contractor will need to determine a working method that will limit, if possible, the traffic flow. The construction zone access must minimize the disturbance of the premises and the environment.
- .3 The Contractor will need to cross paths and tracks with machinery in order to reach the work site. The Contractor will need to repair any damage done to the pavement, grass, gravel, etc., after the crossing of the material.
- .4 A temporary access road will be build by Environment Canada prior to the start of the work. The contractor will need to use this road to access the site.

## 1.6 SIGNALMAN

- .1 Contractor shall provide signallers when using access roads outside of work area.

## 1.7 PRE-PURCHASE ORDER

- .1 The timber parts listed in the table below will be pre-ordered by Environment Canada and provided to the Contractor. All the elements will be stored on the site of the work before the mobilization of the contractor.

Pieces	Wood essence	Finish	Length	Quantity
8x8	BC FIR No.1	S1S	20 feet	20
8x8	BC FIR No.1/2	S1S	14 feet	14
8x8	BC FIR No.1	S1S	10 feet	31
8x8	BC FIR No.1/2	S1S	6 feet 8 inch	24
8x8	BC FIR No.1	S1S	6 feet	31
8x8	BC FIR No.1/2	S1S	5 feet 4 inch	24
3x12	BC FIR No.1/2	S1S	20 feet	24
2x8	BC FIR No.1/2	S4S	10 feet	110
2x8	BC FIR No.1/2	S4S	8 feet	77
3x6	BC FIR No.1/2	S1S	13 feet	29
3x6	BC FIR No.1/2	S1S	9 feet	48
3x6	BC FIR No.1/2	S1S	7 feet	207
3x6	BC FIR No.1/2	S1S	5 feet	397

## **1.8 PRECAUTIONS**

- .1 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .2 Numerous installations are already in the park, such as lookouts, paths, small walls, tracks, etc. The Contractor must protect these installations to be conserved and is responsible for their reparation in case of any damaged caused by negligence.
- .3 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

## **1.9 WORK HOURS:**

- .1 The Contractor is responsible that the work respects decent work hours (from 7:30 am to 5 pm, from Monday to Friday) in order to limit the risk of disrupting the residents and the public. The applicable municipal regulation must also be followed.

## **1.10 INSTALLATION OF THE WORK**

- .1 The Contractor must respect the following procedures for the installation of the work to be built:
  - .1 Locate survey reference points on the work site as identified on the plans.
  - .2 Plant the alignments, levels, and the benchmarks for the work to be built, these shall be done with respect to the geometry and elevations indicated in the plans.
  - .3 Determine excavations, column lengths and anchor angles for further work and for control of missing materials
  - .4 Implant rock anchors and mark reference elevations
  - .5 Check final location of rock anchors.
  - .6 In the case where the Contractor's work does not conform, all rework will be conducted at the expense of the Contractor.

## **1.11 REQUIRED DOCUMENTS**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.
  - .7 Other Modifications to Contract.
  - .8 Field Test Reports.
  - .9 Copy of Approved Work Schedule.
  - .10 Health and Safety Plan and Other Safety Related Documents.
  - .11 Other documents as specified.

**Part 2            Products**

**2.1                NOT USED**

.1            Not used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not used.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 01 11 01 – Work related general information
- .2 Section 01 32 16.07 – Construction progress schedule - bar (GANTT) chart.
- .3 Section 01 52 00 – Construction facilities.
- .4 Section 01 74 11 – Cleaning

**1.2 ACCESS PATH**

- .1 The Contractor shall use the Access Path provided for this purpose to enter the Work Area. The following constraints must be met:
  - .1 Machinery and equipment on crawler moving on the trail shall not exceed a maximum weight of 6800 kg loading included.
  - .2 Machinery and equipment on wheels moving on the trail shall not exceed a maximum weight of 2000 kg loading included.
  - .3 Material may not be dragged to the ground at any time.
  - .4 Machinery and equipment moving on the trail shall not exceed a maximum width of 2.2 m
- .2 No parking will be permitted in the site area. Parking will be outside the work area.

**1.3 SPECIAL REQUIREMENTS**

- .1 This section presents various specific requirements that need to be met, at all times, during the work. These specific requirements include:
  - .1 Coordinate the work with the Departmental Representative in order to permit the normal operations of the building and its occupants.
  - .2 Noisy work will not be performed from Monday to Friday, between the hours of 5:00 PM and 7:00 AM and any time on weekend. Noisy work consists of, but is not limited to, deliveries of material, machinery or other items, the starting of machinery motors, demolition work, drilling related to the installation of anchors, concrete reinforcement bars and/or screws, and foundation work. The Departmental Representative reserves the right to stop work during normal working hours if the work is deemed to be too noisy.
  - .3 Submit the work schedule in accordance with section 01 32 16.07 Construction Progress Schedule -Bar (Gantt) Chart.
  - .4 Ensure that the General Contractor's onsite workers are aware of the regulations and respect them, most especially the rules concerning fire safety, traffic, and construction site safety.
  - .5 Ensure that the access points to the construction site remain blocked whenever the site is not in use. The General Contractor is responsible for providing protection against trespassing.

- .6 The Contractor must deliver materials between the bottom and top between 7:00 am and 8:00 am or between 4:00 pm and 5:00 pm. The transport of employees must be limited to 3 transports per day.
- .7 The Contractor shall provide a working method for on-site traffic according to the specifications restrictions prior to start work. If the Departmental Representative determines that the method may be risky for existing facilities, the Contractor shall review the methodology to the satisfaction of the Departmental Representative.
- .8 At all times, the General Contractor will provide two (2) parking spaces exclusively reserved for the Departmental Representative and his guests.
- .2 This list of special requirements is non-exhaustive and the General Contractor must comply with all of the requirements stated in the specifications.

#### **1.4 CONSTRAINTS FOR THE OCCUPATION OF ACCESS PATH**

- .1 The General Contractor must refer to section 01 52 00 - Construction Facilities for the site boundaries to be respected.

#### **1.5 SECURITY**

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

#### **1.6 BUILDING SMOKING ENVIRONMENT**

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

#### **Part 2 Products**

##### **2.1 NOT USED**

- .1 Not used.

#### **Part 3 Execution**

##### **3.1 NOT USED**

- .1 Not used.

**END OF SECTION**



**Part 1 General**

**1.1 UNIT PRICE OR LUMP SUM**

- .1 The total amount for the contract is determined with respect to the lump sum work (lump sums table) as well as the work done on a unit price basis (unit price table).
- .2 Each of the unit prices or the lumps sums determined must include all expenses, all work, disbursements, payments, indirect and direct costs, mobilization, demobilization, all costs, all facts as well as all responsibilities, obligations, omissions and errors by the contractor related to the completion of the work. These prices must also include the transport and the labour for the materials, as well as organizational overhead: administration, insurance, interest, rent, contributions, taxes and other incidental expenses. It must encompass the losses and the damages caused by the nature of the work, de fluctuation of prices and salaries, the organizational risks, strikes, delays not attributable to the department representative, restrictions due to the transport, accidents and actions from the elements of nature.

**1.2 DEFINITION**

- .1 Lump sum: when the work is determined in a precise and detailed manner and a price is agreed and accepted by both parties for the entirety.
- .2 Unit price: when the specifications relative to the work to be done is determined in a precise and detailed manner and that all the quantities are estimated and given in the accrual voucher.

**1.3 DESCRIPTION OF THE ARTICLES IN TABLE**

- .1 Worksite organization
  - .1 This article includes mobilisation and demobilisation, signs, signalers, the bypass lane (if required), the worksite trailers, the relocate on of signs, the protection of existing utilities, to survey, to all the elements described in the previous section as well as all the requirements written in the Division 1 (General requirements). This article also includes all the other work that is not an integral part of other articles in the accrual voucher.
  - .2 The payment of this article will be done in accordance with the following procedure:
    - .1 25 % with the first monthly payment..
    - .2 50 % distributed equally with the payments for subsequent stages.
    - .3 25 % with the payment issued upon the issue of « Certificate of substantial (provisional) completion of the work ».
- .2 Structural Lumber
  - .1 All parts not included in the pre-order of wood, indicated in section 01 11 01, to be ordered by the Contractor of all dimensions provided for in the plans will be paid in lump-sum to this item. This item includes, but is not limited to, the manufacture of wood, the processing of wood, the provision of documentation and transport to the work site.

- .3 Assembly of wooden structure
  - .1 As mentioned in the contract documents, a certain amount of wood was pre-ordered by the Department representative. This wood is available in for the Contractor at the top of the stairs for part of the work. This item is also applicable to timber ordered by the contractor at item 2. This item will be paid in lump-sum and includes the following: taking action, cuts, displacement of wood, realization of all assemblies without plates, galvanized hardware for these assemblies, installation and final fitting of the wood, implementation and any incidental expenses.
- .4 Railing:
  - .1 Wood:
    - .1 This item will be paid according to a lump sum. This item includes: taking measurements, manufacturing wood, processing wood, transporting to the site of work, cutting, moving wood, realization of all assemblies without plates, galvanized hardware for these assemblies, fitting and fitting Implementation of the timber, provision of technical documentation and any incidental expenses.
  - .2 Wiring
    - .1 This item will be paid according to a lump sum. This item includes: taking measurements, making the wire mesh, cutting the wire mesh before galvanizing, galvanizing, straightening if required, transporting to the site of the work, making all the joints of the wooden grid parts, the galvanized hardware for these assemblies , Implementation and final adjustment, implementation, provision of technical documentation and any incidental expenses.
  - .3 Handrail
    - .1 This item will be paid according to a lump sum. This item includes: taking measurements, making handrails and brackets, handrail cutting before galvanizing, galvanizing, straightening if required, transport to site of work, realization of all handrail assemblies, galvanized hardware For these assemblies, installation and final adjustment, implementation, provision of technical documentation and any incidental expenses.
- .5 Assembly plates
  - .1 Plates for structure and railing:
    - .1 This item will be paid according to a lump sum. This item includes: taking measurements, making plates, cuts and welds before galvanizing, galvanizing, straightening if required, transport to the site of work, realization of all assemblies with plates, galvanized hardware for these assemblies, And final fitting of assemblies, implementation, provision of technical documentation and any incidental expenses.
  - .2 Rock anchor pad
    - .1 This item will be paid according to a lump sum. This item includes: taking measurements, making plates, cuts and welds before galvanizing, galvanizing, straightening if required, transport to the site of work, cuts and welding at the site if required, cold galvanization on

of work, cuts and welding at the site if required, cold galvanization on site if required, placing the clogs on the anchors and assembly Galvanized hardware for these assemblies, installation and final adjustment of assemblies, implementation, provision of technical documentation and any incidental expenses.

.6 Excavation

.1 2nd class excavation

.1 This item will be paid at a flat rate for the 2nd class excavation at the site of each hoof in order to allow the excavation of rock and the placement of the hooves. This item includes: excavation of each area with stable slopes, transportation of excavated material to an adjacent area to the excavation, completion of the site at the end of the work, and any incidental expenses.

.2 Rock excavation with manual equipment

.1 This item will be paid at a price per cubic meter depending on the amount of rock excavated manually over the entire work site. The amount of rock will be determined by a survey statement before the excavation and another survey at the end of the excavation. This price includes: excavation of rock with manual equipment as described in the corresponding quote section, disposition of excavation material to an adjacent area to the excavation, implementation and any incidental expenses.

.7 Rock anchors

.1 Rock anchors

.1 This item will be paid according to unit price for the installation of rock anchors. This position includes: drilling of the rock anchor, supply and installation and centering of galvanized prestressed steel anchor rods, preparation and cleaning of rods and holes, injection of anchors, installation of a wire mesh and formwork under the anchor pad, injection under anchor shoes, Tensioning of anchorages, implementation, provision of technical documentation, cleaning and recuperation and disposition of residue and any incidental expenses.

.2 Test on anchors

.1 This item will be paid at a unit price for the tests on the anchorages. The tests shall be carried out on two permanent anchorages as describe in specifications. Tests that need to be redone or additional tests are at the expense of the Contractor. This item includes: carrying out the tests according to the standards, submitting the test report, cutting the anchor rods, finishing the Area of anchorage following cutting, implementation and any incidental expenses.

**1.4 ADDITIONNALS INFORMATIONS**

.1 Within a maximum period of five (5) days following the award of the contract, the Contractor shall provide the price breakdown for the following elements of its bid:

.1 Pre-ordered structural wood;

.2 Structural timber ordered by Contractor;

- .3 Rock anchors

## **1.5 APPLICATIONS FOR PROGRESS PAYMENT**

- .1 Make applications for payment on account as monthly as Work progresses.
- .2 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .3 Submit to the Department Representative, at least 14 days before first application for payment. Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

## **1.6 SCHEDULE OF VALUES**

- .1 Provide schedule of values supported by evidence as the Department Representative may reasonably direct and when accepted by the Department Representative, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment
- .3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as the Department Representative may reasonably require to establish value and delivery of products.

## **1.7 PROGRESSIVE RELEASE OF HOLDBACK**

- .1 Where legislation permits, if the Department Representative has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Owner shall pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.
- .2 In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

## **1.8 FINAL PAYMENT**

- .1 The contractor must submit application for final payment when Work is completed.
- .2 The Department Representative will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. The Department Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .3 The Department Representative will issue final certificate for payment when application for final payment is found valid.

**Part 2          Products**

**2.1              NOT USED**

.1          Not used.

**Part 3          Execution**

**3.1              NOT USED**

.1          Not used.

**END OF SECTION**

## **Part 1 General**

### **1.1 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. The source file and a pdf file must be submitted with each delivery.
- .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.

### **1.2 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 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 The 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.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

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

- .3 Submit Project Schedule to Departmental Representative within 2 working days of receipt of acceptance of Master Plan.

#### **1.4 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. The Contractor can only mobilize after the acceptance of the calendar.

#### **1.5 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 Mobilization
  - .2 Work Phases
    - .1 Site preparation including required records
    - .2 Excavation work
    - .3 Installing anchors
    - .4 Belvederes
    - .5 Stairs
    - .6 Railings and Architectural Elements
  - .3 Demobilization

#### **1.6 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.

#### **1.7 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.

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not used.

**Part 3      Execution**

**3.1      NOT USED**

.1      Not used.

**END OF SECTION**



## **Part 1        General**

### **1.1            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        Where items or information is not produced in SI Metric units converted values are acceptable.
- .5        Review submittals prior to submission to Departmental. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6        Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7        Verify field measurements and affected adjacent Work are co-ordinated.
- .8        Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9        Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10       Keep one reviewed copy of each submission on site.

### **1.2            SHOP DRAWINGS AND PRODUCT DATA**

- .1        The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2        Submit drawings stamped and signed by professional Departmental Representative registered or licensed in Province of Canada.
- .3        Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4        Allow 5 days for Departmental Representative's review of each submission.
- .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 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit an electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copies 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.
- .12 Submit an 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 accord with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.

- .13 Submit an electronic copy 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.
- .14 Submit an electronic copy 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.
- .15 Submit an electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit an electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that Departmental Representative 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.

### **1.3 SAMPLES**

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's business address and site office.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.

- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### **1.4 MOCK-UPS**

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

#### **1.5 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic copy of colour digital photography in jpg format, 300 DPI resolution monthly with progress statement.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 4 locations.
  - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: following works.

#### **1.6 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not Used.

### **Part 3 Execution**

#### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Partie 1      General**

**1.1            RELATED REQUIREMENTS**

- .1      Not used

**1.2            REFERENCES**

- .1      Province of Québec
  - .1      Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
  - .2      Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

**1.3            ACTION AND INFORMATIONAL SUBMITTALS**

- .1      Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Submit to Departmental representative, and the CNESST the site-specific prevention program, as outlined in the article "GENERAL REQUIREMENTS", at least 10 days prior to the start of work.
- .3      Departmental representative will review Contractor's site-specific prevention program and provide comments to Contractor within 5 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental representative within 5 days after receipt of comments from Departmental representative. Departmental representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4      Departmental representative's review of Contractor's site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor's overall responsibility for construction Health and Safety during the work.
- .5      Submit copies of Contractor's authorized representative's construction site health and safety inspection reports to Departmental representative, once a week.
- .6      Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7      Submit to Departmental representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

The investigation report shall contain at least the following:

  - 1.    date, time and place of accident;
  - 2.    name of sub-contractor involved in the accident;
  - 3.    number of persons involved and condition of wounded;
  - 4.    witness identification;

5. detailed description of tasks performed at the time of the accident;
  6. equipment being used to accomplish the tasks performed at the time of the accident;
  7. corrective measures taken immediately after the accident;
  8. causes of the accident;
  9. preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental representative.
- .10 Submit to Departmental representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.
- .11 Submit to Departmental representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 first aid in the workplace and cardiopulmonary resuscitation;
  - .2 work likely to release asbestos dust (mandatory for all work where asbestos is present);
  - .3 work in confined spaces (mandatory for all work in confined spaces);
  - .4 lockout-tagout procedures (mandatory for all work requiring lockout);
  - .5 safely operating forklift trucks (mandatory for all forklift usage);
  - .6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);
  - .7 any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

#### 1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental representative.

At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental representative.

- .2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .3 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

## **1.5 HAZARD ASSESSMENT**

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

## **1.6 MEETINGS**

- .1 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .2 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental representative no later than 5 days after the committee meeting.

## **1.7 REGULATORY REQUIREMENTS**

- .1 Do the Work in accordance with Section 01 41 00 - Regulatory Requirements.
- .2 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .3 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .4 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code*.

## **1.8 COMPLIANCE REQUIREMENTS**

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

## **1.9 RESPONSIBILITIES**

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).

- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

## **1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS**

- .1 Not used

## **1.11 GENERAL REQUIREMENTS**

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 company safety and health policy;
- .2 description of the stages of the work;
- .3 total costs, schedule and projected workforce curves;
- .4 flow chart of safety and health responsibilities;
- .5 physical and material layout of the construction site;
- .6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
- .8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 training requirements;
- .10 procedures in case of accident/injury;
- .11 written commitment from all parties to comply with the safety program;
- .12 construction site inspection checklist based on the preventive measures;
- .13 emergency response plan which shall contain at least the following:
  - .1 construction site evacuation procedures;
  - .2 identification of resources (police, firefighters, ambulance services, etc.);
  - .3 identification of persons in charge of the construction site;
  - .4 identification of the first-aid attendants;



- .5 communication organizational chart (including the person responsible for the site and the Departmental representative);
- .6 training required for those responsible for applying the plan;
- .7 any other information needed, in the light of the construction site's characteristics.
- .14 If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.
- .2 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.
- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.
- .8 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

## **1.12 RISKS INHERENT TO THE WORKSITE**

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed.

At the worksite there is in particular the presence of the following:

- .1 trees and landscaping to preserve and protect;
- .2 potentially unstable ground;
- .3 body of water close by;
- .4 height works
- .5 Slopy and not very synny site, may become very slippery depending on temperature

The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

### **1.13 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC**

- .1 The worksite is occupied by employees and/or the public during the following times: for the entire duration of the work. The Contractor shall consider the following specific requirements for the protection of employees and / or the public:

- .1 the proper perimeter of the construction site
- .2 crossed circulation with occupancy during delivery during busy hours

These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

### **1.14 UNFORESEEN HAZARDS**

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

### **1.15 PERSON IN CHARGE OF HEALTH AND SAFETY**

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de la sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
  - .1 have a safety officer certificate issued by the CNESST since at least 5 years;
  - .2 have site-related working experience specific to the activities associated with the present project;
  - .3 have working knowledge of occupational health and safety regulations in the workplace;

- .4 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
- .5 be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
- .6 be on construction site at all times during execution of work;
- .7 inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.

The safety officer's certificate shall be submitted to the Departmental representative before the start of the work.

- .2 When the hiring of a safety officer is not required or if this person is hired by the Departmental representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental representative before the start of work.

#### **1.16 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
  - .1 notice of construction site opening;
  - .2 identification of principal Contractor;
  - .3 company OSH policy;
  - .4 site-specific prevention program;
  - .5 emergency plan;
  - .6 minutes of worksite committee meetings;
  - .7 names of worksite committee representatives;
  - .8 names of the first-aid attendants;
  - .9 action reports and correction notices issued by the CNESST.

#### **1.17 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES**

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental representative in accordance with the article "ACTION AND INFORMATION SUBMITTALS" in this section.

- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental representative or his agent.
- .3 Submit to Departmental representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

#### **1.18 PREVENTION OF VIOLENCE**

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental representative.

#### **1.19 BLASTING**

- .1 Not used

#### **1.20 POWDER ACTUATED DEVICE**

- .1 Not used

#### **1.21 USE OF PUBLIC ROADS**

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.
- .3 The Contractor shall use signalers when transporting material and materials in the presence of occupants.

#### **1.22 LOCKOUT-TAGOUT**

- .1 Not used

**1.23 ELECTRICAL WORK**

- .1 Not used

**1.24 ASBESTOS EXPOSURE**

- .1 Not used

**1.25 FUNGAL CONTAMINATION**

- .1 Not used

**1.26 EXPOSURE TO SILICA**

- .1 Not used

**1.27 SANDBLASTING**

- .1 Not used

**1.28 LEAD-BASE PAINT REMOVAL**

- .1 Not used

**1.29 EXPOSURE TO ANIMAL'S FECAL DROPPINGS**

- .1 Not used

**1.30 RESPIRATORY PROTECTION**

- .1 Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 Selection, use and care of respirators. Submit the certificates of the fit testings to the Departmental representative on demand.

**1.31 FALL PROTECTION**

- .1 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.

- .7 Despite the requirements of the regulation, the Departmental representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

## 1.32 SCAFFOLDINGS

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffoldings must respect the following requirements:

### Foundation

- .1 Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
- .2 Contractors wishing to install scaffoldings on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental representative and obtain his authorization before beginning installation.

### Assembly, bracing and mooring

- .1 All scaffoldings shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
- .2 Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor shall submit to the Departmental representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
- .3 For scaffoldings where the span between two supports is greater than three metres, the Contractor shall provide the Departmental representative an assembly plan signed and sealed by an engineer.

### Protection against falls during assembly

- .1 Workers exposed to the risk of falling more than three metres shall be protected against falls at all times during assembly.

### Platforms

- .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
- .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry)
- .3 Scaffoldings of four sections (or six metres) high or more shall have a full platform covering the entire surface between the putlogs every three metres high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.

### Guardrails

- .1 A guardrail shall be installed on every landing.
- .2 Cross braces shall not be considered as guardrails.

- .3 If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
- .4 Where scaffoldings has four sections (or six metres) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

### **Access**

- .1 The Contractor shall ensure that access to the scaffoldings does not compromise worker safety.
- .2 Where the platforms of the scaffoldings are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
- .3 Notwithstanding the provisions of the Code de sécurité pour les travaux de construction (Safety code for the construction industry), stairs shall be installed on all scaffoldings that have six or more rows of uprights or is six sections (or nine metres) high or higher.

### **Protection of the public and occupants**

- .1 When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
- .2 Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental representative.

### **Engineering plans**

- .1 In addition to those required by the Code de sécurité pour les travaux de construction (Safety code for the construction industry), the Departmental representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
- .2 A plan signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
- .3 A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required for the installation and this, before anybody uses the facility. A copy of these documents must be available on the construction site at all times.

### **1.33 CONFINED SPACES**

- .1 Not used

## **1.34 EXCAVATION WORK**

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who performs the digging of trenches or excavations must respect the following requirements:

1. Fill out the following form and submit it to the Departmental representative before beginning to excavation work.
2. Submit to the Departmental representative, as appropriate, the following documents:
  - a. plans and specifications, signed and sealed by an engineer, of the shoring needed to be installed for the excavation work; or
  - b. engineer's advice specifying the wall angles of the trench or excavation.





## Excavation guidelines

N° \_\_\_\_\_ of \_\_\_\_\_

This directive is provided as an example by the Commission de la santé et de la sécurité du travail (CSST). It contains the main instructions that the employer should give to the person responsible for the work on the site and to the operator of the earth-moving machine.

Company name	
Project name	Project no.
Address of the site	Construction start date

### Field survey

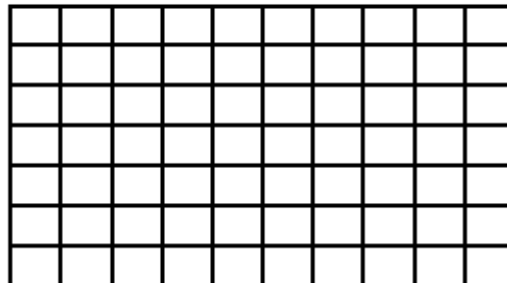
Chaining or axes: from \_\_\_\_\_ to \_\_\_\_\_ Attached plan ☐ Plan no. : \_\_\_\_\_

### Working method to use

While making sure the excavation walls do not pose the risk of landslide

- ☐ dig and shore according to the plans and specifications of the engineer;
- ☐ dig and shore using a trench box;
- ☐ dig without shoring as long as one of the following conditions is respected:
  - ☐ rock is sound;
  - ☐ no worker goes down in the trench or excavation;
  - ☐ the walls are dug according to the engineer's advice.

### Dimensions of excavation (Dig according to the following profile.)



	Minimum	Maximum
H Depth		
Wb Width at bottom		
Width at top		

### Safety measures

Deposit the materials at a distance of at least 1.2 metre (4 feet) from top of walls.  
Do not allowed any vehicle to come closer than 3 metres (10 feet) from top of walls.

- ☐ Respect the engineer's plan concerning work in the proximity of an existing facility.
- ☐ Follow the location plan to locate the underground infrastructures.
- ☐ Install signaling devices prescribed in the traffic plan (barriers, visual references, etc.).
- ☐ Assign a flag person or more to control the flow of traffic.
- ☐ Respect the procedure prescribes for work near power lines.
- ☐ Provide protection devices for the workers, such as concrete crash barriers.

Name	Occupation	
Signature	Date	Telephone no.
Directive submitted		
<input type="checkbox"/> to the responsible of the work on the site <input type="checkbox"/> to the operator of the earth-moving machine		

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### 1.35 LIFTING LOADS WITH CRANE OR BOOM TRUCK

- .1 Not used

### 1.36 HOT WORK

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.

1. Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site.
2. A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
3. The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
4. When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental representative, the Contractor must assign a person to carry out this monitoring.

### Welding and cutting

In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:

1. Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction*, S-2.1, r.4 (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
2. Air extraction system with filters must be used for all welding and cutting work performed inside.
3. Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
4. Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
5. Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the *Code de sécurité pour les travaux de construction*, S-2, r. 6 (Safety code for the construction industry)
6. Store the cylinders far from all heat sources.
7. Not to store the cylinders close to the staircases, exits, corridors and elevators.
8. Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65% copper, to avoid the risk of an explosive reaction.
9. Check that welding equipment with electric arc has the necessary tension and are grounded.
10. Ensure that the conducting wires of the electric welding equipment are not damaged.
11. Place the welding equipment on a flat ground away from the bad weather.

12. Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
13. Move away or protect the combustible materials which are closer than 15 metres from the welding work.
14. Prohibition to weld or cut any closed container.
15. Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
  - a. they have been cleaned and air samples indicating that work can be done without danger has been taken; and
  - b. provisions to ensure the safety of the workers have been made.

### **1.37 ROOFING WORK**

- .1 Not used

### **1.38 STEEL STRUCTURE ERECTION OR DISMANTLING WORK**

- .1 In addition to respecting section 3.24 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
- .2 Contractor must submit the following documents to the Departmental representative before the beginning of steel structure erection work:
  - .1 erecting procedures in accordance with article 3.24.10 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry);
  - .2 rescue procedures for the release of a worker suspended in a safety harness within a maximum of 15 minutes; procedures must be adapted to the construction site and in accordance with article 3.24.4 of that same code; the procedure must be accompanied by a written confirmation that it has been tested;
  - .3 statement from an engineer that the anchor rods have been installed in accordance with the anchoring plan as required by the article 3.24.12 of that same code;
  - .4 hoisting procedures in cases where the lifting is done in one of the ways described in the article 3.24.15 of that same code;
  - .5 name of the individual identified as rescuer and his rescue training certificate;
  - .6 name of the individual identified as first-aid attendant and his first-aid training certificate.
- .3 The Contractor must make sure that the following documents are available for consultation on construction site at all times:
  - .1 Steel structure manufacturer's erection plan in accordance with the requirements of article 3.24.9 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry);
  - .2 Column anchor rods's anchoring plan in accordance with the requirements of article 3.24.11 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

### 1.39 WORK NEAR BODIES OF WATER

1. For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those in article 2.10.13 du *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).
2. The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of these measures should be favoured over the wearing of a life jacket.
3. Submit the following documents to the Departmental representative before the beginning of the work:
  - .1 description of the body of water;
  - .2 description of the work done next to this body of water;
  - .3 plan of transportation on water adapted to the work and to the characteristics of the body of water;
  - .4 rescue plan adapted to the work and to the characteristics of the body of water;

Each of the document listed above must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.

4. The Contractor must submit to the Departmental representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:
  - .1 the person assigned to prepare the documents required in the preceding paragraph; and
  - .2 each person responsible for the transport or rescue operations
5. If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.
6. The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
7. Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.
8. Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 m.

**1.40 INTERIOR USE OF INTERNAL COMBUSTION ENGINES**

- .1 Not used

**1.41 TEMPORARY HEATING**

- .1 Not used

**1.42 WORK NEAR OVERHEAD POWER LINES**

- .1 Not used

**1.43 DIVING OPERATIONS**

- .1 Not used

**1.44 HEALTH AND SAFETY SUBORDINATION AGREEMENT**

- .1 Not used

**1.45 LIFE LINE**

- .1 Where work at a height requires a lifeline, the Contractor shall provide the anchorage points and all necessary equipment for the execution of the work.
- .2 The anchorage plan as well as the working method must be signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec.
- .3 Certification of equipment and certification of workers shall be submitted to the Departmental Representative prior to commencement of work.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 32 01 90.33 – Tree and Shrub Preservation

**1.2 REFERENCES**

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

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .6 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 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
    - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
  - .6 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

- .8 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.

#### **1.4 PREVENETION/CONTROL OF POLLUTION, DISRUPTION OF THE HABITATS, AND THE ENVIRONMENT DURING THE CONSTRUCTION**

- .1 The contractor must respect at all times the Canada Wildlife Act and Wildlife Area Regulations.

#### **1.5 WILD ANIMALS ON THE SITE**

- .1 In order to ensure the security of the workers, visitors, and animals, stop the road circulation and machinery when a wild animal enters the site, more specifically moose, deer, and black bears.
- .2 Keep a safe distance and ensure a secure escape way is necessary for the animal
- .3 Observe from a distance without approaching (avoid any disturbance or harassment)
- .4 In case of help or support, contact the Cap Tourmente National Park Conservation service.

#### **1.6 FIRE**

- .1 Fires or burning of waste is forbidden on the site.
- .2 ABC and water type fire extinguishers must be present and functional on the site throughout the construction period.

#### **1.7 SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties as indicated in section 32 01 90.33 – Tree and Shrub Preservation.
- .2 Before the start of the work, the Contractor must remove and stock-pile the top soil for later reuse.
- .3 All damages caused to the plants by contractor, deemed by the Department representative, which may prevent the plants survival must be replaced by the Contractor with 2 equivalent plantations for every damaged plant and by the identified plans of the Department representative, at the contractor expenses.
- .4 It is strictly forbidden to remove any trees or shrubs between May 15 and August 15.
- .5 The Contractor must obtain the approval of the Department representative to prune.
- .6 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
  - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .7 Minimize stripping of topsoil and vegetation.

- .8 In the case where plants need to be transported using a transplantation bucket, the Contractor must use a jute bag with enough dirt to include all the roots and ensure their protection. Keep the dirt humidified at all times. Keep away from the sun. Replant once the work is finished in its original location or a location indicated by the Department representative.
- .9 Restrict tree removal to areas designated by Departmental Representative.

## **1.8 WORK ADJACENT TO WATERWAYS**

- .1 Construction equipment to be operated on land only.
- .2 It is forbidden to extract and natural or man-made material from the waterways or anywhere close to, including water pumping for work site use.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 The Contractor must take necessary precautions in order to minimize suspended matter caused by the disruption of the waterway bed or as a result of activities with close proximity to the waterways. In order to do so, the contractor must minimize the entry of water on the work site and treat any water that does by the use of temporary installations (sedimentation pond, filtration berm, etc).

## **1.9 WASTE EVACUATION**

- .1 It is forbidden to bury any type of waste or materials on the territory of Environment Canada.
- .2 It is forbidden to evacuate any type of waste or materials by putting them in the waterway, storm sewers or sanitary sewers.
- .3 Residual matter must be evacuated and respecting environmental protection federal and provincial laws, outside the Environment Canada property. Residual matter also includes the materials that have not been chosen to be conserved by Environment Canada, hazardous materials (liquids and solids) and waters that contain suspended matter.

## **1.10 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.
  - .1 Vehicle idling is forbidden unless special authorisation from the Department representative.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
  - .1 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.



## **1.11 HISTORICAL/ARCHAEOLOGICAL CONTROL**

- .1 Archaeological finds
  - .1 If the contractor believes discovered an archaeological find during the work, immediate advise the Department representative and wait for written instructions before continue the work at the location of the find.
- .2 The Contractor must collaborate with Canada in case of finding remains.
  - .1 Collaboration and access
    - .1 Cooperate and confirm with all the Department representative's instructions during excavation, in order to prevent any loss of information of an archaeological site.
    - .2 Facilitate the access to the work and collaborate with the archaeologists which, if need be, will conduct their work on the site and their role will be to guide the Contractor to avoid any loss of archaeological information and assemble all information on the brought forth remains.
    - .3 Allow the archaeologists to proceed to examinations and archaeological samples.

## **1.12 SOIL AND WATER POLLUTION PREVENTION**

- .1 The contractor and sub-contractors that conduct work that need the use of motorised equipment, transfill of fuel, or use dangerous products, must know and apply the procedures in case of a spill over. This procedure must be displayed in view for the employees, on the work site.
- .2 The contractor must ensure that the machinery, the tools, and the equipment that is used for the work are secure, clean, and in good working condition. The department representative reserves the right to refuse access or expel of the site any machinery, tools or equipment that does not correspond to these criteria. Equipment that is in a visibly poor condition and shows signs of leaking or risk of leaking must be returned to the site at the cost of the Contractor or owner of the equipment, and without cost to the Client. Moreover, the machinery that will operate within 30 m of a waterway must use biodegradable vegetable oil.
- .3 If the contractor must store hazardous materials and hydrocarbons, for the use on the project, he must have in the storage location, retention tanks.
- .4 General maintenance, fuelling, and rolling material and equipment cleaning must be conducted at 30 m or more from the waterway.
- .5 The Contractor must have in his possession, on the work site, an emergency intervention kit in case of its necessity during a possible environmental event occurring
- .6 Without limiting to, the intervention kit must include a minimum of appropriate equipment and devices to contain any spill in a manner to minimize the risks of propagation of the contamination caused by the spill of hydrocarbons, hazardous materials or other contaminants. The intervention kit must be indentified by "ENVIRONMENTAL – EMERGENCY" and must include:
  - .1 1 perforated roll of diameter of 3 inches; 12 feet in length
  - .2 1 perforated roll of diameter of 3 inches; 4 feet in length
  - .3 25 pads
  - .4 2 bags 7 litres (sphagnum moss)

- .5 1 epoxy tube
  - .6 2 DANGER panels
  - .7 3 plastic recovery bags ;
  - .8 TDG self-adhesive stickers (transportation of hazardous material) class 4.1;
  - .9 1 smear-proof marker
  - .10 2 pairs of rubber gloves
  - .11 2 pairs of protective glasses
  - .12 Adhesive tape "Duct Tape" or equivalent brand
  - .13 Tools : screwdriver and pliers
  - .14 Declaration documents "Environmental Incident Report", provided by the Department representative.
- .7 Intercept the runoff water coming from the exterior of the site and maintain the water on the outside of the work site and directing it towards the installations or stabilized locations.
- .8 Evacuate outside of the work site the runoff water in channels towards the approved installations which favour sedimentation prior to reaching a water body.
- .9 Put in place temporary physical protection measures in order to avoid all loss of soil caused by rain or the melting of snow and ice.
- .10 The different devices must be designed with respect to the drainage system, the soil stability and the evolution of the work site.
- .11 The sediment barriers (geotextile barriers) are installed in order to maintain the sediments in the interior limits of the work site and to avoid them reaching a water body.
- .1 The geotextile barrier is made up of a geotextile membrane, designed for this purpose, supported by wooden posts. It is crucial that at the base, the geotextile membrane is well embedded in the soil in order to ensure proper efficiency.
- .12 The temporary installations are prohibited in the wetland areas. Moreover, the soil conditions as well as the drainage must be maintained.
- .13 To avoid erosion, the surface to be stripped must be limited. At the end of every work day, the contractor must protect, with the use of covering membranes or by sediment barriers, all surfaces that are stripped and vulnerable to erosion and susceptible to produce sediments towards a body of water or towards a ditch that flows to a hydric area.
- .14 Perform fuel refueling in the Contractor's parking area.

#### **1.13 PROCEDURES IN CASE OF HYDROCARBON, HAZARDOUS MATERIALS, OR OTHER CONTAMINANT SPILLS.**

- .1 In the case that a spill occurs, the intervention and cleaning operations of the site where the spill occurred must be ensured by the Contractor by following the following procedure:
  - .1 Ensure everyone's security and immediately recovering the spill.
- .2 If the Contractor is not capable of immediately containing or recovering the spill or if the spill occurred in water, the following must be advised, depending on the work sector:
  - .1 Local fire services (9-1-1).

- .3 The Contractor must then signal immediately the spill (regardless of the quantity) to the Department representative as well as the environmental officer and prepare and submit the intervention report provided by the Department representative to the former.
- .4 The Contractor will be held responsible of any product spill deemed to have damaged the environment or the property of Environment Canada. If the case, the Contractor will need to immediately, at his cost, execute the corrective measures indicated by the Department representative or the Environmental Officer.
- .5 In the case where the Contractor cannot adequately intervene to the satisfaction of Environment Canada, depending on the size or type of spill, then the additional intervention costs needing Environment Canada personnel or machinery will be charged to the Contractor.
- .6 The intervention report: In the case of an intervention, the contractor must complete without delay, the declaration document of the event (Environmental Incident Report, provided by the Department representative), and submit it to the Department representative.
- .7 The document will be provided in the preliminary meeting prior to the start of the work.

#### **1.14 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.
  - .1 Take action only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

#### **Part 2 Products**

##### **2.1 NOT USED**

- .1 Not Used.

#### **Part 3 Execution**

##### **3.1 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Bury rubbish and waste materials on site where directed after receipt of written approval from Departmental Representative.

- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### **3.2 RESTORATION OF DEGRADED AREAS AND FINAL DEMOBILIZATION**

- .1 The contractor must submit for approval to the Department representative, the methods and means proposed to return the state of the area of the entire affected zone by the circulation, the work, the storage or any other degraded area and conduct the restoration work.
- .2 The contractor must ensure to remove from the limits of the park all equipment and machinery used for the work as well as any surplus material.

**END OF SECTION**

**Part 1        General**

**1.1            REFERENCES AND CODES**

- .1        Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2        Meet or exceed requirements of:
  - .1            Contract documents.
  - .2            Specified standards, codes and referenced documents.

**1.2            NATIONAL PARKS ACT**

- .1        Perform Work in accordance with Canada Wildlife Act and Wildlife Area Regulations when projects are located within boundaries of National Park.

**Part 2        Products**

**2.1            NOT USED**

**Part 3        Execution**

**3.1            NOT USED**

**END OF SECTION**

## **Part 1        General**

### **1.1            INSPECTION**

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .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.

### **1.2            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.
- .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 reinspection.

### **1.3            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.

### **1.4            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.

## **1.5 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 the Departmental Representative.

## **1.6 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.

## **1.7 TESTS AND MIX DESIGNS**

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

## **1.8 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 as specified in specific Section acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative DCC Representative's Consultant'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 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.9 MILL TESTS**

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

**1.10 EQUIPMENT AND SYSTEMS**

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- .2 Refer to relevant section for definitive requirements.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



## **Part 1 General**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 35 43 – Environmental procedures.
- .3 Section 01 52 00 – Construction facilities.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

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

### **1.3 INSTALLATION AND REMOVAL**

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

### **1.4 DEWATERING**

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

### **1.5 POWER SUPPLY**

- .1 Power will not be supplied to the construction site. The Contractor will make arrangements to support his own needs in order to complete the work.

### **1.6 WATER SUPPLY**

- .1 Water will not be supplied to the construction site. The Contractor will make arrangements to support his own needs in order to complete the work.

### **1.7 TEMPORARY HEATING**

- .1 The Contractor will plan the use of temporary heating devices in order to execute the work.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1            RELATED CONNECTIONS**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-0121, Douglas Fir Plywood.
  - .2 CAN/CSA-S269.2, Access Scaffolding for Construction Purposes.
  - .3 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment.

**1.2            ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.3            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 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 The work site must be secured by the contractor at the end of every work day.
- .6 Remove from site all such work after use.

**1.4            SCAFFOLDING**

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding ramps ladders swing staging platforms temporary stairs.

**1.5            HOISTING**

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

**1.6            CONSTRUCTION PARKING**

- .1 An area proximity to the work site will be identified to be used by the Contractor for parking. This area will be outside of the work zone.
- .2 The contractor must at all times reserve 2 parking spaces for the Department Representative.

**1.7            USAGE OF TRAVEL LANES**

- .1 Install and maintain lanes in order to provide access to the work site.

- .2 The contractor must provide signalers when using travel lanes outside the work area that are accessible to the public.

## **1.8 SECURITY**

- .1 Due to the location of the work site, the contractor has the responsibility to ensure the security on the work site.
- .2 Hire reliable security personnel to ensure, after works hours and during holidays, proper surveillance of the work site and the materials, and incur the costs.

## **1.9 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 A dirt road will be available to the Contractor to access the work area. The Contractor shall use it to access the work site and to maintain and maintain it during the work, at his own expense.
- .2 Provide access and temporary relocated roads as necessary to maintain traffic.
- .3 Protect travelling public from damage to person and property.
- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .6 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

## **1.10 OFFICE**

- .1 Provide a ventilated office, heated to a temperature of 22 degrees Celsius, equipped with lighting fixtures providing a luminance level of 750 lux and sufficient dimensions to allow the holding of site meetings, and provide a table for the spreading of the drawings.
- .2 Provide complete and identified first aid kit and store in an easy access location.
- .3 Where necessary, subcontractors must install their own office. Tell them where they can settle.

## **1.11 SANITARY INSTALLATIONS**

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

## **1.12 CLEAN-UP**

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

**Part 2            Products**

**2.1                NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

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**Part 1            General**

**1.1                REFERENCES**

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

**1.2                QUALITY**

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

**1.3                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.

#### **1.4 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 Store cementation products clear of earth or concrete floors, and away from walls.
- .5 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .6 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .7 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 TRANSPORTATION**

- .1 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.

#### **1.6 MANUFACTURER'S INSTRUCTIONS**

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

## **1.7 QUALITY OF WORK**

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

## **1.8 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.

## **1.9 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.

## **1.10 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 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.

## **1.11 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. In specified locations, use hot-dip galvanized steel bolts.
- .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 galvanized steel.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

**Part 3          Execution**

**3.1              NOT USED**

.1          Not Used.

**END OF SECTION**



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**Part 1            General**

**1.1                PROJECT CLEANLINESS**

- .1      Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2      Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3      Clear snow and ice from access to work zone, bank/pile snow in designated areas only.
- .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      Dispose of waste materials and debris off site.
- .7      Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8      Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9      Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

**1.2                FINAL CLEANING**

- .1      When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2      Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3      Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4      Remove waste products and debris other than that caused by Owner or other Contractors.
- .5      Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .6      Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7      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.
- .8      Clean lighting reflectors, lenses, and other lighting surfaces.
- .9      Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .10     Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

- .11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .12 Remove dirt and other disfiguration from exterior surfaces.
- .13 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .14 Sweep and wash clean paved areas.
- .15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .16 Clean roofs, downspouts, and drainage systems.
- .17 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .18 Remove snow and ice from access to the work zone.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 WASTE MANAGEMENT GOALS**

- .1 Accomplish maximum control of solid construction waste.
- .2 Preserve environment and prevent pollution and environment damage

**1.2 RELATED REQUIREMENT**

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 74 11 – Cleaning.

**1.3 DEFINITIONS**

- .1 Definitions
  - .1 Class III: non-hazardous waste - construction renovation and demolition waste.
  - .2 Inert Fill: inert waste - exclusively asphalt and concrete.
  - .3 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
  - .4 Recycling: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products. Recycling does not involve combustion, incineration or destruction of waste through heat.
  - .5 Recycling: Operations encompassing the sorting, cleaning, treatment and reconstitution of solid wastes and other discarded materials or materials intended to promote their use in a form different from their original state. Recycling does not include combustion, incineration or thermal destruction of waste.
  - .6 Re-utilization/re-use: Repeated use of a product or material in its original form for the purpose of using it in a different context in the case of re-utilization or in a similar context in the case of re-use. Re-utilization/re-use involves the following:
    - .1 The recovery of products and materials from the rehabilitation or modernization of a structure which can be re-utilized or re-used, before they are demolished, for the purpose of selling them, re-utilizing them, re-using them in the context of the same project, or storing them for subsequent use.
    - .2 Return of products or materials that can be re-used by suppliers, such as pallets and unused products.
  - .7 Recovery: Removal of components and construction materials, load bearing or not, during the deconstruction or dismantling of industrial, commercial or institutional structures, for the purpose of re-utilizing or re-using them or recycling.
  - .8 Separate Condition: refers to waste sorted into individual types.
  - .9 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .2 References
  - .1 Public Works and Government Services Canada (PWGSC)
    - .1 National protocol for the management of non-hazardous solid waste from construction, renovation and demolition work, 2002.

- .2 Market research report on construction, renovation and demolition waste management (available from the PWSGC's Environmental Services Directorate).
- .3 Sustainable development strategy 2007-2009: Target 2.1, Sustainable use of natural resources.
  - .1 Make sure that under the contract, the resources used for construction or maintenance are used and recovered in a sustainable manner.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

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

#### **1.5 SORTING OF WASTE**

- .1 Place the containers in locations where it will be easy to deposit waste without hindering the activities of the construction site.
- .2 Waste materials must be collected, handled and stored on the construction site, then removed after sorting.
- .3 Recovered waste materials must be transported to approved and authorized recycling facilities.

#### **1.6 USE OF SITE AND FACILITIES**

- .1 Execute the work while disturbing the normal use of the site as little as possible.
- .2 Maintain in effect the safety measures established for the facility. Implement temporary safety measures approved by the Departmental Representative.

#### **1.7 WASTE PROCESSING SITES**

- .1 The Contractor is responsible for finding resources regarding waste reclamation, as well as service providers. Recuperated waste must be transported to approved and/or authorized recycling facilities or to material recyclers.

#### **1.8 SOTRAGE, HANDLING AND PROTECTION**

- .1 Unless specified otherwise, materials for removal do not become Contractor's property.
- .2 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .3 Separate and store materials produced during dismantling of structures in designated areas.
- .4 Material will be stocked as instructed by the Departmental Representative.
- .5 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Provide waybills for separated materials.
  - .4 The materials re-used/re-utilized on site are considered reclaimed and that they must be included in reports.

## **1.9 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 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

## **1.10 SCHEDULING**

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

## **Part 2 Products**

### **2.1 NOT USED**

## **Part 3 Execution**

### **3.1 CLEANING**

- .1 Cleaning during the work: Carry out cleaning activities in compliance with section 01 74 11 - Cleaning.
  - .1 Leave the site clean at the end of each workday.
  - .2 Provide containers on site for the removal of debris and waste materials.
  - .3 Remove the debris and waste materials from the site at the end of each work shift.
  - .4 Take the waste and demolition materials to a site approved by competent authorities.
  - .5 Provide the Departmental Representative with the bills of lading from the waste disposal site regarding the construction material.
- .2 Final cleaning: Remove materials, surplus materials, waste, tools and equipment from the construction site in accordance with section 01 74 11 - Cleaning.
- .3 Waste management: Sort the waste for the purpose of re-utilization/re-use and recycling, in compliance with this section.
  - .1 Remove the recycling bins from the construction site and dispose of the materials at the appropriate facilities.
  - .2 Sort the waste material that will be re-used/re-utilized or recycled at the source and place them at the specified locations.
- .4 Handle waste that cannot be reused, recycled or recuperated in accordance with the relevant codes and regulations in force

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 01 74 11 – Cleaning.
- .2 Section 01 74 21 – Construction/demolition waste management and disposal.

**1.2 REFERENCES**

- .1 Canadian Environmental Protection Act (CEPA)

**1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
  - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents:
    - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2 Request Departmental Representative inspection.
- .2 Departmental Representative 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 French that tasks have been performed as follows:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
  - .4 Certificates required by Utility companies: submitted.
  - .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.
- .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
- .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

- .7 Final Payment:
  - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
  - .2 When Work deemed incomplete by Departmental Representative complete outstanding items and request re-inspection.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **Part 1        General**

### **1.1        ADMINISTRATIVE REQUIREMENTS**

- .1    Pre-warranty Meeting:
  - .1    Convene meeting one week prior to contract completion with Departmental Representative to:
    - .1    Verify Project requirements.
    - .2    Review 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.

### **1.2        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, four final copies of operating and maintenance manuals in French.
- .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.

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

- .1    Maintain, in addition to requirements in General Conditions, 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.

#### **1.4 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.

#### **Part 2 Products**

##### **2.1 NOT USED**

- .1 Not Used.

#### **Part 3 Execution**

##### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Division 01 33 00 – Submittal Procedures

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 CSA International
  - .1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA S16, Design of Steel Structures.
  - .4 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59, Welded Steel Construction (Metal Arc Welding).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
    - .1 For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada. The engineer must be a member of l'Ordre des ingénieurs du Québec.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

- .4 Sample
  - .1 Submit a galvanized steel mesh panel sample for approval by the Departmental Representative prior to production to verify quality following galvanizing. The steel mesh must meet the following criteria:
    - .1 Hot-dip galvanized after cutting according to dimensions in contract documents
    - .2 Be straight do not warp
    - .3 Wire mesh must be smooth, not rough to avoid injuries to users.

#### **1.4 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

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

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W.
- .2 Steel pipe: to ASTM A53/A53M standard weight, finished as indicated.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307 and hot-dipped galvanized finish.
- .6 Welded wire fabric: 50,8x50,8 - MW 4,76 / MW4,76 to CSA G30.18 galvanized after welding and cuts.
- .7 Steel angles: galvanized, sizes indicated for openings. Angles must be welded or bolted back-to-back angles to profiles as indicated.

#### **2.2 FABRICATION**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

- .2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

## **2.3 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
- .2 Zinc primer: zinc rich, ready mix to MPI-EXT 5.2C in accordance with chemical component limits and restrictions requirements and VOC limits of over 250 g/L.

## **Part 3 Execution**

### **3.1 EXAMINATION**

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

### **3.2 ERECTION**

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Deliver items over for casting into concrete with setting templates to appropriate location and construction personnel.
- .7 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
  - .1 Primer: maximum VOC limit 250 g/L to GS-11.

### **3.3 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 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

**END OF SECTION**

## **Part 1 General**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 06 10 00 ROUGH CARPENTRY

### **1.2 REFERENCE STANDARDS**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA O80 Series-97 (R2002)- O80S2-05, Wood Preservation.
  - .2 CSA O80.201-M89, This Standard covers hydrocarbon solvents for preparing solutions of preservatives.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Quality assurance submittals:
  - .1 For products treated by pressure impregnation submit following information certified by authorized signing officer of treatment plant:
    - .1 Information listed in AWP A M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWP A M2 applicable to specified treatment.
    - .2 Moisture content after drying following treatment with water-borne preservative.
    - .3 Acceptable types of paint, stain, and clear finishes that may be used over treated materials to be finished after treatment.

### **1.4 QUALITY ASSURANCE**

- .1 Plant inspection of products treated by pressure impregnation will be carried out by designated testing laboratory to AWP A M2, and revisions specified in CSA O80 Series, Supplementary Requirements to AWP A M2. Provide quality assurance documents immediately following the completion of the first inspections and tests, in progress to allow for continuous verification of results by the Departmental Representative. For each delivery of treated timber, the Contractor must provide the Departmental Representative, at least 7 days prior to delivery, with a certificate of compliance containing the following information for each production lot:
  - .1 Gasoline of treated wood and density (kg / m<sup>3</sup>);
  - .2 The proportion of core faces / sapwood faces;
  - .3 The name and membership number of the recognized classification organization;
  - .4 Identification of processing plant;
  - .5 Type of Preservative;
  - .6 Date of processing and date of sampling;
  - .7 Production lot number of processing;
  - .8 Volume of processed wood in cubic meter of production lot;
  - .9 Nominal dimensions in mm and quantity of parts in production lot;
  - .10 The results of the retention test (kg / m<sup>3</sup>) and the corresponding requirement of CAN / CSA O08; Wood preservation;

- .11 The results of the penetration test (%) and the corresponding requirement of CAN / CSA O08; Wood preservation;
- .12 Place of storage or forwarding.
- .2 Inspection and testing of timber parts shall be carried out by a designated test laboratory and paid for by the manufacturer.
- .3 The Departmental Representative will retain the services of independent testing and inspection organizations to perform additional control, if deemed necessary, upon receipt of the Supplier's quality assurance reports. The cost of these services will be provided by the Departmental Representative. If non-conformities are noted, the additional testing organization costs incurred as a result of the correction of non-conformities are at the expense of the Supplier.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Preservative: to CSA-O80 Series, odourless salt water-borne, for stained finish.
- .2 Preservatives: maximum VOC limit 350g/L.

## **Part 3 Execution**

### **3.1 APPLICATION: PRESERVATIVE**

- .1 Before treat, dry lumber to a moisture content of not more than 25%
- .2 Treat all wood pieces to CSA O80-M, with a preservative product of CA-B type, until a net retention of 3.3 kg/m<sup>3</sup>. Wood must be incised. In the case of a refusal, perform the tests and provide the retention reach.
- .3 Wood pieces must be treated after the required cuts and grinding to arrive at the lengths of wood requested on place.
- .4 Following water-borne preservative treatment, dry material to maximum moisture content of 25%.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 06 05 73 – WOOD TREATMENT

**1.2 REFERENCE STANDARDS**

- .1 CSA International
  - .1 CSA O80 Série-F97 (C2002)- O80S2-05, Wood preservative.
  - .2 CSA O141-05, Softwood Lumber.
  - .3 CAN/CSA-Z809, Sustainable Forest Management.
- .2 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber.
- .3 National Research Council Canada (NRC)
  - .1 National Building Code of Canada 2015 (NBC).

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Québec, Canada.

**1.4 QUALITY ASSURANCE**

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

**1.5 DELIVERY, STORAGE AND HANDLING**

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



**Part 2        Products**

**2.1            FRAMING STRUCTURAL AND PANEL MATERIALS**

- .1        Wood: B.C Fir (Douglas Fir) finish S4S (bleached 4 sides) or S1S (bleached 1 side) with a maximum moisture content of 25%.
  - .1        In accordance with CSA O141;
  - .2        Some parts require a cut and grinding. This section must be made prior to the CA-B wood preservation treatment described in 06 05 73 - WOOD TREATMENT.
  - .3        Complies with Canadian NLGA Classification Rules for Softwood Lumber.

**END OF SECTION**

**Part 1 General**

**1.1 DEFINITIONS**

- .1 Rock: any solid material in excess of 1 m<sup>3</sup> and which cannot be removed by means of heavy duty mechanical excavating equipment. Frozen material not classified as rock.
- .2 PPV: peak particle velocity.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Sustainable Standards Certification in accordance with 01 35 43 – Environmental Procedures.

**1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Not used.

**Part 3 Execution**

**3.1 ROCK REMOVAL**

- .1 Perform excavation in accordance with Erosion and Sedimentation Control Plan.
- .2 Co-ordinate this Section with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Remove rock to alignments, profiles, and cross sections as indicated.
- .4 Explosive blasting is not permitted.
- .5 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.
- .6 Rock excavation work must be carried out with manual excavation equipment. The Contractor must present a manual excavation method considering the quality of the rock in place as presented in the geotechnical report
- .7 Excavate rock to horizontal surfaces with slope not to exceed 10V : 1H
- .8 Prepare rock surfaces which are to bond to concrete, by scaling, pressure washing and broom cleaning surfaces.
- .9 Remove boulders and fragments which may slide or roll into excavated areas.

- .10 Correct unauthorized rock removal at no extra cost, in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

### **3.2 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Rock Disposal:
  - .1 Move rock to in an area designated nearby excavation.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **3.3 PROTECTION**

- .1 Prevent damage to surroundings and injury to persons.

**END OF SECTION**

**Part 1 GENERAL**

**1.1 RELATED REQUIREMENTS**

- .1 Section 31 32 19.01 – Geotextiles.

**1.2 MEASUREMENT PROCEDURES**

- .1 Measurement Procedures: in accordance with Section 01 29 00 - Payment Procedures.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C 117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C 136-05, Standard Test Method for Sieve Analysis of Fine and Course Aggregates.
  - .3 ASTM D 422-63, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D 698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).
  - .5 ASTM D 1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup>) (2,700 kN-m/m<sup>3</sup>).
  - .6 ASTM D 4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

**1.4 DEFINITIONS**

- .1 Excavation classes: two 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. 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 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 mm in any dimension.
- .3 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .5 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

- .6 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.
    - .2 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
- .7 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.

## **1.5 QUALITY ASSURANCE**

- .1 Submit design and supporting data at least 2 weeks prior to beginning Work.
- .2 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Quebec, Canada.
- .3 Keep design and supporting data on site.
- .4 Engage services of qualified professional Engineer who is registered or licensed in Province of Quebec, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

## **1.6 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 Divert excess aggregate materials from landfill to local quarry for reuse as directed by Departmental Representative.

## **1.7 EXISTING CONDITIONS**

- .1 Examine soil report available in Appendix 1 of Specifications.
- .2 Surface features on site:
  - .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.
  - .3 Where required for excavation, cut roots or branches as directed by Departmental Representative and in accordance with Section 32 01 90.33 - Tree and Shrub Preservation.

## **Part 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Not used

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**Part 3 EXECUTION**

**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

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

**3.2 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.

**3.3 PREPARATION/PROTECTION**

- .1 Protect existing features in accordance with Departmental Representative directives.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.
- .4 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.

**3.4 STRIPPING OF TOPSOIL**

- .1 Begin topsoil stripping of areas as indicated after area has been cleared of grasses and removed from site.
- .2 Strip topsoil to depths as indicated.
  - .1 Do not mix topsoil with subsoil.

**3.5 STOCKPILING**

- .1 Fill materials must be removed from site as the work progresses. No area will be available for stockpiling. Therefore, stockpiling is prohibited on site.

**3.6 EXCAVATION**

- .1 Excavation must not interfere with bearing capacity of adjacent foundations.
- .2 Do not disturb soil within branch spread of trees or shrubs that are to remain.
  - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .3 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.

- .4 Restrict vehicle operations directly to work. Perform excavations manually.
- .5 Dispose of surplus and unsuitable excavated material off site.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .8 Obtain Departmental Representative approval of completed excavation.
- .9 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .10 Hand trim, make firm and remove loose material and debris from excavations.
  - .1 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.
- .11 Dispose of and process all excavated soils at appropriate off-site facility identified by Contractor and approved by Departmental Representative.

### **3.7 FILL TYPES AND COMPACTION**

- .1 Use existing materials for backfilling

### **3.8 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 150 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 24 hours after placing of concrete.
  - .3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 2 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.
- .6 Find seabed elevation shall be equal to the surveyed before work.

### **3.9 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 Replace topsoil as indicated.
- .3 Clean and reinstate areas affected by Work as directed by Departmental Representative.

**END OF SECTION**



## **Part 1 General**

### **1.1 SECTION CONTENT**

- .1 Work to be performed under this section to comprise the supply of all labour, equipment and material, and the performance of all work necessary for supplying anchors and associated hardware, drilling anchor holes, installation of sleeves, cleaning anchor holes, installing and grouting anchors, and testing anchors as indicated on the drawings, or as indicated herein.

### **1.2 RELATED REQUIREMENTS**

- .1 Section 01 11 01 - Work related general information
- .2 Section 05 50 00 – Metal Fabrications

### **1.3 REFERENCE STANDARDS**

- .1 CSA International
  - .1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Text for Concrete.
  - .2 CSA-A3000-08, Cementitious Materials Compendium.
  - .3 CAN/CSA-A23.3-04, Design of Concrete Structures for Buildings. CSA-G30.18-07, Billet-Steel Bars for Concrete Reinforcement.
  - .4 CSA-W186 M1990 (R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .2 ASTM International
  - .1 ASTM A615/A615M-09, Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

### **1.4 SOURCE QUALITY CONTROL**

- .1 Upon request, provide Departmental Representative with a certified copy of the mill test report for anchor steel, showing physical and chemical analysis, prior to commencing anchor work.
- .2 Workshop drawings shall show the following characteristics:
  - .1 sequential numbering of each anchor
  - .2 type of anchorage (manufacturer, diameter, steel grade, length, etc.);
  - .3 the grade of steel of all components;
  - .4 description of the anchor corrosion protection system;
  - .5 required accessories and their characteristics (size of anchor heads, plates, covers, etc.)
  - .6 the rock embedding length (anchor length);
  - .7 the diameter of the boreholes;
  - .8 the diameter of the tie rod;
  - .9 the position of the retractors (eg sufficient and deepest at a maximum of 1 meter from the bottom);

- .10 the method used for the installation of the anchors (equipment, type of drilling, method used to ensure stability and alignment of boreholes, cleaning procedure, anchorage installation, grouting, work scheduling, etc. .);
- .11 the type of grout and its strength characteristics;
- .12 grout injection method (injection pressure, injection tube, delays, etc.);
- .13 loads and test procedures on control anchorages;
- .14 tensioning loads;
- .15 all product data sheets used.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 25 mm diameter thread bar - as per ASTM A722/A722M type I, galvanized.
- .2 Two Nuts, bevelled washers, anchor plates, centralizers - as per ASTM A722/A722M to match thread bar, galvanized.
- .3 Cement, fine aggregate and water to meet requirements for concrete as specified in CSA A23.1/A23.2.
- .4 Welded wire fabric: 102 x 102 - MW 13.3 / MW 13.3 to CSA G30.18 galvanized after welding and cuts.

### **2.2 CEMENTITIOUS GROUT FOR ROCK ANCHORS**

- .1 The cementitious grout for rock anchors shall be a cementitious, nonmetallic, nonshrink grout containing specially graded natural fine aggregate. Special precautions shall be taken during installation in subzero ambient temperatures. Enclosures and heating shall be provided to raise the temperature of the concrete substrate to a minimum of 5°C unless specified otherwise.
- .2 Deleterious materials such as calcium chloride shall not be used. The grout shall be pre-blended and packaged in moisture proof bags. Other than mix water, no material shall be added to the premixed grout material during site batching and mixing.
- .3 The anchors must be inserted into the hole before grouting begins. The grout shall be placed by injection using an injection tube from the bottom of the anchor hole. The injection operation must be carried out for each anchor.
- .4 Grout used shall be of "pourable" consistency.
- .5 The properties of the grout of pourable consistency shall be as follows:
  - .1 Bleeding: when allowed to stand for 15 minutes, a sample of the grout shall not bleed or segregate.
  - .2 Expansion: the grout shall exhibit an expansion, at the time of initial set of between 4% and 6%.
  - .3 Compressive Strength:
    - .1 All grout for anchoring dowels shall have a compressive strength of not less than 20 MPa at 7 days and 40 MPa at 28 days, measured on 50mm cubes. The cube molds shall be covered with a clamped steel plate following trowelling of the mortar surface.
    - .2 Grout tests shall be carried out in accordance with CSA A23.2.1B.

.4 Delivery and Storage:

- .1 The Goods shall be delivered to the Site in sealed, unopened containers and labels shall show the name of the manufacturer, date of manufacture, shelf life and batch number.
- .2 All storage and handling of the grout material shall be in strict accordance with manufacturer's Specifications, recommendations and information contained in the Material Safety Data Sheets.

**Part 3 Execution**

**3.1 ROCK ANCHOR HOLES**

- .1 The minimum diameter of each rock anchor hole shall be 50 mm minimum for 25 mm bars.

**3.2 INSTALLATION AND TENSIONING OF ROCK ANCHORS**

- .1 All holes shall be cleaned and flushed prior to grouting. All holes shall be drilled with percussion drills. No core diamond drills shall be used.
- .2 Contractor is responsible for drilling method used to obtain hole with stable walls and adequate dimensions. The drill operator must be qualified for the drilling of rock anchors and must have a minimum of three (3) years experience in the drilling of rock anchors or the like. The Contractor shall provide, upon request of the Supervisor, a list of similar projects carried out by the Operator.
- .3 Boreholes must be drilled from the final excavation level. The boreholes must have a constant diameter in accordance with the shop drawings and the specifications.
- .4 Boreholes must be drilled in one step at final diameter (one bore per anchor). The maximum allowable deviation tolerance for drilling is 1: 100. The maximum allowable drilling depth tolerance is  $\pm 50$  mm. The drilling length in the rock for each anchorage must be validated by the supervisor before the tie rods are installed.
- .5 The batching and mixing equipment shall be capable of thoroughly blending the grout ingredients and of a capacity adequate to carry out the grouting operation without any appreciable delays. The method of transporting the grout shall be such that segregation and bleeding of the grout are prevented.
- .6 Grout material, proportions, mixing procedures and properties shall be demonstrated in the pre-construction testing as meeting the requirements of the Work and changes shall not be made without the agreement of Departmental Representative.
- .7 At the time of placement of the grout in the anchor holes, the grout shall be between 15°C and 25°C and the ambient air temperature surrounding the hole shall not be less than 10°C. The ambient air temperature surrounding the dowels shall not fall below 10°C for three days following placement of the grout. Thermocouples shall be installed in at least five representative holes. Thermocouples shall be monitored and measurements recorded to ensure the temperature requirements during placement and curing are met.
- .8 The level of quality control testing carried out by the Contractor for each dowel grouting operation shall be as follows:
  - .1 Bleeding and expansion tests on grout of pourable consistency, on every third batch.

- .2 Compressive strength tests on one batch of grout consisting of three cubes tested at 7 days and three cubes at 28 days. One set of cubes shall be taken every shift.
- .3 Temperature measurements on each batch of grout.
- .4 The Contractor shall complete and submit to Departmental Representative a daily grout log for each shift which shall contain the following:
  - .1 Date and shift.
  - .2 Batching and mixing plant used.
  - .3 Identification of the Contractor's personnel employed in the grouting operation.
  - .4 Identification of the grout material used.
  - .5 Identification of dowels grouted each shift.
  - .6 Test data for grout tests defined in this section.
  - .7 Temperature readings, ambient, grout before placing and thermocouple temperatures where applicable.
- .9 During the batching, mixing and delivery of grout, batches of grout that are not in accordance with the Specification or requirements of the work shall not be used in the Work.
- .10 Centralizers shall be used on all rock anchors to retain the anchors in the centre of the drill hole during setting of the grout and initial curing.
- .11 The Contractor shall submit to the Departmental Representative, at least seven (7) days prior to commencement of anchor installation work and following anchor test tensile tests where applicable:
  - .1 the certificate of conformity of the tie rods;
  - .2 calibration certificates for cylinders, pumps and pressure gauges used; The calibration certificate shall contain information on the cylinder design, serial number, piston area and internal loss value and shall be less than six (6) months old;
  - .3 calculating the tensions and elongations corresponding to the prestressing force required for the prestressed anchorages;
  - .4 the order of tensioning of the anchorages, for prestressed anchorages;
  - .5 mixing of injection grout.
- .12 The Contractor shall notify the Departmental Representative at least twenty-four (24) hours prior to the insertion of the anchors in the boreholes. The anchorages shall be inserted into the boreholes within a maximum of eight (8) hours after the completion of the drilling and cleaning operations.
- .13 Tie rods shall be clean, free of rust, oil, dirt, mud or other debris. The ducts must be clean and free from dirt. Anchorages must be inserted by gravity or by pushing. The use of mechanical, pneumatic or electrical hammers is not permitted for the installation of anchorages.
- .14 The Contractor shall notify the Departmental Representative at least twenty-four (24) hours prior to the initial tightening of the anchorages. The tensioning of the anchorages must be carried out by a post-tensioning company. If the contractor carries out this work himself, he must do so under the supervision of a qualified representative of the specialist pre-stressor; This representative must be present during the installation of the

anchorages in the boreholes, when tensioning the anchorages and during the injection of the grout into the boreholes.

- .15 When installing the grout, it must be installed until the space between the plate and the rock is filled. Prior to this operation, the Contractor must install a formwork and a mesh under the anchor plate.

### 3.3 ANCHORS TESTS

- .1 Unless otherwise indicated, the tests shall be carried out in accordance with the procedures described in the "Post-Tensioning Institute" Recommendations for prestressed rock and soil anchors. The tests must be carried out by an accredited laboratory.
- .2 Performance test
  - .1 A "performance tests" test shall be carried out on two (2) permanent rock anchors. The test sequence must be submitted by the contractor to the departmental representative for approval at the start of the work and must allow for tracking of the anchorages in place (one test at the beginning and one test at mid-placement).
    - .1 The Departmental Representative shall be present during the conduct of these tests.
    - .2 Tensile tests shall not be carried out until the grout has attained its rated strength and shall be carried out one at a time
    - .3 During tensile tests, the displacements of the anchor head shall be measured in relation to a fixed reference point independent of the anchorage and test mount. These measurements shall be taken and recorded at all loading stages during the test.
    - .4 Loading tests shall be carried out in cyclical and successive stages. The loading stages for this type of test are described in the "Post-Tensioning Institute" document "Recommendations for prestressed rock and soil anchors". The final maximum load applied during the tests shall be 40 kN
    - .5 Anchorages shall be accepted where the maximum creep displacement undergone by the anchorage during the last tensile loading is less than 1.0 mm after ten (10) minutes or 2.0 mm after sixty (60) minutes.
    - .6 Preliminary results of tensile tests shall be transmitted to the Departmental Representative during on-site testing.
    - .7 Following performance testing, the Contractor shall provide written notice confirming the validity of the tests. The drilling of the other anchorages may not commence until such notice has been received
- .3 If a failure occurs during a test or in the case of improper test, each rock anchors that were installed after the last successful test should be tested at the expense of contractor. All rock anchors that have not supported the load as defined above shall be removed and relocated at the expense of the Contractor. In addition, in the 2 cases mentioned above, 2 additional tests must be added at the expense of the contractor.

**END OF SECTION**

## **Part 1 General**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 – Environmental Procedures
- .3 Section 31 23 33.01 – Excavating, trenching and backfilling

### **1.2 REFERENCES**

- .1 Health Canada - Pest Management Regulatory Agency (PMRA)
  - .1 National Standard for Pesticide Education, Training and Certification in Canada (1995).
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .2 Fertilizers Act (R.S. 1985, c. F-10).
  - .3 Fertilizers Regulations (C.R.C., c. 666).
  - .4 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .4 Canadian Nursery Landscape Association
- .5 Normes de bonne pratique de la Société internationale d'arboriculture Québec (SIAQ).
- .6 Bureau de normalisation du Québec - NQ 0605-200 - Entretien arboricole et horticole.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for tree and shrub preservation materials and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit monthly written reports on maintenance during warranty period, to Departmental Representative identifying:
    - .1 Maintenance work carried out.
    - .2 Development and condition of plant material.
    - .3 Preventative or corrective measures required which are outside Contractor's responsibility.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect tree and shrub preservation materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## 1.5 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations.
  - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.
  - .2 Apply pesticides in accordance with National Standard for Pesticide Education, Training and Certification in Canada, Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Departmental Representative prior to application.
  - .3 Apply fertilizer in early spring at manufacturer's suggested rate.
  - .4 Remove dead, broken or hazardous branches from plant material. Dispose of debris through environmentally friendly method

## Part 2 Products

### 2.1 MATERIALS

- .1 Fill:
  - .1 Type (A): clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter.
  - .2 Type (B): excavated soil, free from roots, rocks larger than 75 mm, building debris, and toxic ingredients (salt, oil, etc). Excavated material shall be approved by Departmental Representative before use as fill.
- .2 Coarse washed stones: 35-75 mm diameter clean round hard stone.
- .3 Draintile: 100 mm diameter corrugated coded plastic perforated tubing complete with snap couplings. Fill vents with 20 mm clear stone.
- .4 Peatmoss:
  - .1 Derived from partially decomposed species of Sphagnum Mosses.
  - .2 Elastic and homogeneous.
  - .3 Free of wood and deleterious material which could prohibit growth.
  - .4 Shredded minimum particle size: 5 mm.
  - .5 Natural pH and without add lime
- .5 Fertilizer:
  - .1 To Canada Fertilizer Act and Fertilizers Regulations.
  - .2 Complete, commercial, slow release with 35% of nitrogen content in water-insoluble form.
- .6 Anti-desiccant: commercial, wax-like emulsion.

- .7 Filter Cloth:
  - .1 Type 1: 100 % non-woven needle punched polyester, 2.75 mm thick, 240 g/m<sup>2</sup> mass.
  - .2 Type 2: biodegradable burlap.
- .8 Wood posts: 38 x 89 x 2400 mm length, untreated wood.
- .9 Welded wire fabric (WWF): 100 x 100mm
- .10 Flooring: 50 x 100 mm timber attached to tree perimeter using plastic strips or other method that will not damage the tree.
- .11 Shielding barriers for shafts: 40 x 40 x 5 x 2440 mm T-posts with 1800 mm oc center distance, with wooden slat fastened to the posts with wire n 9, 13 per post.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

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

#### **3.2 IDENTIFICATION AND PROTECTION**

- .1 Trees must be protected before the beginning of the work
- .2 Identify plants and limits of root systems to be preserved as approved by Departmental Representative.
- .3 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative.
- .4 Ensure no pruning is done inside drip line. If pruning inside drip line is required consult an arborist or Canadian Certified Horticultural Technician (CCHT) as approved by Departmental Representative.

#### **3.3 ROOT CURTAIN SYSTEM**

- .1 Lay the plank flooring vertically around the perimeter of the designated deciduous trees in the active work area.

#### **3.4 TRENCHING AND TUNNELING FOR UNDERGROUND SERVICES**

- .1 Determine limits of excavation required for construction, as directed by Departmental Representative.
- .2 Before excavation begins, dig a trench at least 500 mm wide x 1500 mm deep by hand along the perimeter of the excavation limits.



- .3 Make a clean cut of the stripped roots, on the trench side adjacent to the plants to be kept. Cut so that the root ends point obliquely downwards.
- .4 Install wooden poles and welded wire mesh against the wall of the trench on the construction side.
- .5 Secure the Type 2 filter cloth on the vegetation side of the wire mesh.
- .6 Prepare a homogeneous mixture of fertilizers, source material and organic matter.
  - .1 Add the latter to an organic matter content of 7-9% by weight.
  - .2 Incorporate dry type 2: 12: 8 fertilizer at a rate of 1.5 kg / m<sup>3</sup> into the mixture.
- .7 Fill the space between the protection screen and the plants to be maintained by spreading the homogeneous mixture in layers up to 150 mm thick, each compacted to a density of 85% on the normal Proctor test.
- .8 Protect shield from damage during construction.
- .9 During construction, water the plants and root barrier sufficiently so that soil moisture conditions remain optimal until the backfill is completed.
- .10 Protect root screen before and during earthmoving operations.

### **3.5 LOWERING GRADE AROUND EXISTING TREE**

- .1 Begin Work in accordance with schedule approved by Departmental Representative.
- .2 Cut slope not less than 500 mm from tree trunk to new retaining wall.
- .3 Excavate to depths as indicated. Protect from damage root zone which is to remain.
- .4 When severing roots at excavation level, cut roots with sharp tools.
- .5 Prepare homogeneous soil mixture consisting by volume of:
  - .1 60% excavated soil cleaned of roots, plant matter, stones, debris.
  - .2 25% coarse, clean sterile sand.
  - .3 15% organic matter.
  - .4 Grade 2:12:8 fertilizer at rate of 1.5kg/m<sup>3</sup>.
- .6 Place soil mixture over area of excavation to finished grade level. Compact to 85% Standard Proctor Density.
- .7 Water entire root zone to optimum soil moisture level.

### **3.6 PRUNING**

- .1 Prune in accordance with Departmental Representative requirements.
- .2 Prune crown to compensate for root loss while maintaining general form and character of plant. Dispose of debris through environmentally friendly method.

### **3.7 ANTI-DESICCANT**

- .1 Apply anti-desiccant to foliage where applicable and as directed by Departmental Representative.

### **3.8 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.

**END OF SECTION**

## APPENDIX