TABLE OF CONTENTS

APPENDICES

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 32 18 – Work Schedule – Bar Graph (Gantt Chart)

.2 Section 01 14 00 – Work Restrictions

.3 Section 01 56 00 – Temporary Access and Protection Structures

1.2 WORK-RELATED CONTRACTUAL DOCUMENTS

.1 The work described in this contract involves the replacement of an aid to navigation tower and includes, among other things, the design, fabrication and installation of an aid to navigation structure (the "tower") located in the Saint-Nicolas sector of Lévis, which is situated on the south shore of the St. Lawrence River.

1.3 TYPE OF CONTRACT

.1 The work shall be subject to a single fixed-price contract.

1.4 WORK IMPLEMENTATION SEQUENCE

.1 Within three (3) business days of receiving notice of bid acceptance, produce a work schedule in the form of a bar graph (Gantt chart) based on the project's work activities, indicating both the duration and the completion date of various activities. This schedule shall include the submission and approval of the design and shop drawings, the acceptance of work, and the purchase and fabrication of the materials required to complete the project.

.2 This schedule shall be kept up to date, showing the progress of the work completed, and shall be sent to the Departmental Representative on a weekly basis.

.3 Phases to be scheduled

.1 Design

.1 All studies required to obtain the data and information necessary for the design;

.2 Design a 115 ft. high self-supporting steel structure as well as all equipment and accessories associated with "the tower." If so desired, the Contractor may base the design on the plans that have been prepared for another project. These drawings will be available upon request;

.3 Design a foundation for "the tower";

.4 Two weeks after receiving notice of bid acceptance, present the design with sketches (+/-25%). This design shall include the following information: for the tower: the approximate

dimensions (height, width of sides and base) and the materials. The cutaway views shall show the placement of the ladder, the clearance for work on the working platform at the top, access to the working platform, and the design loads; for the foundation: type of foundation, approximate dimensions, depth and materials;

.5 Design the electrical connections for the equipment before its installation in the tower. This includes designing the grounding in compliance with the Coast Guard standard (available upon acceptance of the bid);

.6 Produce engineering plans for the fabrication and construction of the tower and the foundation, including assembly details and the necessary technical specifications. The plans shall comply with the Canadian Coast Guard's design standard;

.7 The plans shall be submitted to the Departmental Representative for approval;

.8 The final plans shall be signed and sealed by a professional engineer who is a member of the Ordre des ingénieurs du Québec.

.2 Fabrication

.1 Build the tower according to the drawings to be produced in the "Design" phase of this mandate;

.2 Galvanize all tower components.

.3 Installation

.1 Mobilization/demobilization and support during the work;

.2 Design and installation of a temporary structure as well as the power supply, installation and maintenance of a navigation light on this temporary structure at the option of the Contractor (plans signed and sealed by an engineer who is an OIQ member, and submitted to and approved by the Departmental Representative). The temporary light shall remain in service until the new structure has been erected and the permanent light is fully operational. A team from the Department's Geomatics sector will help the Contractor align the temporary light. The Department will provide the temporary light. **The Department reserves the right to include the "Temporary Tower" item in the contract or to exclude it;**

.3 Disconnection of existing power supplies;

.4 Dismantling of existing structure;

.5 Demolition of current foundation;

.6 Off-site disposal of demolition material and any equipment or installation that the CCG does not want to salvage;

.7 Construction of a new foundation;

.8 Installation of temporary protection fences to secure the excavations;

.9 At the Quebec City Coast Guard site, retrieval of the new daymarks and other equipment provided by the Departmental Representative;

.10 Assembly of the new tower;

.11 Assembly and installation of an aluminium daymark at the top of the new tower;

.12 Transfer of the identification plate from the existing structure to the new one. The method used to attach the plate shall not perforate the structure's steel components;

.13 Installation of the power supply and connection of the lantern;
.14 Grounding;
.15 Dismantling of the temporary structure;
.16 Fabrication and installation of a chain-link fence;
.17 Cleaning and restoration of the site;
.18 Production of "as-built" drawings and brief photographic reports;
.19 Execution of all other work described in these specifications.

.4 Complete the work in phases so that the public can continue to use the project site. Maintain public access to the project site insofar as advancement of the work precludes offering an alternate solution.

.5 Maintain access for firefighting purpose and plan for firefighting methods.

1.7 USE OF SITE BY CONTRACTOR

.1 The site may be used without restriction until the work has been substantially completed.

.2 However, the Contractor shall restrict its movements to the areas illustrated in Appendix 5. The Contractor shall in no way travel outside these areas without written authorization from the CCG or from the landowners concerned.

1.8 STAKING OUT THE STRUCTURE

.1 The Department will be responsible for positioning the temporary light, laying the new foundation for rear alignment and positioning the light on the new structure. This means that once the Contractor has installed the navigation light, the Department's Geomatics team will go to the site to confirm or correct its position. Moreover, when the work begins, the Geomatics team will go to the site to establish the reference points necessary for positioning the structures.

.2 The centre of the temporary structure shall be positioned using a steel rod and stake.

.3 The centre of the new foundation to be built and its orientation shall be indicated using four (4) stakes.

.4 The daymark shall be installed according to the same azimuth as its initial position on the existing structures. Note its orientation before dismantling it.

.5 Any uncertainty or ambiguity regarding the positioning of a structure on the land shall be immediately reported to the Departmental Representative before work begins.

.6 It is critical that all construction be precise. Deviations will not be tolerated.

.7 Before undertaking the work, identify the placement and extent of existing facilities likely to be damaged or displaced. Take the necessary steps to protect them.

.8 Should facilities be discovered during the course of the work, immediately notify the Departmental Representative and send him or her a written observation report within twenty-four (24) hours.

.9 The Contractor shall ensure that the reference points are protected while the work is being done.

.10 The Contractor shall situate and accurately lay out all other work to be done according to the dimensions, levels and slopes indicated on the drawings to be produced in the "Design" phase of this mandate.

1.9 ITEMS SUPPLIED BY THE DEPARTMENTAL REPRESENTATIVE

.1 Departmental Representative's responsibilities

.1 Make the necessary arrangements so that the materials and equipment supplied by the Departmental Representative are available at the planned location and at the time agreed upon for pick-up by the Contractor.

.2 Contractor's responsibilities

.1 For the purposes of the work progress schedule, create the documents and samples to be submitted as well as the delivery date for each product.
.2 Review the shop drawings, datasheets, samples and other documents to be submitted. Inform the Departmental Representative of all deviations observed or problems foreseen due to the failure of products to comply with the requirements in the design documents previously approved by the Departmental Representative during the "Design" phase of this mandate.
.3 Give the Departmental Representative five (5) business days' advance notice of the scheduled date for equipment pick-up.
.4 Assume responsibility for loading, at the Quebec City Coast Guard site, and for the transportation to and the unloading at the construction site of items supplied by the Departmental Representative.
.5 Upon their delivery, inspect the materials and equipment supplied by the Departmental Representative. If parts are missing or are defective, immediately advise the Departmental Representative before leaving the Quebec City Coast Guard site; otherwise, the materials will be considered to be in good condition.
.6 Handle products at the site, especially when unpacking and storing them.
.7 Protect the products against damage and bad weather.
.8 Assemble, install, connect, adjust and finish the products.
.9 After installation, ensure that the required inspections by the appropriate authorities are performed.
.10 Repair or replace items damaged on site by the Contractor or by a subcontractor in the latter's service.

.3 List of items supplied by the Departmental Representative:
.1 Daymark

.2 Plate and navigation light support
.3 Batteries with casing and voltage regulator
.4 Junction box
.5 Padlocks

All equipment shall be picked up at the following address:

Fisheries and Oceans Canada
Canadian Coast Guard
101 Champlain Boulevard
Québec City, Quebec G1W 7Y7

The Departmental Representative will not supply any other materials or equipment. The Contractor will be responsible for supplying all the materials and equipment necessary for carrying out the work as stipulated by this project.

1.10 EXISTING UTILITIES

.1 Before interrupting utility services, inform the Departmental Representative and the utility companies concerned about the interruption and obtain the necessary authorizations.

.2 Within the context of marine traffic coordination, service interruption is defined as any obstacle to the uninterrupted visibility of the aid to navigation caused by the Contractor's activities. Permanent service interruption, between the moment when the light is disconnected and the moment when the new permanent tower is recommissioned (including lights and daymark), shall last no more than thirty (30) calendar days. The Contractor shall notify the Canadian Coast Guard forty-eight (48) hours before completion of each phase to allow for effective marine traffic management. The notice shall include the name and number from the list of lights, the contract and the work description.

.3 If taps on the existing utility lines or connections to these lines are necessary, notify the Departmental Representative forty-eight (48) hours before the scheduled interruption time for the corresponding electrical or mechanical services. Make sure that the interruption is as short as possible. Carry out the work during the hours established by the appropriate local authorities, causing as little inconvenience as possible.

.4 Before the work begins, define the extent and placement of the utility lines found in the work area and provide the Departmental Representative with this information.

.5 Submit, for the Departmental Representative's approval, a schedule pertaining to the stoppage or closure of active facilities or structures, including the interruption of communications services or power supply. Follow the approved schedule and inform the parties affected by these inconveniences.

.6 As needed, install walkways for crossing trenches on the site in order to maintain normal pedestrian traffic.

.7 When unlisted utility lines are discovered, immediately inform the Departmental Representative and make a written record of them.

.9 Protect or move operational utility lines or maintain them in service. If non-operational lines are discovered during the work, have the appropriate authorities seal them in an authorized manner.

.10 Record the location of utility lines that are maintained, moved or abandoned.

.11 Build barriers in compliance with Section 01 56 00 – Temporary access and protection structures.

1.11 DOCUMENTS REQUIRED

.1 Keep a copy of each of the following documents at the work site:
- .1 Contract drawings
- .2 Specifications
- .3 Addenda
- .4 Revised shop drawings
- .5 List of unrevised shop drawings
- .6 Change orders
- .7 Codes and standards relevant to this project
- .8 Other changes made to the contract
- .9 Reports on on-site tests
- .10 Copy of approved implementation schedule
- .11 Health and safety plan and other safety-related documents
- .12 Other documents, as specified

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 56 00 – Temporary Access and Protection Structures

.2 Section 01 32 18 – Work Schedule – Bar Graph (Gantt Chart)

1.2 ACCESS TO WORK SITE

.1 For work involving the demolition of the existing tower and construction of the new permanent tower, use the existing access road. For the installation and dismantling of the temporary tower, design and build temporary modes of accessing the work site, especially the access road, stairways, traffic lanes, ramps or ladders as well as scaffolding, separate from finished structures and compliant with municipal, provincial or other regulations, and ensure their upkeep.

1.3 USE OF SITE AND FACILITIES

.1 Complete the work with as little disruption to the site's normal use as possible. In this regard, make the necessary arrangements with the Departmental Representative to facilitate the completion of the stipulated work.

.2 Ensure that the existing utilities remain operational and that personnel and vehicles have access to the construction site.

.3 When work reduces safety, plan other temporary means to ensure the safety of assets and individuals on the work site.

1.4 MODIFICATIONS, REPAIRS OR ADDITIONS TO EXISTING BUILDING

.1 Complete the work with as little disruption to the site's normal use as possible. In this regard, make the necessary arrangements with the Departmental Representative to facilitate the completion of the stipulated work.

1.5 EXISTING SERVICES

.1 Inform the Departmental Representative and the utility companies of scheduled service interruptions and obtain the necessary authorizations.

.2 If taps on existing networks or connections to these networks are necessary, provide forty-eight (48) hours' notice before the scheduled interruption of electrical services or mechanical systems. Ensure that the interruption is as short as possible. Schedule the interruptions after the occupants' normal working hours, preferably during the weekend.

.3 Ensure [personnel] [pedestrian] and vehicle traffic.

.4 Build protective barriers in accordance with Section [01 56 00 –

Temporary Access and Protection Structures] [_____].

1.6 SPECIFIC REQUIREMENTS

.1 Submit the work schedule in accordance with Section 01 32 18 – Work Schedule - Bar Graph (Gantt Chart).

.2 Ensure that the Contractor's employees working on the site are familiar and comply with the regulations, particularly those pertaining to fire safety, road traffic and workplace safety.

.3 Remain within the limits of the work site and access roads.

.4 The Contractor's vehicles will have unlimited access to the site.

.5 Ensure that materials and equipment are delivered outside peak hours, unless otherwise indicated by the Departmental Representative.

1.7 SECURITY AUTHORIZATIONS

.1 All employees assigned to this work may be subject to security checks. Depending on the requirements, obtain the required authorizations for all individuals who must be present on the work site.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

1.2 DEFINITIONS

.1 Activity: Specific work completed as part of a project. An activity's duration, cost and resource requirements are usually planned. Activities may be subdivided into tasks.

.2 Bar graph (Gantt chart): Graphic representation of data related to a project's implementation schedule. In a standard bar graph, the activities or other elements of the project are presented from top to bottom on the left side of the graph, with the dates presented from left to right across the top. The duration of each activity is indicated using horizontal segments placed between the dates. In general, the bar graph is generated using a commercially available computer-based project management system.

.3 Basic reference: Approved initial plan (for a project, a work package or an activity), taking into account approved modifications to the project scope.

.4 Work week: Week consisting of five (5) days, from Monday to Friday, considered business days for the purposes of submitting the bar graph (Gantt chart).

.5 Duration: Required number of work periods (except for holidays and other non-work periods) for the execution of an activity or any other aspect of the project. The duration is usually expressed in business days or in work weeks.

.6 General plan: Outline of the program indicating the main activities and key milestones.

.7 Milestone: Important event in the project's execution, most often corresponding to the completion of an important product (deliverable).

.8 Implementation schedule: Dates set for carrying out activities and reaching milestones. Dynamic and detailed timeline of tasks or activities required for reaching project milestones. The follow-up and monitoring process is based on the implementation schedule for the completion and monitoring of activities; this schedule determines the decisions that will be made throughout the project.

.9 Schedule – Project planning, follow-up and monitoring: Global system managed by the Departmental Representative intended to ensure follow-up on the execution of work with respect to defined phases or milestones.

1.3 REQUIREMENTS

.1 Ensure that the general plan and implementation schedule are workable and are in line with the stipulated contract term.

.2 The general plan shall provide for the completion of work according to the stipulated milestones and within the agreed upon timeframe.

.3 Limit the duration of activities to approximately ten (10) business days so that progress reports can be produced.

.4 The contract award or the date on which work is to begin, the pace at which work is progressing, and the issuance of the provisional and final completion certificates are defined phases of the project and are essential terms of the contract.

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 Submit the required documents and samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit to the Departmental Representative no later than three (3) business days following contract award, a bar graph (Gantt chart) to be used as a general plan and for the planning and follow-up of work as well as for the production of progress reports.

.3 Submit the implementation schedule to the Departmental Representative no later than five (5) business days following acceptance of the general plan.

1.5 PROJECT MILESTONES

.1 Project milestones are the interim targets set out in the implementation schedule.
.1 The design with sketches (+/-25%) shall be submitted no later than ten (10) business days following the contract award date.
.2 The design, including final plans, shall be completed no later than twenty (20) business days following the contract award date.
.3 The fabrication shall be completed no later than forty (40) business days following the contract award date.
.4 The construction, which includes commissioning the navigation light and cleaning and restoring the site, shall be completed no later than seventy (70) business days following the contract award date.
.5 The "as-built" drawings shall be submitted no later than March 1, 2016.
.6 The provisional certificate of the substantial completion of work shall be issued no later than sixty (60) business days following the contract award date.

1.6 GENERAL PLAN

.1 Structure the implementation schedule such that the work can be

planned, organized and completed in an orderly fashion according to the bar graph (Gantt chart).

.2 The Departmental Representative will review the schedule and will return it to the Contractor within the five (5) business days that follow.

.3 If the schedule is deemed unworkable, it shall be revised and resubmitted no more than five (5) business days after its receipt.

.4 The revised and accepted schedule will become the general plan, which will then serve as a reference for updates.

1.7 IMPLEMENTATION SCHEDULE

.1 Develop a detailed implementation schedule based on the general plan.

.2 The detailed implementation schedule shall at least include the phases that correspond to the following:

- .1 Contract award
- .2 Design
  - .1 Collection of information and analyses for the design
  - .2 Presentation of design with sketches
  - .3 Design for electrical connections and grounding
  - .4 Completion of plans for the tower's fabrication and assembly, electricity – Presentation of preliminary plans
  - .5 Presentation of final plans
- .3 Fabrication
  - .1 Fabrication of tower and accessories
  - .2 Galvanization
- .4 Installation
  - .1 Mobilization
  - .2 Design of temporary structure
  - .3 Installation of temporary tower
  - .4 Dismantling of existing structure
  - .5 Demolition of current foundation
  - .6 Construction of new foundation
  - .7 Erection of new tower
  - .8 Assembly and installation of an aluminium daymark at the top of the new tower and transfer of the identification plate
  - .9 Installation of power supply and connection for the light
  - .10 Installation of grounding
  - .11 Dismantling of temporary structure
  - .12 Fabrication and installation of a chain-link fence
  - .13 Cleaning and restoration of site
  - .14 Production of "as-built" drawings

1.8 WORK PROGRESS REPORTS

.1 Update the implementation schedule once a week such that it shows modifications to and completion of activities as well as activities in progress.

.2 Attach a narrative report to the implementation schedule indicating work progress, comparing the progress made to the reference schedule, and presenting forecasts, anticipated delays, the repercussions of these factors and potential mitigation measures.

1.9 PROJECT MEETINGS

.1 Discuss the implementation schedule during regular on-site meetings; identify activities that are delayed and plan ways to make up for lost time. Activities are considered delayed if the start or end date exceeds the respective approved dates found in the reference schedule.

.2 Also discuss delays caused by bad weather and negotiate measures to make up for those delays.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 SECTION CONTENTS

.1 The Contractor shall manage operations such that the health and safety of the public and site personnel as well as protection of the environment always take precedence over issues related to cost and schedule.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

1.3 REFERENCES

.1 *Canada Labour Code*, Part II, *Canada Occupational Health and Safety Regulations*

2. Canadian Standards Association (CSA)

.3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.4 Province of Quebec
.1 *An Act Respecting Occupational Health and Safety*, CQLR c S-2.1

.5 *Safety Code for the construction industry*, CQLR c S-2.1, r 6.

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 Submit the required documents and samples in accordance with Section 01 33 00 - Documents and samples to be submitted.

.2 Submit, no later than seven (7) days after the date on which the notice to proceed was signed and before the workforce is mobilized, a health and safety plan created specifically for the work site, comprising the following elements:
.1 Risk/hazard assessment results for work site safety
.2 Results of the analysis of health and safety risks or hazards associated with each task and activity in the work plan

.3 Submit to the Departmental Representative and the appropriate authority, on a weekly basis, a copy of the reports on the health and safety inspection conducted by the Contractor's authorized representative.

.5 Submit copies of incident and accident reports.

.6 The Departmental Representative will review the health and safety

plan prepared by the Contractor for the work site and will submit comments within five (5) days of receipt of the document. As needed, the Contractor shall revise its health and safety plan and shall resubmit it to the Departmental Representative no later than three (3) days following receipt of the latter's comments.

.7 The Departmental Representative's review of the final health and safety plan prepared by the Contractor for the work site shall not be interpreted as approval of this plan and shall in no way limit the Contractor's overall responsibility for health and safety during the construction work.

.8 The Contractor shall ensure that all its employees have at their disposal and use the personal protective equipment required for the work to be done as well as safety equipment and equipment for protection against falls from heights. The Contractor shall also ensure that a height rescue kit is available on site.

.9 It should be noted that a safety advisory is in effect within the CCG and shall be observed by the Contractor. This advisory is found in Appendix 2.

.10 All of the Contractor’s employees required to work at heights shall at least hold a current certification for movement and rescue in elevated metallic structures; proof that this certification is valid will be requested one month before on-site work begins. At least two employees shall be present on the site when such work is being carried out.

1.5 PROJECT NOTIFICATION

.1 Before work begins, send the project notification to the appropriate provincial authorities.

1.6 RISK/HAZARD ASSESSMENT

.1 Assess on-site safety risks/hazards associated with the performance of the work.

1.7 GENERAL REQUIREMENTS

.1 Before starting work, draft a health and safety plan specific to this work site based on the preparatory risks/hazards assessment. Apply the plan and ensure that all its aspects are respected until all site employees have been demobilized. The health and safety plan shall take project particularities into account.

.2 The Departmental Representative may comment in writing if the plan contains anomalies or raises concerns, and may require the submission of a revised plan that will correct those anomalies or eliminate those concerns.

1.8 RESPONSIBILITY

.1 Assume responsibility for the health and safety of those present on the site as well as for the protection of on-site assets located; in areas adjacent to the site, assume responsibility for protecting people and the environment insofar as they are affected by the work.

.2 Comply, and enforce compliance among employees, with the safety requirements set out in the contract documents and in the applicable local, territorial, provincial and federal orders, laws and regulations, and the requirements of the health and safety plan prepared for the site.

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with the *Act respecting occupational health and safety* and the *Regulation respecting industrial and commercial establishments*, CQLR c S-2.1, r 6.

.2 Comply with the *Occupational Health and Safety Regulations* under the *Canada Labour Code*.

1.10 UNEXPECTED RISKS/HAZARDS

.1 Should there be conditions, risks/hazards, or specific or unexpected factors affecting safety while the work is being performed, follow the procedures established with respect to the right of an employee to refuse to carry out dangerous work, in compliance with Quebec laws and regulations, and inform the Departmental Representative of this orally and in writing.

1.11 POSTING OF DOCUMENTS

.1 Ensure that the relevant documents, articles, orders and notices are posted in plain sight on the work site, in compliance with Quebec laws and regulations and in consultation with the Departmental Representative.

1.12 CORRECTIVE MEASURES IN CASE OF NON-COMPLIANCE

.1 Immediately take the necessary measures to rectify situations deemed non-compliant in terms of health and safety by the appropriate authority or by the Departmental Representative.

.2 Provide the Departmental Representative with a written report on the measures taken to rectify situations of non-compliance with respect to health and safety.

.3 The Departmental Representative may issue a stop-work order if the Contractor does not take the necessary action to correct conditions deemed non-compliant with respect to health and safety.

1.13 CARTRIDGE DEVICES

.1 Do not use cartridge devices without written permission from the Departmental Representative.

1.14 WORK STOPPAGE

.1 Give precedence to the health and safety of the public and site personnel as well as protection of the environment over issues related to cost and schedule.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 74 11 – Cleanup

.2 Section 02 41 16 – Demolition of structure

.3 Section 03 30 00 – Cast-in-Place Concrete

4 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

5 Section 03 30 00 – Cast-in-Place Concrete

1.2 REFERENCES

.1 Definitions

.1 Environmental pollution and damage: presence of chemical, physical or biological elements or agents that adversely affect human health and welfare; that alter the ecological balances of importance to human life and that unfavourably affect other species of importance to humankind; or that degrade the aesthetic, cultural or historical characteristics of the environment.

.2 Environmental protection: prevention/control of pollution and habitat or environment disruption during construction. Prevention of environmental and pollution damage covers the protection of land, water, air, and biological and cultural resources; it also includes management of visual aesthetics; noise; solid, chemical, gaseous and liquid waste; radiant energy and radioactive material as well as other pollutants.

.2 References

.1 Preliminary environmental assessment for this project.

1.3 PRELIMINARY ENVIRONMENTAL ASSESSMENT

.1 The mitigation measures prescribed in the preliminary environmental assessment that was carried out for this project shall be implemented. They will be available when the contract is awarded.

.2 Prior to commencing construction activities or delivery of materials and equipment to the site, provide an environmental protection plan for review and approval by the Departmental Representative.

.4 Ensure that the plan includes a comprehensive overview of the measures it contains for implementing the mitigation measures recommended in the environmental assessment.

.5 The actions included in the environmental protection plan shall be presented at a level of detail commensurate with the environmental issues and required construction tasks.

.6 The environmental protection plan must include:

.1 Names of the individuals responsible for ensuring adherence

to the plan;

.2 the drawings showing the locations of temporary excavations or embankments for haul roads, stream crossings, materials, structures, sanitary facilities, stockpiles of excess or spoil materials; the drawings illustrating the methods to control runoff and to contain materials on site;

.3 An emergency spill control plan including procedures, instructions, and reports to be used in the event of the unforeseen spill of a regulated substance;

.4 A non-hazardous solid waste disposal plan identifying methods and locations for disposal of solid waste and clearing debris;

.5 An air pollution control plan detailing provisions to ensure that dust, debris, materials, and trash do not become airborne and exit the project site;

.6 a waste water management plan, identifying the methods and procedures for management or discharge of waste water directly derived from construction activities, such as concrete curing water, cleanup water, dewatering of ground water, disinfection water, hydrostatic test water and water used in flushing of lines;

1.4 FIRES

.1 Fires and burning of rubbish on the work site are prohibited.

1.5 DRAINAGE

.1 Provide the drainage and pumping necessary to keep the excavations and the site dry.

.2 Ensure that water pumped toward a stream, a sewer system or a disposal or drainage system contains no suspended solids.

.3 Ensure that water containing suspended solids or harmful substances is evacuated or eliminated according to the requirements of the local authorities.

1.6 CLEARING OF THE SITE AND PROTECTION OF PLANTS

.1 Protect trees and plants on site and adjacent properties as indicated.

.2 Wrap in burlap the trees and shrubs adjacent to the construction site, the storage areas and the trucking lanes. Encase trees and shrubs with a protective wood framework of a height at least 2 m from ground level.

.3 During the excavation and earthwork, protect the roots of the designated trees up to the drainage line to prevent disturbance or damage. Avoid any unnecessary traffic and unloading or storage of material over the root zones of the protected trees.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas designated by the Departmental Representative.

1.7 POLLUTION PREVENTION

.1 Maintain the temporary erosion and pollution control features installed under this contract.

.2 Control emissions from equipment and tools in compliance with local authorities' requirements.

.3 Prevent sandblasting material and other extraneous materials from contaminating the air and the waterways beyond the application area.
.1 Provide temporary enclosures to prevent the sandblasting materials and other foreign material from contaminating the air beyond the application area.

.4 Wet down dry materials and cover rubbish to prevent blowing dust or debris. Provide dust control for temporary roads.

.5 Clean the temporary work and storage area adequately and regularly.

1.8 NON-COMPLIANCE NOTIFICATION

.1 A written notice of non-compliance shall be issued to the Contractor by the Departmental Representative for every observed non-compliance with a federal, provincial or municipal act, regulation or permit, or with any other element of the environmental protection plan implemented by the Contractor.

.2 Upon receipt of a non-compliance notice, the Contractor must propose corrective measures to the Departmental Representative, to be implemented upon approval.
.1 The Contractor must wait for written approval from the Departmental Representative before implementing the proposed measures.

.3 The Departmental Representative will order the stoppage of all work until satisfactory corrective action is taken.

.4 No additional time or adjustments shall be granted for a work stoppage.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 CLEANUP

.1 Perform cleanup operations in accordance with Section 01 74 11 – Cleanup.

.2 Waste management: Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.3 Bury waste materials on site only after receiving written authorization from the Departmental Representative.

.4 Ensure that public waterways and storm and sanitary sewers remain

free of waste and volatile materials disposal.

3.2 TRANSPORTATION OF MATERIAL

.1 Transportation of materials to the work site on public roads can be done between 7 a.m. and 6 p.m.

.2 Ensure that the trucks used are in good working order. Any trucks or other methods of transport operating at a noise level deemed above the normal limits by the Departmental Representative must stop transporting materials or be repaired to make them acceptable.

.3 Respect the rules in place regarding load limits and speed limits in residential areas.

.4 Use appropriate signage and cooperate with the municipality, the Departmental Representative and the other relevant authorities to minimize the impact of transport on the lives of those living near the truck routes and the work site.

.5 Use a tarpaulin to cover granular material during transportation.

.6 Limit traffic for the transportation of material to roads and areas identified in these specifications.

.7 Maintain the roads used in good condition at all times and take the necessary measures to ensure they can be safely used and crossed by other users.

.8 Upon work completion, promptly restore the roads to a condition that is at least equal to their original state.

1 Description

.1 The geometric dimensions of the daymark will depend on the installation site. They are specified on the plans appended to these specifications.

.2 Daymark erection plans are included in Appendix 9.

2 Daymark

.1 The daymark will be provided by the Departmental Representative.

3 Mount assembly

.1 Assemble the daymark mount on the ground as detailed in the erection plans.

.2 For any daymark geometric position, the horizontal shaped conductors must be on top.

.3 The daymark shall be installed as shown in Appendix 9 (back light). Note that the 08809 series plans represent front light daymarks. Back light daymarks shall be inverted top-down. Holes were aligned for daymark installation in either direction.

4 Mount installation

.1 Secure the daymark mount to the tip of the structure. The daymark and tower tips shall be at same level. The daymark shall be installed on the side with the same azimuth as the side of the existing daymark structure to be dismantled.

.2 Use the bolting parts supplied by the Departmental Representative. If additional units are required, supply grade 316 stainless steel parts.

.3 No drilling in structure members will be accepted without prior approval from the Departmental Representative.

5 Lath installation

.1 With the mount secured to the tower, bolt the aluminium laths to the mount as detailed in the drawings.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

1.2 INSPECTION

.1 The Departmental Representative shall have access to the work. If part of the work is performed off site, ensure that the Departmental Representative has access to this work as well throughout its entire duration.

.2 Give timely notice requesting any inspections, approvals or special testing required by the Departmental Representative or by local regulations governing the site.

.3 If the Contractor covers or allows the covering of work prior to the conduct of the required inspections, approvals or special testing, the Contractor shall uncover such work and submit it to the required inspections, approvals or special testing to the satisfaction of the appropriate authorities and make good such work.

.4 The Departmental Representative may order an inspection of any part of the work suspected to be non-compliant with the contract documents. If inspection finds such work to be non-compliant with the drawings to be produced in the "Design" phase of this mandate, the Contractor shall take necessary measures to make good such work and pay inspection and repair costs. If such work is found to be compliant with the contract documents, the Departmental Representative will bear the incurred inspection and restoration costs.

1.3 INDEPENDENT TESTING AND INSPECTION AGENCIES

.1 The Departmental Representative will be in charge of retaining the services of independent testing and inspection agencies. The Departmental Representative will assume the cost of these services.

.2 The Contractor shall provide the hired agencies with equipment required to conduct their testing and inspections.

.3 The hiring of testing and inspection agencies does not relieve the Contractor of its responsibility to perform the work in compliance with the contract documents.

.4 If defects are revealed during testing and/or inspection, the hired agency will request further inspection and/or testing to ascertain the precise nature and full degree of such defects. The Contractor shall correct any defects and imperfections as per the instructions of, and at no extra cost to, the Departmental Representative, and shall pay the ensuing retesting and reinspection costs.

1.4 SITE ACCESS

.1 Allow inspection and testing agencies to have access to the site and to off-site manufacturing and fabrication shops.

.2 Cooperate with such agencies and take all reasonable measures to provide the access they require.

1.5 PROCEDURE

.1 Give advance notice to the appropriate agency and the Departmental Representative of any required testing so that all involved parties can be present for testing.

.2 Submit the samples and/or materials/equipment required for testing, compliant with plan specifications and related standards, within a reasonable timeframe and in the predetermined order to avoid work slowdown.

.3 Provide the labour and facilities necessary to collect and handle samples, materials and equipment on site. Also provide the space required to store and process samples.

1.6 REJECTED STRUCTURES OR WORK

.1 Remove defective work items, even when built into the work, when the Departmental Representative finds and rejects such work items as non-compliant with the contract documents as a result of inconsistency with best practices or the use of defective materials or products. Replace or redo such items in keeping with the requirements set out in the contract documents.

.2 Make good any other contractors' work damaged during such refit or replacement work.

.3 If the Departmental Representative deems it inexpedient to repair defective work or work non-compliant with contract documents, the Contracting Authority shall deduct from the contract price the difference in value between the work performed and the work required by the contract documents, with the amount of such difference to be determined by the Departmental Representative.

1.8 REPORTS

.1 Submit one hard copy and one electronic copy by email of testing and inspection reports to the Departmental Representative.

.2 Provide copies of these reports to the subcontractors who performed the work tested or inspected and, as per the "Manufacture" phase of this mandate, to the manufacturer or builder of the materials tested or inspected.

1.9 TESTING AND MIX DESIGN

.1 Provide the required test and mix design reports.

.2 Testing and mix design costs beyond those required by the drawings to be produced in the "Design" phase of this mandate or by local regulations governing the site shall be submitted for the Departmental Representative's approval, and may subsequently be eligible for reimbursement.

1.10 WORK SAMPLES

.1 Prepare work samples in accordance with work-related standards and as specifically indicated on the drawings to be produced in the "Design" phase of this mandate. The requirements in this section apply to all sections of these specifications requiring work samples.

.2 Prepare work samples for the Departmental Representative's approval within a reasonable timeframe and in the predetermined order to avoid work slowdown.

.3 A delay in work sample preparation is insufficient grounds for an extension of the work schedule, and no such request will be accepted.

.4 When needed, the Departmental Representative will assist the Contractor in establishing a work sample preparation schedule.

.5 Work samples may be part of the finished work.

1.11 SHOP TESTING

.1 Submit shop test certificates as per the drawings to be produced in the "Design" phase of this mandate, and those prescribed by work-related standards.

1.12 MATERIALS, EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical and electrical systems, and grounding.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work

1.2 REFERENCES

1.3 SETUP AND REMOVAL OF EQUIPMENT

.1 Provide the necessary means for using temporary utility services to allow for prompt performance of the work.

.2 Dismantle and remove equipment off site when no longer needed.

1.4 LAND DRAINAGE

.1 Provide temporary pumping and drainage facilities to keep excavations and land clear of stagnant water.

1.5 EXISTING UTILITY SERVICE (AIDS TO NAVIGATION)

.1 Within the context of marine traffic coordination, service interruption is defined as any obstacle to the uninterrupted visibility of the aid to navigation caused by the Contractor's activities. Permanent service interruption, between the moment when the light is disconnected and the moment when the new permanent tower is recommissioned (including lights and daymark), shall last no more than thirty (30) calendar days. The Contractor shall notify the Canadian Coast Guard forty-eight (48) hours before completion of each phase to allow for effective marine traffic management. The notice shall include the name and number from the list of lights, the contract and the work description.

1.6 TEMPORARY STRUCTURE

.1 The structure shall be approved by the Departmental Representative and shall be able to sustain the electric navigation light throughout the demolition and structure reconstruction work. The temporary structure height is 33.33 m.

.2 The structure shall be designed by a professional engineer who is a member of the Ordre des ingénieurs du Québec, and comply with safety standards. Prior to erection, provide the Departmental Representative with plans signed and sealed by an engineer.

.3 Temporary structure installation work shall not obstruct visibility of the

navigation light, which will remain in service throughout this work.

.4 The structure shall be securely installed, stable and guyed if necessary. The Departmental Representative will visit the site to approve the tower as safe for departmental staff to climb, if required. Notify the Departmental Representative seven (7) days in advance for light alignment.

.5 Prior to commissioning the navigation light on the temporary structure, the Contractor shall notify the Departmental Representative, who will have the alignment checked. Notify the Departmental Representative seven (7) days in advance for light alignment.

.6 The Contractor shall have the capacity to install the existing light at the tip of the tower and to access it in case of failure.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 56 00 – Temporary Access and Safety Structures

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood
- .2 CAN/CGSB 1.59-[97], Alkyd Exterior Gloss Enamel

.2 Canadian Standards Association (CSA International)
- .1 CSA-A23.1/A23.2-[04], Concrete Materials and Methods of Concrete Construction / Methods of Test and Standard Practices for Concrete
- .2 CSA-O121-[M1978(R2003)], Douglas Fir Plywood
- .3 CAN/CSA-S269.2-M87(R2003), Access Scaffolding for Construction Purposes
- .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Workplace

1.3 SETUP AND REMOVAL OF EQUIPMENT

.1 Supply, set up or outfit site facilities required for prompt execution of the work.

.2 Dismantle and remove equipment off site when no longer needed.

1.4 SCAFFOLDING

.1 Scaffolding: compliant with CAN/CSA-S269.2

.2 When required, supply and maintain scaffolding, access ramps, ladders, platforms and temporary stairs required for execution of the work.

1.5 HOISTING EQUIPMENT

.1 When required, supply, install, maintain and operate winches and cranes required for moving workers, materials and equipment. Make necessary financial arrangements with subcontractors for their use of hoisting equipment.

.2 Winches and cranes shall be operated by qualified operators.

1.6 ON-SITE STORAGE/ALLOWABLE LOADS

.1 Ensure that work is performed within the scope of the contract documents. Do not unreasonably obstruct the premises with materials and equipment.

.2 Do not overload or allow overloading of any part of the structure to avoid compromising its integrity.

1.9 ON-SITE PARKING

.1 Parking will be permitted on site provided it does not interfere with execution of the work.

.2 Lay out and maintain adequate access roads to the site.

.3 Lay out adequate temporary access roads and ensure snow removal throughout the work.

.4 If permitted to use existing roads to access the site, maintain them throughout the work and, if necessary, repair any damage that may be caused to them.

1.10 OFFICES

.1 The contract does not require an on-site office for the Departmental Representative.

.2 Provide a marked and fully stocked first aid kit stored in an easy access location.

1.11 MATERIALS, EQUIPMENT AND TOOL STORAGE

.1 Supply and keep clean and orderly lockable weatherproof sheds for storage of materials, equipment and tools.

.2 Leave on-site materials and equipment not requiring storage in weatherproof sheds and ensure that their hindrance to the flow of operations is minimal.

1.13 SANITARY FACILITIES

.1 Provide workers with sanitary facilities compliant with applicable orders and regulations.

.2 Post required notices and take all precautions required by local sanitation authorities. Keep premises and area clean.

1.14. WATER SUPPLY

.1 Provide water supply necessary for the execution of the work, including drinking water.

1.15 TRAFFIC SAFETY AND MANAGEMENT

.1 The Contractor's rolling stock for hauling materials and equipment to and from the site shall interfere as little as possible with road traffic.

.2 Check the adequacy of existing roads and their authorized load limits. The Contractor shall repair damage to roads caused by construction.

.3 Lay out necessary access and work site roads.

.4 Lay out work site roads of suitable grades and widths, avoiding sharp curves, blind corners and dangerous intersections.

.5 Take necessary dust control measures to ensure safe flow of operations at all times.

.13 Provide snow removal throughout the work.

.14 Upon completion of the work, dismantle work site roads designated by the Departmental Representative.

1.16 CLEANUP

.1 Remove debris, waste and packaging materials from the site on a daily basis.

.2 Remove dust and mud from permanently surfaced roads.

.3 Store salvageable materials and equipment recovered during demolition work.

.4 Do not store new or recovered materials and equipment in site facilities.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 52 00 – Site installation

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.
- .2 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)
- .1 CSA-O121-[M1978(R2003)], Douglas Fir Plywood.

.3 Public Works and Government Services Canada (PWGSC), Standard Acquisition Clauses and Conditions (SACC) - ID: R2002D, Title: General conditions "C," in effect from May 14, 2004.

1.3 SETUP AND REMOVAL OF EQUIPMENT

.1 Supply, set up or outfit the temporary access and protection structures required for prompt execution of the work.

.2 Dismantle and remove equipment off site when no longer needed.

1.4 HOARDING

.1 Erect a temporary site enclosure using a new 1.2 m high snow fence wired to T-posts spaced at 2.4 m on centre. Provide one (1) lockable truck gate.

.2 Place fences around trees and vegetation to be left in place to protect them from damage by equipment or construction procedures.

1.5 ACCESS TO SITE

.1 Construct the roads, paths, ramps and pedestrian crossings necessary to access the site.

1.6 SNOW REMOVAL

.1 For the duration of the contract, provide any necessary snow removal for the access road, as well as the work and storage areas.

.2 Removal and disposal of snow shall be performed in accordance with current federal, provincial and municipal laws and regulations.

1.7 EMERGENCY VEHICLE ACCESS

.1 Provide an access road for emergency vehicles, allowing for sufficient overhead clearance.

1.8 PROTECTION FOR SURROUNDING PUBLIC AND PRIVATE PROPERTIES

.1 Protect the surrounding public and private properties from damage during performance of work.

.2 If necessary, assume full responsibility for damages.

1.9 PROTECTION OF FINISHED SURFACES OF THE BUILDING

.1 Protect the material as well as the finished or partially finished structure surfaces during performance of the work.

.2 Assume full responsibility for damage to the structures due to a lack of, or improper, protection.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section [_____].

1.2 REFERENCES

.1 References to relevant standards are made in each section of these specifications.

.2 Where doubt exists about whether certain products or systems adhere to relevant standards, the Departmental Representative reserves the right to verify them through testing.

.3 If the products or systems comply with contract documents, the costs associated with those tests will be covered by the Departmental Representative; otherwise, they shall be covered by the Contractor.

1.3 QUALITY

.1 The products, materials, equipment, devices and parts used to perform the work shall be new, in perfect condition and of the highest quality for the purposes for which they are intended. As needed, provide proof of the nature, source and quality of the supplied products.

.2 The procurement policy aims to acquire, at a minimal cost, articles containing the highest possible percentage of recycled and reclaimed materials, all while maintaining satisfactory levels of competitiveness. Make reasonable efforts to use recycled products/materials in both building the structure and performing the work.

.3 Products found to be defective before the end of the work will be refused, regardless of the findings of previous inspections. Inspections are not carried out with the intention of relieving the Contractor of its responsibilities, but rather to reduce the risk of omission or error. The Contractor shall remove and replace defective products at its own expense, and will be responsible for any delays or costs incurred as a result.

.4 In case of conflict regarding product quality or suitability, only the Departmental Representative may settle the issue on the basis of the contract document requirements.

.5 Unless otherwise indicated in the specifications, provide a certain degree of uniformity by ensuring that materials or items of the same type come from the same manufacturer.

.6 Permanent identification plates, labels and trademarks visibly appearing on products are not acceptable, unless they provide

operating instructions or are affixed to materiel installed in mechanical or electrical rooms.

1.4 EASE OF OBTAINING PRODUCTS

.1 If the Departmental Representative has not been advised of foreseeable delivery delays at the beginning of the work, and if it appears likely that performance of the work will be delayed as a result, the Departmental Representative reserves the right to substitute those products with other comparable products that can be delivered faster without an increase in the contract price.

1.5 PRODUCT STORAGE, HANDLING AND PROTECTION

.1 Store and handle products in such a way as to avoid damaging, altering or soiling them and do so in accordance with the manufacturer's instructions, as appropriate.

.2 Store bundled or clustered materials in their original packaging, and leave factory packaging, labels and seals intact. Do not open, unwrap or untie products until they are ready to be used in the project.

.3 Products susceptible to damage in bad weather shall be stored in a weatherproof enclosure.

.4 Water-based binders shall not be placed directly on the ground or on concrete floors, nor in contact with walls.

.5 Keep clean and dry sand intended to be used in mortar or grout. Store it on wooden pallets and cover it with waterproof tarps in bad weather.

.6 Place construction lumber as well as sheet material and panelling on flat, rigid supports so that they do not rest directly on the ground. Place such materials on a gentle slope to encourage condensation water to run off.

.7 Store and mix paint products in a heated, well-ventilated area. Every day, remove oily rags and other flammable waste from work sites. Take all necessary precautions to avoid the risk of spontaneous combustion.

.8 Replace damaged products at no extra charge, to the Departmental Representative's satisfaction.

.9 Touch up factory-finished surfaces that have been damaged to the Departmental Representative's satisfaction. When touching up, use products identical to those used in the original finish. Identification plates shall not have finishing product applied or be touched up.

1.6 TRANSPORTATION

.1 Pay the transportation costs for products required for the performance of the work.

.2 Transportation costs for products supplied by the Department are included in the bid and are a part of the contract. Unload, handle and store these products.

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in the plan specifications, install or set up products according to the manufacturer's instructions. Do not rely on instructions that appear on labels or containers that come with the products. Obtain a copy of the written instructions directly from the manufacturer.

.2 Notify the Departmental Representative in writing of any discrepancies between the plan specifications and the manufacturer's instructions so that the Departmental Representative can take appropriate action.

.3 If the manufacturer's instructions have not been followed, the Departmental Representative may require that the incorrectly installed or set up products be removed and reinstalled without an increase in the contract price.

1.8 WORK PERFORMANCE QUALITY

.1 Implementation shall be of the highest possible quality, and the work shall be completed by tradespeople skilled in their respective disciplines. Advise the Departmental Representative if the work to be done will likely not achieve the expected results.

.2 Do not hire unqualified workers or workers without the capacity required to perform the tasks expected of them. The Departmental Representative reserves the right to prohibit site access to all persons deemed to be incompetent or negligent.

.3 Only the Departmental Representative can settle disputes concerning work performance quality and the skills of the workforce, any such decision being final.

1.9 COORDINATION

.1 Ensure that workers work together in carrying out the project. Oversee their work closely and continuously.

.2 It is up to the Contractor to coordinate work and install trenches, sleeves and accessories.

1.10 ITEMS TO BE CONCEALED

.1 Unless otherwise indicated, conceal pipes, ducts and power cables in trenches.

.2 Before concealing the items, inform the Departmental Representative of any abnormal situations. Complete the installation according to the

Departmental Representative's instructions.

1.11 REFURBISHMENT WORK

.1 Carry out refurbishment work required to repair or replace structure parts or materials found to be defective or otherwise unacceptable. Coordinate work to be done on adjacent affected structures, as needed.

.2 Refurbishment work shall be performed by specialists who are familiar with the materials in use; these tasks shall be carried out such that no part of the structure is damaged or is at risk of being damaged.

1.12 EQUIPMENT LOCATION

.1 Inform the Departmental Representative of any problems that may be caused by the choice of equipment location and proceed with the installation according to the latter's instructions.

1.13 FASTENERS – GENERAL INFORMATION

.1 Unless otherwise indicated, provide accessories and metal fasteners of the same texture, colour and finish as the component being fastened.

.2 Avoid all electrolytic action between metals or materials of varying types.

.3 Unless the drawings to be produced in the "Design" phase of this mandate require the use of stainless steel fasteners or fasteners made of another type of material, use corrosion-resistant, hot-dipped galvanized steel fasteners and anchors to fasten exterior structures.

.4 It is important to determine the spacing of anchors bearing in mind load limits and shear strength for strong, permanent anchoring. Wooden dowels and dowels made of any other organic material are not acceptable.

.5 Use the least possible number of visible fasteners, space them out evenly and install them with care.

.6 Fasteners that may cause crumbling or cracking of the component to which they are anchored will be refused.

1.14 FASTENERS – MATERIALS

.1 Use fasteners with standard commercial shapes and dimensions, made of appropriate material and with a finish appropriate for the intended use.

.2 Unless otherwise indicated, use heavy-duty fasteners of semi-fine quality with a hexagonal head. Use 304 stainless steel parts for exterior

installations.

.3 Bolt stems shall not exceed the top of the nut by more than their diameter.

.4 Use plain washers on equipment and materials and locking plate washers with soft substrate for areas where there are vibrations. To secure equipment and materials to stainless steel components, use resilient washers.

1.15 PROTECTING WORK IN PROGRESS

.1 Do not overload any part of the structure. Unless otherwise indicated, obtain written authorization from the Departmental Representative before cutting or piercing framework or running a sleeve through it.

1.16 EXISTING UTILITY NETWORKS

.1 When making connections to existing networks, carry out this work during hours set by the appropriate local authorities with as little interference as possible with the work in progress.

.2 Protect or move operational utility lines or maintain them in service. If pipes are discovered during the work, cap them in a manner approved by the responsible authorities, and flag and make note of the capped areas.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 – Environmental Protection

.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 SITE CLEANLINESS

.1 Keep site clean and free of accumulated debris and waste materials.

.2 Remove debris and waste materials from the site at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site.

.3 Keep access to building cleared of ice and snow. Bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from the appropriate authorities for disposal of debris and waste materials.

.5 When required, provide on-site containers for disposal of debris and waste materials.

.6 Provide and use separate marked bins for recycling. Refer to Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.7 Dispose of debris and waste materials in designated unloading areas.

1.3 FINAL CLEANUP

.1 Upon substantial completion of the work, remove excess materials, tools, and construction equipment and machinery not required for the performance of remaining work.

.2 Remove debris and waste materials, and leave premises clean and suitable for occupancy.

.3 Prior to final inspection, remove excess materials, tools, and construction equipment and machinery.

.4 Remove debris and waste materials.

.5 Remove waste materials off site at regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site.

.6 Make arrangements with and obtain permits from the appropriate authorities for disposal of debris and waste materials.

.7 Remove dirt and other elements marring exterior surfaces.

.8 Sweep and clean permanently surfaced areas.

.9 Remove snow and ice from access roads to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 WASTE MANAGEMENT OBJECTIVES

.1 Before work begins, meet with the Departmental Representative to review PWGSC's waste management plan and objectives.

.2 PWGSC's waste management objective is to reduce the total flow of construction/demolition waste to landfills by 75 percent. Provide the Departmental Representative with documents certifying that comprehensive measures and procedures for waste management, recycling, and reuse/repurposing of recycled and reused materials have been implemented.

.3 Exercise maximum control over solid construction waste.

.4 Protect the environment and prevent pollution and environmental impacts.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 35 43 – Environmental Protection

.3 Section 01 74 11 – Cleanup

1.3 REFERENCES

.1 Canada Green Building Council (CaGBC), LEED Canada-NC Green Building Rating System for New Construction & Major Renovations, version 1.0, December 2004

1.4 DEFINITIONS

.1 Class III non-hazardous materials: Construction, renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): Plan based on WRW data intended to keep track of the economic aspect of waste management methods used.

.3 Demolition Waste Audit (DWA): Applies to waste actually generated by the work.

.4 Discharge - inert waste: Concrete and asphalt materials exclusively.

.5 Materials Source Separation Program (MSSP): Sorting activities,

directly on the work site, for reusable and recyclable waste, designed to ensure the classification of waste into the appropriate categories.

.6 Recyclable: Ability of a product or material to be recovered at end of its life cycle and re-manufactured into a new product for reuse/repurposing.

.7 Recycle: To collect or process waste and used materials in order to reintroduce them as new products into a consumption cycle.

.8 Recycling: Process of sorting, cleaning, processing and reconstituting solid waste and other discarded materials so that they can be used in a form different from their original form. Recycling does not include combustion, incineration or thermal destruction of waste.

.9 Reuse/repurposing: Repeated use of products or materials in their original form for similar (repurposing) or different (reuse) uses. Reuse and repurposing include the following:
.1 The recovery for reuse/repurposing of products and materials generated by the retrofitting of a structure or facility, prior to their demolition, for the purpose of their resale, reuse or repurposing within the same project or storage for later use.
.2 Returning to suppliers products and materials that can be reused or repurposed, such as pallets and unused products.

.10 Recovery: Removal of load bearing and non-load bearing construction components and materials during deconstruction or dismantling of industrial, commercial or institutional structures for reuse/repurposing or recycling.

.11 Sorted waste: Waste already sorted by type.

.12 Sorting at source: Separation of different types of waste products and materials from the moment they become waste.

.13 Waste Audit (AD): Detailed inventory of products and materials that go into a building. The WA includes assessing the volume and mass, the quantities of waste materials and the waste generated by construction, renovation, deconstruction or demolition. The quantities of materials reused/repurposed, recycled and sent to the landfill shall be listed separately (Appendix A).

.14 Waste Management Coordinator (WMC): Representative of the Contractor responsible for supervising waste management activities and coordinating requirements relating to reports, documents and samples to be submitted.

.15 Waste Reduction Workplan (WRW): A written document that discusses waste reduction, reuse or recycling opportunities (Appendix B). The WRW is based on data provided on the waste checklist (Appendix A).

1.5 DOCUMENTS

.1 Keep a copy of the following documents at the work site:
.1 Waste Audit

.2 Waste Reduction Workplan
.3 Materials Source Separation Program
.4 Appendices [A] [B] [C] [D] [E] for the project

1.6 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

.2 Prepare and submit the following before the start of work:
.1 Two (2) copies of the Waste Audit (WA, Appendix A)
.2 Two (2) copies of the Waste Reduction Workplan (WRW, Appendix B)
.3 Two (2) copies of the Demolition Waste Audit (DWA, Appendix C)
.4 Two (2) copies of the Cost/Revenue Analysis Workplan (CRAW, Appendix D)
.5 Two (2) copies of the Materials Source Separation Program (MSSP) description

.3 Submit, before final payment, a summary of waste recovered for reuse/repurposing, recycling or disposal, supported by a deconstruction/disassembly audit.
.1 Failure to submit the required summary may cause the final payment to be withheld.
.2 Provide receipts, weigh tickets, bills of lading and the quantities and types of unsorted reused/repurposed waste materials collected on site and sorted or discarded off site.
.3 Indicate the quantity in tonnes and the number, type, size and destination of each waste material generated by the project that has been reused/repurposed, sold or recycled.
.4 For each waste material generated by the project and sent to the landfill or incinerated, indicate the quantity in tonnes and the name of the landfill, incinerator or transfer station.

1.7 WASTE AUDIT (WA)

.1 Perform the WA before work begins.

.2 Prepare the WA (Appendix A).

.3 The WA (Appendix A) shall include the percentage of recycled, reused/repurposed materials or products in the materials or products used.

1.8 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare the WRW before work begins.

.2 The WRW shall include the following, without limitation:
.1 Destination of waste materials listed
.2 Deconstruction/disassembly techniques and sequence
.3 Deconstruction/disassembly work schedule

.4 Location
.5 Safety measures
.6 Protection measures
.7 Specific indication of storage areas
.8 Waste material handling and removal details
.9 Quantities of waste materials to be recovered for reuse/repurposing and to be sent to the landfill

.3 Organize the WRW such that the various measures are ranked according to the 3R (reduction, reuse/repurposing and recycling) priorities in descending order of importance.

.4 Describe the waste management method in the plan.

.5 Based on the data listed in the WA, identify waste material reduction, reuse/repurposing or recycling opportunities.

.6 Post the WRW, or a summary of it, at the site in a location where the workers can read it.

.7 Set realistic waste reduction goals; identify existing constraints and develop strategies to eliminate them.

.8 Monitor waste reduction; produce a report and indicate the total volume of waste materials actually generated at the site as well as the operating cost.

1.9 DEMOLITION WASTE AUDIT (DWA)

.1 Prepare the DWA before work begins.

.2 Fill in the DWA (Appendix C).

.3 Provide an inventory of the quantities of waste materials to be recovered for reuse/repurposing, recycling or disposal.

1.10 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Prepare a CRAW (Appendix D).

1.11 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare the MSSP before work begins.

.2 According to the methods authorized by the Departmental Representative and with the latter's authorization, implement the MSSP for any waste generated by the work.

.3 Provide on-site facilities necessary to collect, handle and store the anticipated quantities of reusable/repurposable and recyclable waste materials.

.4 Supply containers in which reusable/repurposable and recyclable waste materials will be deposited.

.5 Place the containers in locations where it will be easy to deposit waste materials without hampering construction activities.

.6 Place waste materials sorted at one or more of the sites in a location where they will sustain the least possible damage.

.7 Waste materials shall be collected, handled and stored on site and disposed of in sorted condition.
.1 Recovered waste materials shall be transported [to the approved and authorized recycling facility] [to users of waste materials for recycling purposes].

.8 Waste materials shall be collected, handled and stored on site and disposed of in unsorted condition.
.1 Recovered waste materials shall be transported to [a site operating under a certificate of approval] [the facilities of the Contracting Authority].
.2 The waste materials shall be sorted into relevant categories for reuse/repurposing or recycling.

1.12 WASTE TREATMENT SITE

Ministère du Développement durable, de l'Environnement et de la Faune
Head office at 150 René-Lévesque Boulevard East
Québec City, Quebec G1R 4Y1
418-643-3127
1-800-561-1616

Conseil de la conservation et de l'environnement
800 D'Youville Place
19th Floor
Québec City, Quebec G1R 3P4
418-643-3818

1.13 MATERIALS STORAGE, HANDLING AND PROTECTION

.1 Store waste materials recovered for reuse/repurposing or recycling in locations indicated by the Departmental Representative.

.2 Unless otherwise indicated, waste materials that must be removed become the property of the Contractor.

.3 Undemolished framework components left in place shall be protected against movement and damage.

.4 Support structures affected by the work. If the building's safety may be compromised, stop work and immediately notify the Departmental Representative.

.5 Protect surface drainage structures to prevent them from being damaged or obstructed; protect electrical and mechanical facilities.

.6 Sort waste materials generated by the dismantling of structures and store them in designated areas.

.7 Prevent the contamination of waste material to be recovered and recycled, in accordance with the acceptance conditions of the designated facilities.
.1 It is recommended to sort waste material at the source.
.2 Remove unsorted waste materials and have them sorted at an off-site treatment facility.
.3 Provide a sorted waste materials waybill.

1.14 WASTE DISPOSAL

.1 The burial of waste or debris is prohibited.

.2 Disposal of waste, volatile materials, white spirits, hydrocarbons and paint thinner in a waterway, storm sewer or sanitary sewer is not permitted.

.3 Keep a log of construction waste, indicating the following information:
.1 The number and size of bins.
.2 The type of waste placed in each bin.
.3 The total tonnage of waste generated.
.4 The total tonnage of waste reused/repurposed or recycled.
.5 The destination of waste to be reused/repurposed or recycled.

.4 Recover waste materials as deconstruction/disassembly work proceeds.

.5 Prepare a project summary in order to monitor the destination and quantities of each type of waste material identified in the audit prior to deconstruction.

1.15 USE OF PREMISES AND FACILITIES

.1 Perform the work with as little disruption as possible to the normal use of the site.

.2 Implement provisional security measures approved by the Departmental Representative.

1.16 WORK TIMELINE

.1 Coordinate waste management with other activities to ensure an orderly work flow.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 SELECTIVE DEMOLITION

.1 Reuse/repurposing of building elements: This project was designed to meet the following requirements for the reuse/repurposing of building elements. Unless authorized by the Departmental Representative, the percentage of building elements conserved shall not be lower than that indicated on the drawings.

3.2 GENERAL

.1 Perform the work in accordance with the WRW.

.2 Waste that is not reused/repurposed, recycled or recovered shall be handled in accordance with relevant regulations and codes.

3.3 CLEANUP

.1 Once work is complete, remove tools and then waste. Leave the premises clean and tidy.

.2 Keep work areas clean during the work.

.3 Waste materials to be reused/repurposed or recycled shall be sorted at source and placed where indicated.

3.4 WASTE RECOVERY

.1 Based on the following list, sort waste materials from the general waste stream and put them in separate piles or containers, with the authorization of the Departmental Representative, in accordance with relevant fire safety regulations.
- .1 Identify containers or stockpiling areas.
- .2 Provide instructions on disposal practises.

.2 On-site sale of materials recovered for reuse/repurposing is permitted as long as it does not delay work performance.

.3 Demolition waste

Type of waste materials	Recommended percentage	Actual percentage of

	of waste recovery	waste recovery
Acoustic tiles	[50]	[_____]
Acoustic materials	[100]	[_____]
Textile floors	[100]	[_____]
Movable partitions	[80]	[_____]
Doors and frames	[100]	[_____]
Electrical equipment	[80]	[_____]
Furniture	[80]	[_____]
Marble pedestals	[100]	[_____]
Mechanical equipment	[100]	[_____]
Metal elements	[100]	[_____]
Rubble	[100]	[_____]
Wood components (uncontaminated	[100]	[_____]
Other		[_____]

.4 Construction waste

Type of waste materials	Recommended percentage of waste recovery	Actual percentage of waste recovery
Cardboard	[100]	[_____]
Plastic packaging	[100]	[_____]
Rubble	[100]	[_____]
Steel elements	[100]	[_____]
Wood components (uncontaminated	[100]	[_____]
Other		[_____]

3.5 WASTE AUDIT (WA)

Appendix A below, Waste Audit (AD), shall contain the following information: Column 1: waste category and physical description of the waste materials (clippings, clean drywall, etc.). Column 2: total amount of waste materials received by the Contractor (indicate units of measurement used). Column 3: estimation, as a percentage, of the amount of materials that constitute waste. Column 4: total waste (column 2 x column 3). Column 5: areas where the waste was generated. Column 6: total percentage of recycled materials in relation to the total amount of waste (column 4). Column 7: total percentage of recycled materials in relation to the total amount of waste.

.1 Appendix A – Waste Audit (WA)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Category of materials x	Quantity of materials x received (unit)	Estimated percentage of waste (unit)	Total quantity of materials x	Generation of materials x	Percentage of materials recycled	Percentage of materials reused / repurposed
Wood						

and
plastic
components
-
Description

Scraps
Warped vane

Plastic

packaging

Cardboard
packaging

Other

Door
and
window
components

-
Description

Painted
frames
Glass
Wood
elements
Metal
components

Other

3.6 WASTE REDUCTION WORKPLAN (WRW)

Appendix B below, Waste Reduction Workplan (WRW), shall contain the following information: Column 1: category and type of waste. Column 2: name of the persons responsible for WRW execution. Column 3: information in column 4 of Appendix A. Column 4: planned and actual quantities of waste reused/repurposed. Column 5: planned and actual quantities of waste recycled. Column 6: name of approved recycling facility.

.1 Appendix B

(1) Category of materials	(2) Persons responsible	(3) Total quantity of waste (units)	(4) Quantity of waste reused /	Quantity (5) Planned quantity of waste recycled	(6) Actual quantity	Destination

repurposed (unit)

(unit)

Wood and plastic components

Description

Scraps/ Clippings

Warped vane

Plastic packaging

Cardboard packaging

Other

Door and window components

Description

Painted frames

Glass

Wood elements

Metal elements

Other

3.7 DEMOLITION WASTE AUDIT (DWA)

Appendix C below, Demolition Waste Audit (DWA), shall contain the following information: Column 1: type of recovered waste materials. Column 2: quantity of materials listed in column 1 (use several columns as needed to identify demolition areas). Column 3: measurement unit used for column 2. Column 4: total amount of recovered waste materials. Column 5: cumulative volume of recovered waste materials. Column 6: total weight in kilograms. Column 7:

observations and hypotheses about the specified scrap materials.

.1 Appendix C – Demolition Waste Audit (DWA)

(1) Description of the materials	(2) Quantity	(3) Unity	(4) Total	(5) Volume (cumul.)	(6) Weight (cumul.)	(7) Observations and hypotheses
Wood elements						
Wooden posts						
Plywood components						
Baseboards - Wood						
Door joineries - Wood						
Storage furniture						
Doors and windows						
Conventional panels						
Conventional slabs						
Laminated wood						
Folding doors (closets)						
Panes						

3.8 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

Appendix D below, Cost/Revenue Analysis Workplan (CRAW), shall contain the following information: Column 1: type of recovered waste materials. Column 2: total amount of waste materials listed in column 1. Column 3: cumulative volume of recovered waste materials. Column 4: total weight in kilograms. Column 5: costs incurred due to disposal, marked by a minus (-) sign, or revenue resulting from the disposal, marked by a plus (+) sign. Column 6: subtotal of column 5, by category. Row 7: total of all entries in column 6. A negative result is a cost; a positive result is revenue.

.1 Appendix D – Cost/Revenue Analysis Workplan (CRAW)

(1) Description of the materials	(2) Total quantity by (unit)	(3) Volume (cumul.)	(4) Weight (cumul.)	(5) Cost/Revenue of disposal (+/-) $	(6) Subtotal category (+/-) $
Wood elements					
Wooden posts					
Plywood components					
Baseboards - Wood					
Door joineries - wood					
Storage furniture					$
Doors and windows					
Conventional panels					
Conventional slabs wood					
Folding doors - Closets					
Panes					$
		(7) Costs (-)/Revenue (+)			$

3.9 KEY FEDERAL AND PROVINCIAL AUTHORITIES ON ENVIRONMENTAL ISSUES

.1 Appendix E – Key Environmental Government Authorities

Province	Address	General Fax Information

Alberta	Alberta Environmental Protection Petroleum Plaza, South Tower 9915 - 108th Street Edmonton AB T5K 2G8	403-427-2739	
	Alberta Special Waste Management Corporation Pacific Plaza, Suite 610 10909 Jasper Avenue NW Edmonton AB T5J 3L9	403-422-5029	403-428-9627
British Columbia	Ministry of Environment, Lands and Parks 810 Blanshard Street, 4th Floor Victoria BC V8V 1X4	604-387-1161	604-356-6464
	Waste Reduction Commission Soils and Hazardous Waste 770 South Pacific Blvd., Suite 303 Vancouver BC V6B 5E7	604-660-9550	604-660-9596
Manitoba	Environment Manitoba Building 2,139 Tuxedo Avenue	204-945-7100	

	Winnipeg MB R3N 0A6	Clean Environment Commission,	204-326-2395 204-326-2472
	284 Reimer Avenue, Box 21420 Steinbach MB R0A 2T3		
New Brunswick	Department de of the Environment, 364 Argyle Street, PO Box 6000 Fredericton NB E3B 5H1	506-453-3700	506-453-3843
Newfoundland	Department of Environment Confederation Building, Box 8700, St. John's NL A1B 4J6	709-729-2664	709-729-1930
Northwest Territories	Department of Renewable Resources Scotia Centre Building, Box 21 5102 - 50 Avenue Yellowknife NT X1A 3S8	403-873-7420	403-873-0114
Nova Scotia	Department of the Environment, 5151 Terminal Road, 5th Floor Box 2107	902-424-5300	902-424-0503

	Halifax NS B3J 3B7		
Nunavut	Department of Sustainable Development Environmental Protection Service Box 1000, Station 1195 Iqaluit NU X0A 0H0	867-975-5910	
Ontario	Ministry of the Environment and Energy 135 St. Clair Avenue W. Toronto ON M4V 1P5	416-323-4321 800-565-4923	416-323-4682
	Environment Canada 94 Toronto ON	416-734-4494	
Prince Edward Island	Department of Environmental Resources 11 Kent Street, 4th Floor, PO Box 2000 Charlottetown PE C1A 7N8	902-368-5000	902-368-5830
Québec	Ministère de l'Environnement et de la Faune, Head Office: 150 René-Lévesque Blvd. East, Québec City QC	418-643-3127 800-561-1616	418-646-5974

	G1R 4Y1		
	Conseil de la conservation et de l'environnement 800 D'Youville Place, 19th Floor Québec City QC G1R 3P4	418-643-3818	
Saskatchewan	Saskatchewan Environmental and Resource Management 3211 Albert Street Regina SK S4S 5W6	306-787-2700	306-787-3941
Yukon	Yukon Renewable Resources PO Box 2703 Whitehorse YT Y1A 2C6	403-667-5683	403-667-3641

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 74 11 – Cleanup

.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
- .1 CCDC 2-[2008], Stipulated Price Contract
- .2 DOC 14-[2000], Design-Build Stipulated Price Contract

.2 *Canadian Environmental Protection Act* (CEPA)
- .1 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*, SOR/2008-197

1.3 ADMINISTRATIVE PROCEDURES

.1 Acceptance of work procedure
- .1 Contractor's inspection: The Contractor shall inspect the work, identify defects and failures, and make any necessary repairs for full compliance with the requirements set out in the contract documents.
  - .1 Notify the Departmental Representative in writing upon completion of the Contractor's inspection and submit a document certifying that corrections have been made.
  - .2 Subsequently request that the work be inspected by the Departmental Representative.
- .2 Departmental Representative's inspection
  - .1 The Departmental Representative will inspect the work jointly with the Contractor to identify defects and failures.
  - .2 The Contractor shall make corrections as required.
- .3 Completion of tasks: Submit a document written in French certifying that the following tasks have been completed:
  - .1 The work has been completed, inspected and deemed compliant with contract documents.
  - .2 Faults and defects identified during the inspections have been corrected.
- .4 Final inspection
  - .1 When all of the above-mentioned tasks have been completed, request a final inspection of the work jointly by the Departmental Representative and the Contractor.
  - .2 If the work is deemed incomplete by the Departmental Representative, complete the outstanding items and request another inspection.

1.4 FINAL CLEANUP

.1 Perform cleanup operations in accordance with Section 01 74 11 – Cleanup.
.1 Remove surplus materials, waste, tools and equipment from the site.

.2 Waste management: Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 45 00 – Quality Control

1.2 REFERENCES

.1 *Canadian Environmental Protection Act* (CEPA)

.1 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*, SOR/2008-197

1.3 ADMINISTRATIVE PROCEDURES

.1 Meeting on warranties, prior to completion of work.

.1 One (1) week prior to completion of work, hold a meeting with the Contractor's representative and the Departmental Representative, during which the following will be assessed:

.1 Project requirements

.2 Manufacturer's installation instructions and terms of the warranty offered by the manufacturer

.2 The Departmental Representative will establish the communication procedure to be followed in the cases listed below.

.1 Notice of default for items, equipment or systems under warranty.

.2 Determination of priorities with respect to default types.

.3 Determination of a reasonable response time.

.3 Provide the name, address and telephone number of the bonded company responsible for performing troubleshooting/repairs under warranty.

.4 Ensure that the company's offices are located within the local service area of the item/work covered by the warranty, that resource people are available at all times and that they are able to follow up on requests for information on troubleshooting/repairs under warranty.

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/ INFORMATION

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

.2 Two (2) weeks prior to substantial completion of the work, submit to the Departmental Representative two (2) final copies of the operating and maintenance manuals in French.

.3 Materials and replacements, special tools and spare parts supplied

shall be of the same production quality as products used for the execution of the work.

.4 Upon request, provide documents confirming the type, source of supply and quality of products supplied.

1.5 PRESENTATION

.1 Present data in the form of an instruction manual.

.2 Use 3-ring (D-ring) hardback vinyl sleeved spine binders, with 219 mm x 279 mm loose-leaf sheets.

.3 If multiple binders are needed, group the data in a logical order.
.1 Clearly indicate the contents of the binders on the back of each one.

.4 On the cover page of each binder, indicate the name of the document (e.g., "Project File"), typewritten or in block letters, as well as the name of the project and the table of contents.

.5 Provide a tab divider for each product and system. A product description and a list of the main pieces of equipment shall be typed on the tab.

.6 The text shall consist of printed data supplied by the manufacturer, or of typed data.

.7 Supply drawings on a reinforced, perforated tab.
.1 Insert them into the binder and fold large drawings according to the size of the pages containing text.

.8 Provide CAD files to scale [1:1], in dwg format.

1.6 PROJECT FILE CONTENT

.1 Table of contents for each volume: Indicate the project name;
.1 Indicate the date of submission of documents;
.2 Indicate the name, address and telephone number of the Consultant and the Contractor and the names of their representatives;
.3 Provide a list of products and systems, indexed based on the contents of the volume.

.2 For each product or system, indicate the following:
.1 name, address and telephone number of subcontractors and suppliers, as well as local distributors of materials and spare parts.

.3 Datasheets: Mark each sheet so that the specific products and parts, as well as installation data, can be clearly identified; delete all irrelevant information.

.4 Drawings: Drawings are used to complement the datasheets and to illustrate the relationship between the various elements of the equipment and systems; they include control and block diagrams.

.5 Typed text: As required, to complete the datasheets.
.1 Provide instructions in a logical order for each procedure, incorporating the manufacturer's instructions specified in Section 01 45 00 – Quality Control.

1.7 DOCUMENTS AND SAMPLES TO BE INCLUDED IN THE PROJECT FILE

.1 In addition to the documents mentioned in the general conditions, keep on site for the Departmental Representative a copy or a set of the following documents:
.1 Contract drawings
.2 Specifications
.3 Addenda
.4 Change orders and other contract amendments
.5 Revised shop drawings, datasheets and samples
.6 Records of tests performed on site
.7 Inspection certificates
.8 Certificates issued by manufacturers

.2 Keep project documents clean, dry and legible.
.1 Do not use them as project implementation documents.

.3 The Departmental Representative shall have access to the project file documents and samples in order to perform inspections.

1.8 RECORDING DATA IN THE PROJECT FILE

.1 Record information on a set of opaque drawings with blue or black lines.

.2 Record information using felt tip markers, using a different colour for each major system.

.3 Record information as the work unfolds.
.1 Do not wrap up work until the required information has been recorded.

.4 Contract drawings and shop drawings: indicate all data to show the actual state of the work, including the following:
.1 The measured depth of foundation elements.
.2 The location, measured on horizontal and vertical planes, utility pipes and underground utilities relative to permanent surface facilities.
.3 The location of utility pipes and interior fixtures, measured with respect to visible and accessible construction elements.
.4 Changes made locally to dimensions and details of the work.
.5 Changes made following change orders.
.6 Details that do not appear on the original contract documents.
.7 References to shop drawings and related changes.

.5 Specifications: Indicate all data to show the actual state of the work, including the following:
.1 The manufacturer's name, the trademark and the catalogue

number for each product actually installed and, in particular, all optional items and replacement parts.
.2 Changes ensuing from addenda or change orders.

.6 Other documents: Keep manufacturers' certificates, inspection certificates and records of tests carried out on site, as specified in the drawings to be produced in the "Design" phase of this mandate or as prescribed in the project standards.

.7 Where appropriate, provide digital photos to be included in the project file.

1.9 MATERIALS AND SYSTEMS

.1 For each piece of equipment and system, provide a description of the whole and its constituent parts.
.1 Indicate the function, normal operating characteristics and constraints.
.2 Indicate the characteristic curves, with technical data and test results; also provide a complete list of replaceable parts and their commercial numbers.

.2 Provide lists of supply circuits (distribution panels), indicating the electrical characteristics, control circuits and telecommunications circuits.

.3 Provide colour-coded wiring diagrams for the installed hardware.

.4 Operating methods: Indicate the instructions and start-up, break-in and normal operating sequences, as well as the following instructions:
.1 Instructions pertaining to regulation, control, shutdown, decommissioning and emergency operations;
.2 Instructions pertaining to summer and winter operations and any other special instructions.

.5 Maintenance: Provide instructions on routine maintenance and troubleshooting as well as instructions for dismantling, repair and reassembly, alignment, adjustment, balancing and verification of elements and networks.
.6 Provide a list of original manufacturer parts as well as illustrations, drawings and assembly diagrams required for maintenance.

1.10 FINISHING MATERIALS AND PRODUCTS

.1 Building materials, finishing products and other products to be applied: Provide the datasheets and indicate the catalogue number, size, composition and designations of colours and textures of the products and materials.
.1 For the purpose of resupply, provide the necessary information regarding special products.

.2 Provide instructions on cleaning agents and methods and the recommended timeline for cleaning and maintenance, and indicate the precautions to be taken against harmful methods and hazardous

products.

.3 Water repellents and products exposed to bad weather: Provide the manufacturer's recommendations on cleaning agents and methods and the recommended timeline for cleaning and maintenance, and indicate the precautions to be taken against harmful methods and hazardous products.

.4 Additional requirements: In accordance with the requirements indicated on the drawings to be produced in the "Design" phase of this mandate.

1.11 WARRANTIES AND GUARANTEES

.1 Develop a warranty management plan containing any warranty-related information.

.2 Thirty (30) days before the warranty meeting prior to completion of the work, submit the management plan to the Departmental Representative for approval.

.3 The warranty management plan shall outline the actions and documents that will ensure that the Departmental Representative benefits from the warranties provided for in the contract.

.4 The plan shall be submitted in narrative form and shall contain sufficient details to be later used and understood by the staff responsible for maintenance and repairs.

.5 Record all information in a binder to be handed over at the time of work acceptance. Comply with the requirements below.
.1 Separate each warranty and guarantee using tab dividers labelled according to the content of the table of contents.
.2 Make a list of subcontractors, suppliers and manufacturers, indicating the name, address and telephone number of the designated representative for each one.
.3 Obtain two copies of the warranties and guarantees signed by the subcontractors, suppliers and manufacturers within ten (10) days of completion of the work concerned.
.4 Ensure that the documents are submitted in the prescribed form, contain all required information and are notarized.
.5 Countersign the documents to be submitted as necessary.
.6 Retain the warranties and guarantees until they are to be remitted.

.6 With the exception of elements commissioned with the authorization of the Contracting Authority, do not change the effective date of the warranty until the substantial completion date of the work has been determined.

.7 The warranty management plan shall include or indicate the following:
.1 Roles and responsibilities of individuals associated with the various warranties, including the points of contact and telephone numbers of persons in charge within the Contractor, subcontractor, manufacturer and supplier organizations participating in the work.

.2 List and progress status of the warranty certificates for items and batches covered by extended warranties and lightning protection systems.

.3 List of all materials, components, systems or batches of the work covered by a warranty as well as the information listed below for each one:

.1 Name of the component, equipment, system or batch;

.2 Model and serial numbers;

.3 Location;

.4 Name and telephone number of the manufacturers and suppliers;

.5 Name, address and telephone number of the distributors of spare parts and replacement materials/equipment.

.6 Warranties and their terms, including a general construction warranty of one (1) year. The components, materials, systems or batches covered by an extended warranty, as well as the expiration date of each, shall be indicated.

.7 References to warranty certificates, if applicable.

.8 Warranty effective date and expiry.

.9 Summary of maintenance activities to be performed for the warranty to be valid.

.10 References to relevant operating and maintenance manuals.

.11 Name and telephone number of the organization and people to call for warranty service.

.12 Typical response and repair/troubleshooting times anticipated for the various items under warranty.

.4 Expression of intent by the Contractor to be present for the required inspections nine (9) months after completion of the work.

.5 Procedure for labelling components, materials and systems covered by an extended warranty, and its progress status.

.6 Posted copies of operating and maintenance instructions near designated pieces of equipment whose operating conditions are significant for warranty or safety reasons.

.8 Quickly respond to any verbal or written request for troubleshooting/repair work required under warranty.

.9 All verbal instructions shall be followed by written instructions.

.1 The Departmental Representative may pursue legal action against the Contractor if the latter fails to meet its obligations.

1.12 WARRANTY LABELS

.1 At the time of installation, label each component, material or system covered by a warranty. Use durable, water- and oil-resistant labels approved by the Departmental Representative.

.2 Attach the labels using a copper wire and coat with impermeable silicone.

.3 Do not remove the date of receipt until the work is accepted for occupancy.

.4 The labels shall contain the following information and signatures:
- .1 Type of product/equipment
- .2 Model number
- .3 Serial number
- .4 Contract number
- .5 Warranty period
- .6 Inspector's signature
- .7 Contractor's signature

PART 2 – PRODUCTS

2.1 NOT APPLICABLE

.1 Not applicable.

PART 3 – EXECUTION

3.1 NOT APPLICABLE

.1 Not applicable.

PART 1 – GENERAL

1.1 SECTION CONTENTS

.1 Abridged version of Section 02 41 16 – Demolition of Structures, targeting the methods and procedures for the complete or partial demolition of the back light structure at Pointe à Basile, that is, removal of the daymark, complete dismantling of the existing structure, and complete demolition of the foundations of the existing structure.

1.2 RELATED SECTIONS

.1 Section 31 23 33.01 – Excavation, Trenching and Backfilling

.2 Section 03 33 00.01 – Cast-in-Place Concrete

.3 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.4 Section 01 35 43 – Environmental Protection

.5 Section 01 35 29.06 – Health and Safety

1.3 REFERENCES

.1 Canadian Standards Association (CSA) / CSA International

.1 CSA-S350-[M1980(R2003)], Code of Practice for Safety in Demolition of Structures

1.4 TRANSPORTATION, STORAGE AND HANDLING

.1 Waste management and disposal

.1 Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.5 EXISTING CONDITIONS AND SERVICE INTERRUPTION

.1 Begin demolition or removal of structures in the state they are in.

.2 The current structure is a 115 ft. steel latticework trapezoidal tower.

.3 The foundation to be demolished at the site of the Pointe à Basile NL (LLN1965) consists of four (4) concrete blocks (one under each foot of the tower). The volume is estimated at around 38 m^3 of reinforced concrete.

.4 If a material resembling asbestos applied by spraying or with a trowel, or resembling other materials designated and listed as hazardous, is

discovered during execution of the work, work shall be suspended, appropriate precautions shall be taken and the Departmental Representative shall be notified immediately.
.1 Do not resume work until written instructions have been received from the Departmental Representative.

.5 Inform the Departmental Representative forty-eight (48) hours before interrupting aid to navigation services. In this case, service interruption is defined as any obstacle to the uninterrupted visibility of the aid to navigation caused by the Contractor's activities.

.6 Determine the nature, scope and inherent risks resulting from the project's dismantling and demolition work.

PART 2 – PRODUCTS

2.1 MACHINERY AND EQUIPMENT

.1 Turn off equipment, tools and machinery when not in use, unless extreme temperature conditions require uninterrupted operation.

.2 Demonstrate that the tools, equipment and machinery are used in a way that allows for materials to be recovered in their best possible condition.

.3 All materials ensuing from the demolition work, not reused and not recovered by the facility owner, that is, Fisheries and Oceans Canada, shall become the property of the Contractor, which shall dispose of them in accordance with Section 01 35 43 – Environmental Protection.

PART 3 – EXECUTION

3.1 PREPARATORY WORK

.1 Perform the work in accordance with Section 01 35 29.06 – Health and Safety.

.2 Protection
.1 Minimize dust and noise generated by the work as well as any inconveniences to occupants.
.2 Provide dust screens, tarps, railings, support components and other necessary protective devices.

.3 Disconnect electric network service lines. Put cautionary markings on pipes and electrical equipment that must remain powered during demolition work in order to supply other structures with power.

.4 Locate and protect utility pipes. Do not touch utility pipes that are in service or powered and that must not be moved.

3.2 DEMOLITION, RECOVERY AND DISPOSAL

.1 Dismantle the existing structure to allow for the construction of the new structure. Sort substances and materials, and divide them into separate piles according to whether they will be reused/repurposed or recycled.

.2 Refer to the requirements and drawings of the existing structure in Appendix 8 to determine which substances and materials are to be recovered for reuse/repurposing.

.3 Unless otherwise indicated, transfer the extracted substances and materials to the appropriate recycling facilities as required by the appropriate authorities.

3.4 DISPOSAL

.1 Identify the different piles by indicating the type and quantity of materials.

.2 Take appropriate safety measures and allocate adequate resources to prevent theft, vandalism and deterioration of the materials.

.3 Put the disposed materials in a place that will be suitable for their reuse/repurposing in new construction. Keep double handling to a minimum.

.4 Dispose of materials for which an environmentally friendly disposal method is required in a place that, firstly, will facilitate their removal from the site and their assessment by potential users interested in reusing/repurposing them and, secondly, will not impede their dismantling, processing or transport by truck.

3.5 REMOVAL FROM THE WORK SITE

.1 Deliver materials for which an environmentally friendly disposal method is required to a waste management centre or a facility that accepts approved waste, in accordance with the relevant regulations.

.2 Eliminate other materials in accordance with the relevant regulations at approved facilities.

3.6 SITE CLEANUP AND RESTORATION

.1 Keep the facilities clean and tidy throughout the entire duration of the demolition work.

.2 Once the work is complete, return surfaces, parking areas, walkways and paths that have been affected by the work to their original condition.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 03 20 00 – Concrete Reinforcements

.2 Section 03 33 00 – Cast-in-Place Concrete

.3 Section 01 33 00 – Submittal Procedures

.4 Section 01 47 21 – Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

.1 Canadian Standards Association (CSA) / CSA International
.1 CAN/CSA-A23.1/A23.2-[F04], Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.2 CAN/CSA-O86S1-[F05] Supplement No. 1 to CAN/CSA-086-01, Engineering Design in Wood
.3 CSA-O121-[FM1978(C2003)], Douglas Fir Plywood
.4 CSA-O151-[F04], Canadian Softwood Plywood
.5 CSA-O153-[FM1980(C2003)], Poplar Plywood
.6 CAN/CSA-O325.0-[F92(C2003)], Construction Sheathing
.7 CSA-O437 Series-[F93(C2006)], Standards on Oriented Strand Board (OSB) and Waferboard
.8 CSA-S269.1-[1975(R2003)], Falsework for Construction Purposes
.9 CAN/CSA-S269.3-[FM92(C2003)], Concrete Formwork

.2 Underwriters' Laboratories of Canada (UL)
.1 CAN/ULC-S701-[05] Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering

1.3 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

2. Submit shop drawings for formwork and falsework.

.3 The shop drawings shall indicate, show or comprise the method and schedule of construction, shoring, form stripping and reshoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners and locations of temporary embedded parts. Comply with CAN/CSA-S269.3 regarding formwork drawings.

1.4 TRANSPORTATION, STORAGE AND HANDLING

.1 Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.2 Place substances defined as toxic or hazardous in the designated containers.
.3 Take unused wood to a recycling, reuse/repurposing or composting centre authorized by the Departmental Representative.
.4 Take unused plastic to a recycling, reuse/repurposing or composting centre authorized by the Departmental Representative.
.5 Take unused form stripping agents to an approved hazardous material collection site, authorized by the Departmental Representative.

PART 2 – PRODUCTS

2.1 MATERIALS/ EQUIPMENT

.1 Formwork materials
.1 For concrete without special architectural features, use wood and wood product formwork materials compliant with CSA-O121, CAN/CSA-O86, CSA-O437 Series, and CSA-O153.
.2 For concrete with special architectural features, use formwork materials compliant with CSA-A23.1/A23.2.
.3 Rigid insulation panels: compliant with CAN/ULC-S701.

.2 Tubular column/post forms: round, spirally wound steel or laminated fibre forms, internally treated with a form stripping agent.
.1 Spiral pattern may show in hardened concrete.

.3 Form ties
.1 For concrete that is not to contain architectural features, use removable or snap-off metal ties of fixed or adjustable length, free of devices leaving holes larger than 25 mm in diameter on the concrete surface.
.2 For concrete that is to contain architectural features, use snap ties complete with plastic cones and light grey concrete plugs.

.8 Form stripping agent: non-toxic, biodegradable and low in VOC.

.9 Form oil: colourless mineral oil, non-toxic, biodegradable and low in kerosene-free VOC, with a Saybolt universal second viscosity of at least 70 but no more than 110 and 15 to 24 mm^2/s at a temperature of 40 degrees Celsius, and with an open-cup flash point of at least 150 degrees Celsius.

.10 Falsework materials: compliant with CSA-S269.1.

PART 3 – EXECUTION

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork and falsework, and ensure dimensions agree with drawings.

.2 Obtain authorization from the Departmental Representative before pouring concrete directly on the ground or reserving, in formwork, openings not shown on the drawings.

.3 Before pouring concrete directly on the ground, erect the walls and base of the excavated area and remove loose earth.

.4 Fabricate and erect falsework in accordance with CSA-S269.1.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to the shape, dimensions, locations and levels indicated within the tolerances required by CSA-A23.1/A23.2.

.8 Align form joints and make them watertight.
.1 Minimize the number of form joints.

.9 Unless otherwise indicated, use 25 mm chamfer strips on external corners and/or 25 mm fillets on interior corners of formwork joints.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.11 Construct forms for architectural concrete, and place ties as indicated and/or as directed.
.1 Joint pattern is not necessarily based on the use of standard size panels or the maximum permissible spacing of ties.

.12 Build in anchors, sleeves and other inserts required to accommodate work specified in other sections.
.1 Ensure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including a coat of paint, for example.

.13 Install a liner on the interior surfaces of the following formwork:
.1 The external face of the main beams, secondary beams, exterior beams and the vertical edge of the bridge walkway slabs.
.2 The underside of the main beam and the bridge deck, if visible.
.3 The visible faces of abutments, backwalls, posts and pillars. Do not offset the liner panel joints. Align the joints in a uniform manner.
.4 Attach the liner to the formwork in such a way as to avoid forming creases.

.5 Extend the liner over the edges of the formwork panels.
.6 Ensure that the liner is new and has not already been used.
.7 Ensure that the liner is dry and free of any oil when it is placed over the concrete.
.8 Application of a form stripping agent is not permitted when a draining liner is used.
.9 If concrete surfaces must be cleaned after removal of formwork, use a pressurized water jet so as not to alter the smooth finish of the concrete.
.10 The cost of a textile liner is incorporated into the price of concrete for the corresponding part of the work.

.14 Before pouring the concrete, clean the formwork in accordance with CSA-A23.1/A23.2.

.15 If slip forms and flying forms are used, submit the details required under the SUBMITTAL PROCEDURES section in PART 1.

3.2 FORM STRIPPING AND RESHORING

.1 After pouring the concrete, leave formwork in place for the minimum period of time indicated on the drawings produced as part of this mandate.

.2 Remove formwork after the minimum prerequisite hardening time or once the concrete has reached the % of its design resistance, as indicated in the drawings to be produced in the "Design" phase of this mandate.

.3 Replace the required shoring when it is necessary to rapidly remove the formwork or structural elements that might be subject to additional loads during construction of the structure.

.5 Reuse formwork and falsework, subject to the requirements of standard CSA-A23.1/A23.2

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 03 33 00 – Cast-in-Place Concrete

.2 Section 03 10 00 – Concrete Formwork and Accessories

.3 Section 01 33 00 – Submittal Procedures

.4 Section 01 45 00 – Quality Control

.5 Section 01 74 11 – Cleanup

.6 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.2 COST AND METHOD OF PAYMENT

.1 No measurements will be taken in connection with this section.

.1 Include costs related to reinforcements in the concrete work packages set out in Section 03 30 00 – Cast-in-Place Concrete.

1.3 REFERENCES

.1 CSA International

.1 CSA-A23.1-[F09]/A23.2-[F09], Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete

.2 CSA-A23.3-[F04], Design of Concrete Structures

.3 CSA-G30.18-[09], Carbon Steel Bars for Concrete Reinforcement

.4 CSA-G40.20/G40.21-[F04(C2009)], General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel

.5 CAN/CSA-G164-[FM92(C2003)], Hot Dip Galvanizing of Irregularly Shaped Articles

.6 CSA-W186-[FM1990(C2007)], Welding of Reinforcing Bars in Reinforced Concrete Construction

.2 Reinforcing Steel Institute of Canada (RSIC/IAAC)

.1 RSIC-[2004], Reinforcing Steel, Manual of Standard Practice

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/ INFORMATION

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

.2 Reinforcement designs shall be produced in compliance with the Manual of Standard Practices published by the RSIC and with ACI

standard 315.

.3 Shop drawings

.1 The drawings shall bear the signature and seal of a professional engineer who is recognized in the province of Quebec or holds a license to practice in Canada.

.1 The drawings shall show the details for installing the reinforcements as well as the following:

.1 Details on bending the reinforcement bars

.2 List of reinforcements

.3 Number of reinforcements

.4 Dimensions, spacing and placement of reinforcements and necessary mechanical joints if their use is authorized by the Departmental Representative. The reinforcements shown shall be marked according to an identification code allowing their placement to be identified without the need to consult the structural drawings.

.5 The drawings shall also indicate the dimensions, spacing and placement of seats, spacers and supports.

.2 Unless otherwise indicated, right lengths and sealing overlap lengths of the bars shall comply with standard CSA-A23.3.

.4 When a chromate solution is used to replace the galvanized protective coating for non-prestressed reinforcements, provide a description of the product to the Departmental Representative for examination before use.

1.5 QUALITY ASSURANCE

.1 Quality assurance: under Section 01 45 00 – Quality Control.

.1 Report on factory tests: At least two (2) weeks before installation of reinforcements, submit to the Departmental Representative, if requested, a certified copy of the factory tests for steel reinforcements.

.2 If requested, submit to the Departmental Representative in writing the proposed source of supply for the reinforcement materials to be supplied.

1.6 TRANSPORTATION, STORAGE AND HANDLING

.1 Transport, store and handle the materials and equipment in compliance with the manufacturer's written instructions.

.2 Delivery and acceptance: Deliver materials and equipment to the work site in their original packaging, which shall be labelled with the manufacturer's name and address.

.3 Storage and handling

.1 Store the materials and equipment off the ground in an

appropriate dry and well-ventilated location, in accordance with the manufacturer's recommendations.

.2 Replace damaged reinforcements with new ones.

PART 2 – PRODUCTS

2.1 MATERIALS/ EQUIPMENT

.1 Any replacement of reinforcement bars with bars of different dimensions shall be authorized in writing by the Departmental Representative.

.2 Reinforcement bars: Unless otherwise indicated, high-adhesion bars made from steel billets, at the grade indicated on the drawings to be produced in the "Design" phase of this mandate.

.3 Reinforcement bars: High-adhesion bars of weldable low alloy steel, in compliance with standard CSA-G30.18.

.4 Tie wire: Cold-drawn annealed steel wire, in compliance with standard [ASTM A 82/A 82M].

.5 Reinforcement wire: High-adhesion steel wire in compliance with standard [ASTM A 82/A 82M].

.8 Protective epoxy coating for non-prestressed reinforcements: in compliance with standard ASTM A 775/A 775M.

.9 Galvanized protective coating for non-prestressed reinforcements: zinc coating of at least [610] g/m², in compliance with standard CAN/CSA-G164.

.1 Proceed with the chromate treatment of galvanized steel reinforcements to protect them against any reaction from contact with Portland cement paste.

.2 If the chromate treatment is carried out immediately after galvanization, the reinforcements shall be immersed in an aqueous solution containing at least 0.2% sodium dichromate by mass or 0.2% chromic acid.

.1 The reinforcements shall be immersed for at least 20 seconds in the solution, maintained at a temperature equal to or greater than 32 degrees.

.3 If the galvanized steel reinforcements are at ambient temperature, add sulfuric acid to act as a binder. The sulfuric acid concentration shall be between 0.5 and 0.1%.

.1 In such a case, solution temperature restrictions do not apply.

.4 Commercially available chromate solutions can replace the above-mentioned solution, provided that they are of comparable effectiveness.

.10 Seats, spacers, bar supports and support braces: in compliance with standard CSA-A23.1/A23.2.

.11 Mechanical joints: subject to authorization by the Departmental Representative.

.12 Round and smooth bars: in compliance with standard CSA-G40.20/G40.21.

2.2 FASTENING

.1 Steel reinforcements shall be fastened in compliance with standard CAN/CSA-A23.1/A23.2.

.2 The Departmental Representative shall approve the placement of splices other than those indicated in the installation drawings.

.3 Once they are approved by the Departmental Representative, the reinforcements shall be welded in compliance with standard CSA-W186.

.4 Shipped batches of reinforcement bars shall be clearly marked with an identification code, in accordance with the list of required reinforcement bars and their bending details.
.1 Epoxy-coated bars shall be shipped in compliance with standard ASTM A775/A775M.

2.3 QUALITY CONTROL AT SOURCE

.1 At least three (3) weeks before beginning to install the reinforcements, submit to the Departmental Representative, if requested, a certified copy of the factory testing report, stating the results of physical and chemical analyses of the reinforcing steel.

.2 If requested, inform the Departmental Representative of the proposed source of supply for the materials to be provided.

PART 3 – EXECUTION

3.1 PREPARATION

.1 Galvanization of the reinforcement bars shall include a chromate treatment.
.1 The duration of the treatment is determined by bar diameter, namely one (1) hour per 25 mm of diameter.

.2 Perform bending tests to check the brittleness of the galvanized reinforcement bars, in compliance with standard ASTM A143/A143M.

3.2 BENDING ON THE WORK SITE

.1 Unless otherwise indicated or with authorization from the Departmental Representative, reinforcement bars shall not be bent or welded on site.

.2 When bending on site is authorized, bend the bars without heating them by slowly applying constant pressure.

.3 Replace bars that show cracking or crazing.

3.3 INSTALLING REINFORCEMENTS

.1 Install the reinforcements according to the installation drawings and in compliance with standard CSA-A23.1/A23.2.

.2 In concrete structures, use round and smooth bars for mobile couplings.
.1 Apply a coat of bituminous paint to the part of the couplings that must move inside the hardened concrete.
.2 When the paint is dry, apply a uniform, thick layer of mineral oil lubricant.

.3 Request that the Departmental Representative approve the reinforcements and their installation before pouring the concrete.

.4 Make sure to preserve the integrity of the reinforcement bar coating when pouring the concrete.

.5 During shipping and handling, cover the parts of the bars coated with epoxy and paint in order to properly protect them.

3.4 TOUCH-UPS ON THE WORK SITE

.1 Using a compatible finishing product, touch up the damaged or cut ends of the galvanized or coated reinforcements in order to achieve a continuous coating.

3.5 CLEANUP

.1 Cleanup during work in progress: Perform cleanup operations in accordance with Section 01 74 11 – Cleanup.
.1 Leave the premises clean at the end of each work day.

.2 Final cleanup: Once the work is complete, remove all surplus materials, waste, tools and equipment from the work site, in accordance with Section 01 74 11 – Cleanup.

.3 Waste management: Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 03 10 10 – Concrete Formwork and Accessories

.2 Section 03 20 10 – Concrete Reinforcements

.3 Section 01 32 16.07 – Work Schedule – Bar Graph (Gantt Chart)

.4 Section 01 45 00 – Quality Control

.5 Section 01 33 00 – Submittal Procedures

.6 Section 01 35 29.06 – Health and Safety

.7 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.8 Section 01 74 11 – Cleanup

1.2 COST AND METHOD OF PAYMENT

.1 Measurement for payment purposes

.1 Cast-in-place concrete will not be measured for payment purposes, but will rather be subject to a lump sum.

.2 No deductions will be made for the volume of concrete displaced by reinforcing steel, construction steel or piles.

.3 The supply and installation of anchor bolts, nuts and washers, including the sealing of the bolts with grout, will not be measured for payment purposes, but will rather be considered an integral part of the work.

.4 Heating of the water and aggregate and measures taken to protect the concrete from cold weather will not be measured for payment purposes, but will rather be considered an integral part of the work.

.5 Cooling of the concrete and measures taken to protect the concrete from hot weather will not be measured for payment purposes, but will rather be considered an integral part of the work.

1.3 REFERENCES

.1 Abbreviations and acronyms

.1 Cement: hydraulic cement or composite hydraulic cement (where the suffix "b" indicates that it is a composite product)

.1 GU or GUb: general use cement
.2 MS or MSb: moderate sulphate-resistant cement
.3 MH or MHb: moderate heat of hydration cement
.4 HE or HEb: high early strength cement

.5 LH or LHb: low heat of hydration cement
.6 HS or HSb: high sulphate-resistant cement
.2 Fly ash
.1 Class F: has a calcium oxide content of less than 8%
.2 Class CI: has a calcium oxide content of between 8 and 20%
.3 Class CH: has a calcium oxide content of more than 20%
.3 Class S: granulated blast-furnace slag

.2 References
.1 ASTM International
.1 ASTM C 260-[06], Standard Specification for Air-Entraining Admixtures for Concrete
.2 ASTM C 309-[07], Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
.3 ASTM C 494/C 494M-[08a], Standard Specification for Chemical Admixtures for Concrete
.4 ASTM C 1017/C 1017M-[07], Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
.2 Canada Green Building Council (CaGBC)
.1 LEED Canada-NC, version 1.0-[2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovation (reference kit) (includes addenda [2007])
.2 LEED Canada-CI, version 1.0-[2007], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Commercial Interiors
.3 Canadian Standards Association (CSA) / CSA International
.1 CSA-A23.1/A23.2-[F04], Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
.2 CSA-A283-[06], Qualification Code for Concrete Testing Laboratories
.3 CSA-A3000-[F03], Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005)

1.4 ADMINISTRATIVE PROCEDURES

.1 Meeting prior to implementation: One (1) week before concrete work begins, hold a meeting in accordance with Section 01 32 16.07 – Work Schedule – Bar Graph (Gantt Chart).
.1 Ensure that essential staff and the Departmental Representative are present.
.1 Check the work requirements.

1.5 QUALITY ASSURANCE

.1 Quality assurance: under Section 01 45 00 – Quality Control.

.2 Submit to the Departmental Representative a valid, recognized

certificate issued by the concrete manufacturer at least three (3) weeks before concrete work begins.

.1 Provide the testing information and a certificate issued by an independent, recognized inspection and testing laboratory confirming that the materials in the concrete mixture and the mix proportion meet the specified requirements.

.3 At least three (3) weeks before beginning concrete work, submit the proposed quality control methods for the items listed below to the Departmental Representative for review.

.1 Erection of temporary support structures
.2 Concreting in hot weather
.3 Concreting in cold weather
.4 Curing
.5 Finishing
.6 Removal of formwork
.7 Completion of joints

.4 Quality control plan: Submit a written report to the Departmental Representative, certifying that the placed concrete complies with the performance requirements set out under PART 2 – PRODUCTS.

1.7 TRANSPORTATION, STORAGE AND HANDLING

.1 Delivery and acceptance

.1 Transport time: The concrete shall be delivered to the work site and unloaded within 120 minutes of mixing.

.1 If necessary, any changes to the maximum transport time shall be accepted in writing by the Departmental Representative and the concrete producer, in compliance with CSA-A23.1/A23.2.

.2 Deviations shall be submitted to the Departmental Representative for review.

.2 Concrete delivery: Ensure that the concrete supplier provides continuous delivery of concrete, in compliance with CSA-A23.1/A23.2

.2 Management of packaging waste: Collect packaging waste for reuse/repurposing and recover pallets, boxes, padding and other packaging materials by manufacturer, in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

PART 2 – PRODUCTS

2.1 DESIGN CRITERIA

.1 Variant 1 – Performance: in compliance with CSA-A23.1/A23.2 and the instructions in the MIX PROPORTION section under PART 2 –

PRODUCTS.

2.2 PERFORMANCE CRITERIA

.1 Quality control plan: Ensure that the concrete supplier is able to provide concrete that meets the performance criteria indicated on the drawings to be produced in the "Design" phase of this mandate, which criteria are to be established by the Departmental Representative, and plan for an equipment compliance assessment under the QUALITY ASSURANCE section of PART 1.

2.3 MATERIALS/ EQUIPMENT

.1 Cement: Type and use as indicated in the drawings to be produced in the "Design" phase of this mandate and in compliance with CSA A3001.

.2 Supplementary cementing material: At least [20%] by mass [Class [F], [CI] and [CH] fly ash] [natural pozzolan (N)] [granulated blast-furnace slag (S)], in compliance with CSA A3001.

.3 Water: in compliance with [CSA-A23.1]

.4 Aggregate: in compliance with [CSA-A23.1/A23.2]

.5 Admixtures
.1 Air-entraining admixtures: in compliance with ASTM C260
.2 Chemical admixtures: in compliance with ASTM C494. The Departmental Representative shall accept the setting accelerators or retarders used during concrete work in hot or cold weather.

.7 Curing products: white, in compliance with CSA-A23.1/A23.2 and ASTM C309, type 1 or type 1-D chlorinated rubber, containing a temporary pigment

2.4 MIX PROPORTION

.1 Variant 1 – Performance method to prescribe concrete: meets the performance criteria set by the Departmental Representative and follows the instructions in the drawings to be produced in the "Design" phase of this mandate, in compliance with CSA-A23.1/A23.2.
.1 Ensure that the concrete supplier meets the performance requirements set out in the drawings to be produced in the "Design" phase of this mandate for the parameters provided below, and assess compliance according to the instructions set out in the quality control plan.
.2 Parameters to be followed based on the drawings to be produced in the "Design" phase of this mandate for the mixture of concrete in its plastic state:
.1 Uniformity
.2 Workability
.3 Suitability for finishing: bleeding
.4 Setting time
.3 Parameters to be followed based on the drawings to be produced in the "Design" phase of this mandate for hardened concrete:

.1 Durability and exposure class: [C-XL] [C-1][A-1] [C-2] [A-2] [C-3] [A-3] [C-4] [A-4] [F-1] [F-2] [N]
.2 Compression strength
.3 Intended use
.4 Aggregate diameter
.5 Soundness: acceptable range of volume variation due to shrinkage, creep and the freeze-thaw cycle
.6 Prequalification

.4 Submit a quality management plan to ensure concrete quality control based on the specified performance requirements.
.5 Certification of concrete supplier: The mixing facility and the materials shall meet the requirements of CSA A23.1.

.6 Supplementary cementing material shall also follow the instructions in the drawings to be produced in the "Design" phase of this mandate.

Certification of concrete supplier: The mixing facility and the materials shall meet the requirements of CSA A23.1.

PART 3 – EXECUTION

3.1 PREPARATION

.1 Obtain written authorization from the Departmental Representative before placement of concrete.
.1 Give at least [twenty-four (24)] hours' notice before beginning concrete work.

.2 Place reinforcements in accordance with Section 03 20 00 – Concrete Reinforcements.

.3 Follow the instructions below during concrete work.
.1 Fashioning cold joints is not permitted.
.2 Ensure that the transportation and handling of concrete minimize intervention during placement and cause no damage to the construction or existing structures.

.4 Concrete pumping will only be permitted once the equipment and mix proportion have been approved.

.5 Ensure that the reinforcements and embedded parts are not moved during placement of the concrete.

.6 Before pouring the concrete, obtain authorization from the Departmental Representative regarding the proposed method for protecting the concrete during placement and curing in bad weather.

.7 Protect existing structures against fouling.

.8 Clean concrete surfaces and remove any stains before applying finishing products.

.9 Keep a concreting record that accurately indicates the date and location of each mix, the properties of the concrete, the ambient temperature and the samples collected.

.11 New concrete elements shall not bear any load prior to authorization by the Departmental Representative.

3.2 PLACEMENT

.1 Carry out work on cast-in-place concrete structures in compliance with CSA-A23.1/A23.2.

.2 Sleeves and elements to be embedded

.1 Do not install any sleeve, conduit or pipe and do not have any openings through a joist, beam, column capital, or column, unless indicated or authorized by the Departmental Representative.

.2 After obtaining authorization from the Departmental Representative, prepare the openings and place the sleeves, fasteners, pipe hangers, and other embedded elements indicated on the drawings or specified elsewhere.

.3 Sleeves and openings greater than 100 mm x 100 mm not indicated shall be examined by the Departmental Representative.

.4 Do not remove or move reinforcements to install any pieces of hardware. If the elements to be embedded in concrete cannot be placed in the indicated locations, have any modifications accepted by the Departmental Representative in writing before pouring the concrete.

.5 Confirm the placement and dimensions of the sleeves and openings indicated on the drawings.

.6 Place special elements to be embedded, for strength testing purposes, according to the instructions and requirements of the methods used for non-destructive concrete testing.

.3 Anchor bolts

.1 Secure anchor bolts to the templates, in collaboration with the related trades, before pouring the concrete.

.2 Only after receiving authorization from the Departmental Representative, use grout to seal anchor bolts installed in holes drilled beforehand or drilled after the concrete has set.

.1 Holes drilled in this way shall have a diameter of at least 100 mm.

.2 The diameter of holes drilled after the concrete has set shall comply with the manufacturer's recommendations.

.3 Prevent water, snow and ice from accumulating in holes meant to hold anchor bolts.

.4 Install the bolts and fill the holes with grout to compensate for shrinkage or with epoxy grout, in accordance with the drawings to be produced in the "Design" phase of this mandate.

.5 It is important to take into account ambient temperature when anchor bolts are installed in expansion joints with sliding or rolling assistance devices.

.4 Weepholes and scupper drains

.1 Install weepholes and scupper drains in accordance with Section 03 10 00 – Concrete Formwork and Accessories. If wooden formworks are used, they shall be removed after the concrete sets.

.2 Install drainage pipes and nozzles as per instructions.

.5 Curing and finishing

.1 Finish concrete surfaces in compliance with CSA-A23.1/A23.2.

.2 Use the methods set out in CSA-A23.1/A23.2 to remove excess bleeding water. Make sure not to damage the surfaces of concrete elements.

.3 Use curing products that are compatible with the finishing product, as specified in the drawings to be produced in the "Design" phase of this mandate. Attach a written statement affirming that the various products used are compatible.

3.3 CONSTRUCTION TOLERANCES

.1 The construction tolerances of concrete surfaces shall comply with CSA-A23.1, based on the straight-edge method.

3.4 ON-SITE QUALITY CONTROL

.1 Tests performed on site: Conduct the tests indicated below in accordance with Section 01 45 00 – Quality Control, and submit a report as instructed in the DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION section in PART 1.

.1 Concrete mix
.2 Slump
.3 Air content
.4 Compression strength at 7 and 28 days
.5 Ambient temperature and concrete temperature

.2 Inspection and testing of the concrete and its constituents will be performed by the testing laboratory designated by the Departmental Representative, to his or her satisfaction, in compliance with CSA-A23.1/A23.2.

.1 Ensure that the testing laboratory is certified under CSA-A283.

.3 Ensure that the results of the tests are sent to the Departmental Representative so that they may be reviewed during the meeting prior to placement of concrete.

.4 The Departmental Representative will bear testing costs.

.5 The Departmental Representative will collect additional samples during concrete work in cold weather. These samples shall be cured on site, in the same conditions as the concrete mixes from which they were extracted.

.6 Non-destructive testing of concrete shall be carried out according to the methods described in CSA-A23.1/A23.2.

.7 The inspection and tests carried out by the Consultant shall not replace or complete the quality control carried out by the Contractor, nor can they relieve the latter of its contractual responsibilities in that regard.

3.5 CLEANUP

.1 Perform cleanup operations in accordance with Section 01 74 11 – Cleanup.

.2 Waste management: Sort waste materials for reuse/repurposing and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.1 Divert 50% of waste from landfills: Prepare a construction waste management plan in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.2 After receiving written authorization from the Departmental Representative, transport unused concrete and concrete constituents to a quarry or local recycling facility.
.3 Arrange an appropriate space on the work site for safe washing of concrete trucks.
.4 Send unused admixtures (pigments, fibres) to an approved hazardous material collection site, authorized by the Departmental Representative.
.5 Disposing of unused admixtures in sewers, watercourses or lakes, on the ground, or in any other location where they could pose a risk to health or the environment is prohibited.
.6 Take the necessary measures to prevent admixtures from contaminating bodies of water or sources of potable water.
.7 If necessary, collect liquid waste or solidify it using inert, non-combustible materials, taking all appropriate safety measures.
.8 Dispose of waste in compliance with local, provincial/territorial and federal regulations.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 74 19 – Construction/Demolition Waste Management and Disposal

.3 Section 03 30 00 – Cast-in-Place Concrete

.4 Section 01 41 01 – Daymark Installation

1.2 REFERENCES

EDITOR: Modify the following paragraphs as required by the work.

.1 American Society for Testing and Materials (ASTM) International
.1 ASTM A 53/A 53M-[02], Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
.2 ASTM A 269-[02], Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
.3 ASTM A 307-[02], Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.40-[97], Anticorrosive Structural Steel Alkyd Primer
.2 CAN/CGSB-1.181-[92], Ready-Mixed Organic Zinc-Rich Coating

.3 Canadian Standards Association (CSA) / CSA International
.1 CAN/CSA-G40.20/G40.21-[F98], General Requirements for Rolled or Welded Structural Quality Steel / Structural Steel
.2 CAN/CSA-G164-[FM92(C1998)], Hot Dip Galvanizing of Irregularly Shaped Articles
.3 CAN/CSA-S16.1-[01], Limit States Design of Steel Structures
.4 CSA-W48-[F01], Filler Metals and Allied Materials for Metal Arc Welding (prepared in collaboration with the Canadian Welding Bureau)
.5 CSA-W59-[FM1989(C2001)], Welded Steel Construction (Metal Arc Welding) (Metric Version)

.4 Environmental Choice Program
.1 PCE/CCD-047a-[98], Paints, Surface Coatings
.2 PCE/CCD-048- [98], Recycled Water-Borne Surface Coatings

.5 CSA-S37-13, Antennas, Towers, and Antenna-Supporting Structures

1.3 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 The plans for erecting the structures to be assembled that will have been produced in the "Design" phase of this mandate.

.2 Datasheets

.1 Submit the required datasheets as well as the manufacturer's product specifications and documentation in accordance with Section 01 33 00 – Submittal Procedures.
.2 Submit two copies of the relevant WHMIS (Workplace Hazardous Materials Information System) safety datasheets, in accordance with Section 01 33 00 – Submittal Procedures. Indicate the content of volatile organic compounds (VOCs).
.1 For finishes, coatings, paints and printing products

.2 Shop drawings
.1 Submit the shop drawings required under Section 01 33 00 – Submittal Procedures.
.2 The shop drawings shall indicate or show the materials, core thickness, finishes, assembly, joints, anchorage method and number of anchoring devices, supports, reinforcement components, details and accessories.

1.4 QUALITY ASSURANCE

.1 Test reports: Submit test reports certifying that the products, materials and equipment comply with specific physical characteristics and performance criteria.

.2 Certifications: Submit documents signed by the manufacturer certifying that the products, materials and equipment comply with specific physical characteristics and performance criteria.

.3 Pre-implementation meeting: Hold a meeting to examine the work requirements, the manufacturer's installation instructions and the manufacturer's warranty.

1.5 TRANSPORTATION, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading

.1 Equipment and materials shall be transported, stored, handled and protected as required by the manufacturer.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Sort and recycle waste in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.2 Remove all packaging materials from the site and send them to the appropriate recycling facilities.

.3 Collect and sort all paper, plastic, polystyrene and corrugated cardboard packaging materials and place them in the appropriate

on-site recycling bins, in compliance with the waste management plan.

.4 Send unused metallic materials to a metal recycling facility approved by the Departmental Representative.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Profiles and steel plates: 350W grade, in compliance with CAN/CSA-G40.20/G40.21

.2 Welding materials: in compliance with CSA-W59

.3 Welding electrodes: in compliance with the CSA-W48 series

.4 Bolts and anchor bolts: in compliance with ASTM A 307

.5 Grout: non-shrink, non-metallic, fluid consistency with a resistance as indicated in the drawings to be produced in the "Design" phase of this mandate.

.6 The steel structure will have been manufactured in the "Manufacturing" phase of this mandate.

.7 The daymark will be provided by the Departmental Representative.

.8 The guardrail to be installed shall comply with the Coast Guard's standards and guidelines.

.9 Batteries in their case and voltage regulators will be provided by the Department with their supports.

2.2 METALLIC STRUCTURES – GENERAL INFORMATION

.1 Structures shall be straight, square, aligned and consistent with the required dimensions, and the joints shall be tight and properly secured.

.2 Install the structures in compliance with the requirements of standard CAN/CSA-S37-13 and those of the drawings to be produced in the "Design" phase of this mandate.

.3 Comply strictly with the part numbers indicated in the drawings and on the components.

.4 In terms of orientation, the side of the tower with the ladder must be opposite the daymark. For daymark positioning, consult paragraph 4.1 of Section 01 41 01 – Daymark Installation.

.5 All joints shall be bolted, unless otherwise indicated. Drilling, welding

and heating of parts will not be accepted.

.6 Repair damaged galvanized surfaces. Clean damaged surfaces with a metal brush, removing loose or cracked zinc layers. Apply two layers of approved zinc-pigmented paint to the damaged surfaces.

.7 High strength bolts shall be used in all bolted assemblies. The tension applied to the bolts shall comply with the recommendations in the design plans.

.8 The tower shall be erected so as to prevent members from being bent or overloaded during installation and to avoid damage to the galvanization.

.9 Place non-shrink concrete between the base plate and the foundation following the upgrade of the structure. The torque and verticality tolerances shall comply with CSA-S37 and be verified by the Departmental Representative.

.10 Visible welds shall be continuous along the entire joint, and shall be filed or ground down until the surface is smooth and uniform.

2.3 FINISHING

.1 Galvanizing: hot-dip with 600 g/m² zinc coating, in accordance with CAN/CSA-G164

.2 Zinc paint base coat: zinc-rich paint, ready to apply, in compliance with CAN/CGSB-1.181

2.4 INSULATION COATING

.1 Aluminium surfaces shall be coated with bituminous paint in order to insulate them from the following materials:
.1 Dissimilar metals, except for stainless steel, zinc and reduced area white bronze
.2 Concrete, mortar and other masonry materials
.3 Wood

2.5 METAL FRAME

.1 Steel posts: galvanized steel posts, in compliance with CAN/CSA-S-136, core height indicated, minimum steel thickness, as specified in the drawings to be produced in the "Design" phase of this mandate.

.2 Post bars: made of the same material with the same finish as the steel posts and with an appropriate core height.

.3 Angle irons: compliant with dimensions indicated in the drawings to be produced in the "Design" phase of this mandate and made of the same material with the same finish as the posts.

.4 Tensioners and accessories: compliant with the manufacturer's recommendations.

PART 3 – EXECUTION

3.1 ASSEMBLY

.1 Unless otherwise indicated, perform welding work in compliance with CSA-W59.

.2 Assemble the metal structures ensuring that they are square, straight, level, aligned and precision-tuned, and ensure that the joints and crossings are tight.

.3 Supply and install appropriate anchors as specified in the drawings to be produced in the "Design" phase of this mandate.

.4 Visible fasteners shall be compatible with the material they go through or are fastened to and shall have the same finish.

.5 Supply and install the structural components recommended in other sections in accordance with the parts list and submitted shop drawings.

.6 Install the structures in compliance with the requirements of CAN/CSA-S37-13 and those of the drawings and specifications to be produced in the "Design" phase of this mandate. Assemble the components on site using bolts according to CAN/CSA-S16.1.

.7 Send the templates and parts to be embedded in concrete or mounted into the masonry to trade professionals.

.8 Once the assembly is finished, touch up the rivets, on-site welds, bolts and burned or scratched surfaces with base coat paint.

.9 Touch up galvanized surfaces that were burned during on-site welding using a zinc-rich base coat paint.

3.2 CLEANING

.1 Clean the metal structures after implementation to remove any dust created by the construction work or the surrounding environment.

.2 Once the implementation is complete, clear the site of any excess materials, waste, tools and equipment protection barriers.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 This section lists the power supply and commissioning requirements for the navigation light at the top of the new structure. Diagram 2 of drawing 08990-E02 (Appendix 10) shows the electrical system to be installed in the new tower.

1.2 REFERENCES

.1 Canadian Standards Association (CSA) / CSA International
.1 CSA-C22.1-F06, Canadian Electrical Code, Part 1 (most recent edition), Safety Standard for Electrical Installation

.2 CSA-C22.2
.3 CAN/CSA-C22.3, Overhead Systems (most recent edition)

.2 Electrical and Electronic Manufacturers Association of Canada (EEMAC)

.3 Institute of Electrical and Electronics Engineers (IEEE) / National Electrical Safety Code (NESC) Product Line
.1 IEEE SP1122-[2000], The Authoritative Dictionary of IEEE Standards Terms, 7th Edition

1.3 DEFINITIONS

.1 Electricity and electronic terms: Unless otherwise indicated, the terminology used in this section and in the drawings is based on the definition found in IEEE SP1122.

1.4 DESIGN REQUIREMENTS

.1 The operating voltage shall comply with CAN3-C235.

.2 Motors, electric heaters and command/control/regulation/distribution devices shall work properly at 60 Hz and within the limits set by the above-mentioned standard.
.1 Devices shall be able to function without sustaining damage in the extreme conditions defined in this standard.

.3 Operating and display language: For identification and display purposes, provide nameplates and labels in French for command/control devices.

1.5

.1 Submit the documents and samples required under Section 01 33 00 –

DOCUMENTS/SAMPLES TO BE SUBMITTED

Submittal Procedures.

.2 Quality control: in accordance with Section 01 45 00 – Quality Control.
.1 Machinery and equipment shall be CSA-certified.
.2 If CSA-certified machinery and equipment cannot be obtained, submit the proposed machinery and equipment to the appropriate authority for approval before delivering them to the work site.
.3 Permits and licenses: in accordance with the general conditions of the contract.
.4 Once the work has been completed, submit the certificate of receipt issued by the appropriate authority to the Departmental Representative.

1.6 QUALITY ASSURANCE

.1 Quality assurance: in accordance with Section 01 45 00 – Quality Assurance.

.2 Qualification: Electrical work shall be performed by certified and qualified technicians, by a master electrician, by an electrical contractor licensed by the province of Quebec or by an apprentice, in compliance with the appropriate authorities regarding professional training and workforce qualifications.
.1 Employees enrolled in a provincial apprenticeship program may perform specific tasks under the direct supervision of a certified, qualified technician.
.2 Permitted tasks: Depending on the degree of training and the ability demonstrated to perform specific tasks.

.3 Site meetings
.1 Hold site meetings in accordance with Section 01 32 18 – Work Schedule – Bar Graph (Gantt Chart).

.4 Take the necessary occupational health and safety measures for construction in accordance with Section 01 35 29.06 – Health and Safety.

PART 2 – PRODUCTS

2.1 MATERIALS/EQUIPMENT SUPPLIED BY THE DEPARTMENTAL REPRESENTATIVE

.1 The Departmental Representative will supply the following equipment and materials:

1. Batteries, if required
2. Battery casing, if required
3. Nema 4X junction box
4. Voltage regulator, if required
5. Navigation light support plate

2.1 MATERIALS/EQUIPMENT TO BE SUPPLIED BY THE CONTRACTOR

.1 Electrical service mast and meter base:

1. Conductors, 6 AWG gauge with PVC protective pipe 31.75 mm (1¼") in diameter, with all connectors, conduits, attachments and other required accessories.
2. Panelboard and circuit breakers: Square D, 60 A, QO type; Power distribution:
   - .1 All cables shall be Teck 90, gauge 10, three conductors (10/3)
   - .2 Service plug, 15 A
   - .3 All connectors for Teck 90 cables shall be Star Teck or equivalent
   - .4 Nuts and bolts shall be 316 stainless steel (lanterns, cables, attachments, etc.)
   - .5 Fasteners, attachments and supports for Teck cables shall be made of Andrews brand stainless steel
   - .6 Supports and fastening plates shall be stainless steel

   Battery casing, if required
3. Nema 4X junction box
4. Voltage regulator, if required
5. Navigation light support plate

.2 Grounding:

.1 In compliance with the Canadian Electrical Code; green insulated or bare tinned 2/0 AWG conductor buried or protected with a PVC pipe where there is a risk of a mechanical break.

.2 Grounding rods shall be copper, ¾" in diameter and 10' long, or comply with the specifications of the drawings to be produced in the "Design" phase of this mandate.

.3 The 2/0 cable and rods shall be welded together using an exothermic Cadweld, or equivalent, with a protective coating recommended by the manufacturer. The cable shall be fastened to the tower, without any cut or weld, by a Thomas & Betts #10103-TB ground clamp.

The Contractor shall determine and supply the length of wire required for the installation.

2.4 WARNING SIGNS

.1 Warning signs: compliant with the requirements of the appropriate authority

2.5 CABLE TERMINALS

.1 Ensure that the lugs, terminal points and screws of the cable terminals are suitable for both copper and aluminium conductors.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Unless otherwise indicated, perform the entire installation in compliance with CSA-C22.1.

.2 Unless otherwise indicated, install overhead and underground networks in accordance with CSA-C22.3, No. 1.

3.2 LABELS, NAMEPLATES AND IDENTIFICATION PLATES

.1 Ensure that the CSA labels, nameplates and identification plates are visible and legible once the materials are installed.

3.3 POWER SUPPLY

.1 Install the service mast.

.2 Install the electrical inlet inside the metal enclosure.

.3 Unless otherwise indicated, attach the metal electrical inlet enclosure to the new structure according to the drawing. Cable entrance and exit openings shall be waterproof.

.4 The bending radius of Teck cables shall comply with Canadian Electrical Code requirements.

3.4 SUPPLY AND INSTALLATION OF LIGHT

.1 Install the junction box (NEMA 4X Hammond PJ1086H) at the top of the tower.

.2 Supply the junction box with two separate parallel 120V 15A circuits and one 12V DC circuit from the batteries.

.3 Install the navigation light and/or other equipment and/or accessories at the top of the structure. Adjust the position of the lantern(s) so that the beam of light is above and perpendicular to the daymark. The Departmental Representative will make the final adjustment.

3.5 GROUNDING

.1 Ground the electrical installation using a Cadweld mold in compliance with the Canadian Electrical Code.

3.6 COORDINATION

.1 Ensure that circuit protection devices, such as over-current triggers,

OF PROTECTIVE DEVICES

relays and fuses, are installed, are the correct gauge and are set to the required values.

3.7 COMMISSIONING THE LIGHT

.1 Once the electrical installation has been completed, before the lantern(s) is(are) commissioned, the Contractor shall notify the Departmental Representative so that he or she can have Department staff verify the light's alignment.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 02 41 16.01 – Demolition of Structures

.2 Section 01 35 43 – Environmental Protection

.3 Section 01 33 00 – Submittal Procedures

.4 Section 01 45 00 – Quality Control

.5 Section 01 35 29.06 – Health and Safety

.6 Section 01 56 00 – Temporary Access and Protection Structures

.5 Section 01 35 29.06 – Health and Safety

1.2 MEASUREMENT FOR PAYMENT PURPOSES

.1 The work carried out under this section shall be considered an integral part of the work in this fixed-price contract.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM) International
.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 Coarse Aggregates
.3 ASTM D 422-63[2002], 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 ^{3}) (600 kN-m/m ^{3})
.5 ASTM D 1557-[02e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ^{3}) (2,700 kN-m/m ^{3})
.6 ASTM D 4318-[05], Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-8.1-[88], Woven Wire Test Sieves, Non-Metric Version
.2 CAN/CGSB-8.2-[88], Woven Wire Test Sieves, Metric Version

.3 Canadian Standards Association (CSA) / CSA International
.1 CAN/CSA-A3000-[F03], Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005)
.1 CSA-A3001-[F03], Cementitious Materials for Use in Concrete
.2 CSA-A23.1/A23.2-[F04], Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete

1.4 DEFINITIONS

.1 Excavated material classes: two (2) types of excavated materials are recognized, ordinary and rock.

.1 Excavated rock: solid mass with a volume greater than 1.00 m³ that can only be removed using a mechanical excavator equipped with a [0.95 to 1.15 m³] bucket. Frozen materials are not considered excavated rock.

.2 Ordinary excavated material: all types of excavated material of any nature other than excavated rock.

.2 Unclassified excavated material: all types of deposits found during construction

.3 Topsoil

.1 Any material suitable for growing vegetation that can be used as extra land for landscaping or sowing.

.2 Any material reasonably free of subsoil, lumps of clay, undergrowth, noxious weeds and other debris and free of stones, stumps, roots and other harmful materials larger than 25 mm.

.4 Waste material: surplus material or excavated material unusable for the purposes of the current work.

.5 Borrow material: material from areas located outside the grading area necessary for backfills or other parts of the structure.

.6 Recycled backfill material: inert material from different sources modified to meet the needs of backfill areas.

.7 Unsuitable material

.1 Compressible, chemically unstable and low-resistance materials

.2 Frost-susceptible material

1. Fine-grained soil with a plasticity index lower than 10, according to the ASTM D 4318 test, and a grain size within the recommended limits according to [ASTM C 136] [and] [ASTM D 422] [tests]. The sieve designation shall comply with CAN/CGSB-8.1 and CAN/CGSB-8.2.

.2 Table

Sieve designation	Sift %
2.00 mm	[100]
0.10 mm	[45–100]
0.02 mm	[10–80]
0.005 mm	[0–45]

.3 Coarse-grained soil with a sifting percentage higher than 20% by weight per 0.075 mm sift.

.8 Dimensionally stabilized fill material: very low-resistance mix composed of cement, concrete aggregate and water that does not compress once placed in trenches designed to hold utility pipes and that can be excavated without prior preparation.

1.5 DOCUMENTS/SAMPLES TO BE SUBMITTED

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

.2 Quality control: in accordance with Section 01 45 00 – Quality Control.
.1 Inform the Departmental Representative in writing once the bottom of the excavation has been reached.

1.6 QUALITY ASSURANCE

.1 The Contractor shall submit a document proving that its insurance policy covers the work carried out under its direction.

.7 Do not use soil before the results analysis report has been reviewed and approved by the Departmental Representative.

.8 Health and Safety

.1 Take the necessary health and safety measures for construction in compliance with Section 01 35 29.06 – Health and Safety.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse/repurposing and recycling according to the drawings to be produced in the "Design" phase of this mandate.

.2 Send reusable excess aggregate to a quarry or local recycling facility authorized by the Departmental Representative.

1.8 EXISTING CONDITIONS

.1 Review the soil analysis report. A geotechnical study report produced as part of another project is presented in Appendix 6. However, it is only for information purposes; it is strongly recommended that the Contractor carry out another study and include the related costs when submitting this mandate. These will be an integral part of the contract.

.2 Buried pipelines
.1 Before commencing excavation, determine the position and condition of the existing structures and underground networks, and inform the Departmental Representative and the appropriate authorities of the results. The appropriate authorities will be required to clearly locate these positions in order to avoid any service interruption during the work.
.2 Maintain and protect against damage water, sewer, gas and electrical pipes and telephone lines as well as all other pipes or identified structures.
.3 Note the location of underground preserved, rerouted or abandoned pipes.
.4 Confirm the location of recent excavations carried out near the work area.

.3 Buildings and elements in the area
.1 In the presence of the Departmental Representative, check the condition of the buildings, trees and other vegetation, lawns, fences, service poles, cables, railway tracks, pavements, boundary markers

and bench-marks that may be affected by the work.

.2 While carrying out the work, protect buildings and other elements in the area from damage. If damage occurs, immediately restore the affected elements according to the Departmental Representative's instructions.

.3 If roots or branches need to be cut during excavation, proceed according to the Departmental Representative's instructions.

PART 2 – PRODUCTS

2.1 MATERIALS/ EQUIPMENT

.1 Type 1 and 2 backfill material: compliant with the following requirements:

.1 Stones, gravel or sand from sifting or crushing

.2 Grain size within the limits indicated during the ASTM C 117 and ASTM C 136 tests and sieve opening sizes compliant with CAN/CGSB-8.2.

.3 Table

Sieve designation	Sift %	
	Type 1	Type 2
75 mm	-	[100]
50 mm	-	-
37.5 mm	-	-
25 mm	[100]	-
19 mm	[75–100]	-
12.5 mm	-	-
9.5 mm	[50–100]	-
4.75 mm	[30–70]	[22–85]
2.00 mm	[20–45]	-
0.425 mm	[10–25]	[5–30]
0.180 mm	-	-
0.075 mm	[3–8]	[0–10]

.2 Type 3 backfill material: non-frozen material from excavation or another source, authorized by the Departmental Representative for the proposed use and free of rocks larger than 75 mm, clinker, ash, sod, waste or other harmful materials.

.3 Dimensionally stabilized fill material: dosed and mixed to provide the following properties:

.1 Maximum compressive strength of 0.4 MPa at 28 days

.2 Maximum 25 kg/m³ Portland cement content, composed of 40% fly ash acting as substitute material or according to the drawings to be produced in the "Design" phase of this mandate

.3 Minimum resistance of 0.07 MPa at 24 hours

.4 Cement aggregate: in compliance with CSA-A23.1/A23.2

.5 Cement: type indicated on the drawings to be produced in the "Design" phase of this mandate

.6 Subsidence: from 160 to 200 mm

.4 Geotextiles: compliant with the drawings to be produced in the "Design" phase of this mandate

PART 3 – EXECUTION

3.1 PREPARATORY WORK

.1 Within the indicated limits, remove obstacles, snow and accumulated ice from excavation area surfaces.

3.2 PREPARATION/ PROTECTION

.1 Protect existing elements in accordance with Section 01 56 00 – Temporary Access and Protection Structures and with relevant municipal regulations.

.2 Keep the excavations clean and free of stagnate water and friable soil.

.3 If the soil is prone to vary significantly in volume due to moisture content fluctuations, cover and protect it to the Departmental Representative's satisfaction.

.4 Protect natural and artificial elements that must remain in place. Unless otherwise indicated or unless located in a building zone, protect existing trees from any damage.

.5 Protect utility pipes that must remain in place.

3.3 STRIPPING THE TOPSOIL

.1 Do not mix topsoil with subsoil materials.

.2 Dispose of topsoil in the areas designated by the Departmental Representative.
.1 Do not pile dirt higher than 2 m, and protect the pile from erosion.

3.4 DISPOSAL

.1 Dispose of the backfill material in the areas designated by the Departmental Representative.
.1 Dispose of granular materials so as to prevent separation.

.2 Protect backfill material from any contamination.

3.5 KEEPING EXCAVATIONS DRY AND PREVENTING LIFTING

.1 Keep excavations dry throughout the work.

.2 If there is a risk of quicksand or lifting, avoid excavating below the water table.
.1 To prevent pipes or the trench bottom from lifting, reduce the water table level, cut the sheet piles or use other suitable methods.

.3 Protect open excavations from flooding and potential damage from

runoff water.

.4 Drain water in accordance with Section 01 35 43 – Environmental Protection in a way that does not pose a risk to public or private property, or any part of the work completed or in progress.
.1 Install and maintain drainage pits and other temporary diversion methods around the excavation boundary.

3.6 EXCAVATION

.1 Carry out the excavation in accordance with the measurements, drawings, dimensions and levels indicated in the drawings to be produced during the "Design" phase of this mandate.

.2 Remove existing concrete foundations during excavation.

.3 Do not move the dirt underneath tree branches or bushes that must remain in place.
.1 If excavation between roots is necessary, dig by hand and cut the roots with an ax or a well-sharpened saw.

.4 Excavated and deposited materials shall be disposed of a sufficient distance away from the trench according to the Departmental Representative's instructions.

.5 Limit the use of construction equipment in the immediate vicinity of non-backfilled trenches.

.6 Remove unsuitable of excess excavated material from the work site.

.7 Avoid obstructing the flow of runoff or natural streams.

.8 Excavation bottoms shall be level, contain undisturbed soil and be free of organic matter and loose or non-resistant substances.

.9 Inform the Departmental Representative when the expected level of the excavation bottom is reached.

.10 Completed excavations shall be approved by the Departmental Representative.

.11 Remove all unsuitable material from the bottom of the trenches, including materials located below the required levels, at the extent and to the depth determined by the Departmental Representative.

1 Clean any identified cracks in the rock and fill them with grout or concrete mortar to the satisfaction of the Departmental Representative.

3.7 FILL MATERIAL AND COMPACTION

.1 Use the type of fill material indicated on the drawings to be produced in the "Design" phase of this mandate, as indicated or recommended below.

.2 Use dimensionally stabilized fill material in the indicated locations.

3.8 BACKFILLING

.1 Do not begin backfilling until:
.1 The foundation has been inspected and approved by the Departmental Representative.
.2 Concrete formwork has been removed.

.2 The areas to be backfilled shall be free of debris, snow, ice, water and frozen earth.

.3 Do not use backfill material that is frozen or that contains snow, ice or debris.

.4 Backfill around structures

.1 Place bedding and cover materials in compliance with the drawings to be produced in the "Design" phase of this mandate.

.2 Do not backfill around or above concrete structures within twenty-four (24) hours after concrete has been poured.
.3 Place the backfill layers simultaneously on both sides of the installed structures in order to balance the loads.

.5 Conduct backfills that are dimensionally stabilized or made from recycled material in the locations indicated on the drawings to be produced in the "Design" phase of this mandate.

.6 Consolidate and level these dimensionally stabilized backfills using internal vibrators.

3.9 SITE RESTORATION

.1 Once the work has been completed, remove excess material and debris, grade the slopes and correct defects according to the Departmental Representative's instructions.

.2 Replace the topsoil according to the Departmental Representative's instructions.

.3 Clean and restore the areas affected by the work according to the Departmental Representative's instructions.