

**SOW – PRESQU’ILE BAY FIXED AID MODIFICATIONS**

LL487 – BRIGHTON FRONT RANGE  
LL488 – BRIGHTON REAR RANGE

**LAKE ONTARIO**

**BRIGHTON, ON**

MARITIME AND CIVIL INFRASTRUCTURE

Prepared by: TC

Approved by: LL

Revision: 2

File: EWTM 8010-0487000

Rev Date: 2023 JUNE 13

## TABLE OF CONTENTS

SECTION:	011100 GENERAL INSTRUCTIONS .....	3
SECTION:	013300 SUBMITTAL PROCEDURES .....	10
SECTION:	013530 HEALTH AND SAFETY REQUIREMENTS .....	11
SECTION:	013543 ENVIRONMENTAL PROCEDURES .....	13
SECTION:	014500 QUALITY CONTROL.....	17
SECTION:	016100 COMMON PRODUCT REQUIREMENTS .....	19
SECTION:	024116 DEMOLITION OF STRUCTURES.....	21
SECTION:	033000 CONCRETE WORK .....	24
SECTION:	133613 METAL TOWERS.....	28
SECTION:	310099 FOUNDATIONS .....	31

## APPENDICES

APPENDIX A: SITE LOCATION AND PHOTOGRAPHS  
APPENDIX B: SUMMARY OF SUBMITTALS  
APPENDIX C: REFERENCE DRAWINGS  
APPENDIX D: NEW ATON TOWER DRAWINGS  
APPENDIX E: SAFETY RAIL SYSTEM INSTALLATION INSTRUCTIONS  
APPENDIX F: ENVIRONMENTAL ASSESSMENTS

## **SECTION: 011100 GENERAL INSTRUCTIONS**

### **PART 1 - GENERAL**

#### **1.1 Minimum Standards**

.1 Perform work in accordance with National Building Code of Canada (NBC) and any other code of provincial or local application. In the case of any conflict or discrepancy, the more stringent requirements will apply.

.1 Meet or exceed requirements of:

.1 Contract documents;

.2 Specified standards, codes, and referenced documents.

#### **1.2 Definitions**

.1 The following acronyms utilized throughout these specifications are to be interpreted as follows:

.1 CCG: Canadian Coast Guard

.2 DFO: Department of Fisheries and Oceans

.3 PA: Project Authority/Technical Authority

.4 CA: Contract Authority

.5 AtoN: Aid to Navigation

.6 SRAN: Short Range Aid to Navigation

.1 Term encompassing the sector light, solar panel, batteries, and all related appurtenances.

.7 DSL: Designated Staging Location

#### **1.3 Background**

.1 The Canadian Coast Guard has a requirement to modify the pair of existing range towers used within Presqu'île Bay to guide commercial and recreational vessels from Lake Ontario into the bay. The intent of the project is to perform a geotechnical investigation at the front range tower, LL487 Brighton Range Front, in preparation for a new tower, engineered foundation, and sector light that will be installed in the same location. The Contractor is responsible for performing a geotechnical investigation and obtaining an engineered foundation designed to meet the intended loads of the tower and the results of the geotechnical investigation. In preparation for the new tower, the front range tower will be demolished by the Contractor. The new tower has been fabricated by others in anticipation of construction and will be provided to the Contractor at the CCG DSL. Following the new foundation construction and tower installation by the Contractor, and confirmation of sector light installation by CCG, the rear range tower, LL488 Brighton Range Rear, will be demolished in

its entirety.

Both towers marked for demolition contain lead-based paint and are located in public areas.

#### 1.4 Description of Work

.1 Work under this Contract includes but is not limited to the provision of all labour, materials, and equipment required to:

.1 Mobilize to site with a work barge of appropriate size and certification based on the Contractor's assessment of the site;

.2 Perform a geotechnical investigation at LL487 Brighton Range Front;

.1 On site investigation; and,

.2 Compile a geotechnical investigation report detailing findings and recommendations.

.3 Remove and dispose of existing front range in its entirety, including but not necessarily limited to the cylindrical concrete tower, concrete foundation, pier, aid light, associated batteries, solar panels, wiring, and daymark;

.1 The existing range is estimated to be 23'-3 1/2" [7.1m] above the concrete foundation;

.2 The existing concrete foundation is estimated to be 7'-6 1/2" [2.3m] high;

.3 The existing concrete foundation is resting upon a standalone pier located below the lake's surface.

.4 Design and construct a foundation of suitable structural capacity to support the intended loads of the new AtoN;

.1 Finished height of the foundation must be 7'-6 1/2" [2.3m] above chart datum (74.01m IGLD55).

.5 Transport the new AtoN from the CCG DSL to the site;

.6 Install the AtoN upon the completed foundation;

.7 Following the confirmation of the installation of SRAN appurtenances by CCG, remove and dispose of existing rear range in its entirety, including but not necessarily limited to steel skeleton tower, concrete footings, daymark, and surrounding chain link fence;

.1 The existing range is estimated to be 59'-4 1/2" [18.1m] above the concrete footings;

.2 Concrete footings are 4-pile dolphin bases.

.3 Remove and salvage all electrical equipment associated with rear range tower including aid light, associated batteries, solar panels, and wiring.

.1 All salvaged items must be transported by the Contractor to the CCG Prescott Base upon completion of the demolition.

CCG Base – Prescott  
401 King St. W  
Prescott, ON  
K0E 1T0

- .8 Dispose of all waste at a licensed waste disposal facility.
- .2 The following work will be undertaken by others and is hereby excluded from the work of this contract:
  - .1 Fabrication of the new tower;
    - .1 Supplied items to be transported to the site from CCG Prescott Base by the Contractor.
    - .2 Advise the Canadian Coast Guard Project Authority at least three [3] working days prior to pick-up. Shipping/receiving hours are Monday through Friday, 9:00AM to 3:00PM.
  - .2 Application of marine coating system; and
  - .3 Supply and installation of all SRAN equipment.
- 1.5 Submittals
  - .1 Mandatory submittals and schedule for submission are detailed below and in *Appendix B – Summary of Submittals*. The following identifies general requirements only. The relevant sections must be consulted for a complete listing of mandatory content.
  - .2 The Contractor must provide a Detailed Schedule:
    - .1 Deadline:
      - .1 No later than ten [10] working days following award.
    - .2 Deliverables:
      - .1 The Contractor must furnish a high level schedule outlining:
        - .1 Anticipated start and finish dates of the project;
        - .2 Anticipated onsite periods (preliminary investigations, material staging, construction);
        - .3 Proposed submission dates for:
          - .1 Design Package;
          - .2 Construction Plan.
  - .3 The Contractor must provide a Design Package:
    - .1 Deadline:

- .1 As identified in the Contractor's detailed schedule;
- .2 Deliverables:
  - .1 Prior to mobilization to complete the geotechnical investigation, the Contractor must provide a Project Specific Safety Program (Section 013530), a Project Environmental Protection Plan (Section 013543), and the proposed investigation methods, equipment, subcontractors, etc. for the geotechnical investigation activities, at a minimum;
  - .2 The following deliverables must be provided to CCG either prior to or at the same time as the Construction Plan;
    - .1 Compilation of a geotechnical report sealed by a professional engineer who is licensed to practice in the province of Ontario;
    - .2 Foundation Installation Package (Section 310099).
- .4 The Contractor must provide a Construction Plan:
  - .1 Deadline:
    - .1 No later than ten [10] working days prior to mobilization.
  - .2 Deliverables:
    - .1 A Construction Plan of sufficient detail to demonstrate that the Contractor has considered all of the challenges of the project and is prepared to undertake the works in a competent and professional manner in accordance with all legislation, including:
      - .1 Project Specific Safety Program (Section 013530);
      - .2 Project Environmental Protection Plan (Section 013543) ;
      - .3 Demolition Plan (Section 024116);
      - .4 Concrete Placement Plan (Section 033000); and,
      - .5 Erection Package (Section 133613).
- .5 The Contractor must provide a Maintenance Package:
  - .1 Deadline:
    - .1 No later than thirty [30] calendar days following substantial completion of the installation.
  - .2 Deliverables:
    - .1 Consolidated as-constructed/as-built documentation. Package is to include, but is not necessarily limited to the following:

- .1 Drawing or sketch of the new sector light tower, indicating the position of the construction pier relative to the former installation. The Contractor must indicate a consistent point of reference and detail:
  - .1 Height of former foundation;
  - .2 Height of new foundation;
  - .3 Difference in elevation from top of former foundation to top of new foundation;
  - .4 Distance from center of the new foundation to the center of the former foundation.
- .2 Concrete test results (Section 033000); and,
- .3 Foundation and anchorage maintenance package (Section 310099).

#### 1.6 Contractor Qualifications

- .1 The work must be carried out under the supervision and responsibility of a sole specialized Contractor, capable of performing both demolition and installation of structures on remote islands;
  - .1 The Contractor must have experience in the demolition of structures;
  - .2 The Contractor must have experience working in remote areas.
  - .3 The Contractor must designate a project manager or main point of contact for the contract.
- .2 The Project Engineer engaged by the Contractor must be licensed to practice the required discipline within the Province of Ontario.
- .3 Requests to amend the project team, following contract award, must be forwarded in writing. The Canadian Coast Guard reserves the right to reject any proposal to amend the project team.

#### 1.7 Site Location

- .1 The location of LL487 Brighton Range Front is as follows:
  - .1 Lat./Long.: 44° 1' 7.163" N, 77° 43' 16.147" W.
- .2 The location of LL488 Brighton Range Rear is as follows:
  - .1 Lat./Long.: 44° 1' 18.106" N, 77° 43' 48.572" W.
- .3 The LL487 Brighton Range Front site is located approximately 250' [76m] offshore of the village of Brighton, Ontario and the LL488 Brighton Range Rear is located within a residential neighbourhood in the village of Brighton, Ontario.

#### 1.8 Existing Conditions

- .1 Bidders must make their own estimate of the difficulties associated with all phases of the works.

.2 The Contractor must include in their costs all expenses related to the difficulties of working at the site.

.3 Photographs of the existing site are included in *Appendix A – Site Locations and Photographs*.

#### 1.9 Contractor's Access to Site

.1 The Contractor must be responsible for transportation of all labour, materials, and equipment to and from the sites, including any and all material furnished or itemized for salvage by CCG.

.2 The LL487 Brighton Range Front site is accessible by water only. The site is located approximately 250 ft [76 m] offshore from Brighton, Ontario.

.3 The LL488 Brighton Range Rear site is accessible by motor vehicle. The site is located within a residential neighbourhood within Brighton, Ontario.

.4 The Contractor must source appropriate marine access to support all construction work.

.5 The Contractor must allow in their price for the proper transportation to and from the site for the CCG PA and designated representatives.

.1 The total number of passengers will be one [1] on a typical day; however, required personnel could increase to two or three [2-3] depending on quality assurance requirements itemized herein.

.2 Transportation is to be from Brighton, ON unless otherwise agreed upon between the Contractor and the CCG PA.

.1 PPE for CCG PA (and representatives) is the responsibility of CCG. PPE provided will be in accordance with more stringent requirements of either the Contractor's or CCG's designated safety equipment.

#### 1.10 Completion, Scheduling, and Planning of the Works

.1 The Contractor's schedule must be coordinated with the Canadian Coast Guard one [1] month prior to commencing.

.2 Work must be scheduled to commence in the Spring/Summer of 2024. Work may commence as early as practical following the Canadian Coast Guard's acceptance and approval of all mandatory submissions.

.3 The geotechnical investigative field work and report must be completed as to allow sufficient time for the design of an engineered foundation by the Contractor, demolition of existing structures, and installation of new structures before Winter 2024/2025.

.4 Once the Contractor mobilizes to site, the Contractor must perform each task consecutively without undue delay between each stage unless written permission is given by the CCG.

.5 The Contractor must prepare to stand down for a period of approximately three [3] days, weather depending, following the completion and acceptance of the new tower installation at LL487 Brighton Range Front. CCG technicians will use this time to install the required SRAN equipment.



Once the SRAN equipment is installed, calibrated, and accepted by the CCG PA, the Contractor must commence the demolition of the LL488 Brighton Rear Range tower.

- .6 All field work must be completed by November 29<sup>th</sup>, 2024, weather permitting, unless otherwise negotiated and approved in writing by CCG PA and DFO CA.

#### 1.11 Temporary Facilities

- .1 The Contractor must provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 The Contractor must arrange, pay for, and maintain temporary electrical power supply as required for construction, and water supply as required, in accordance with governing regulations and ordinances.
- .3 The Contractor must maintain emergency spills kit on-site at all times.

#### 1.12 Fees, Permits, Certificates, and Information

- .1 The Contractor must provide authorities having jurisdiction with all information requested.
  - .1 The Contractor must provide copies to the Canadian Coast Guard of any documentation submitted to other authorities related to the work described in this document.
  - .2 The Contractor must pay fees and obtain certificates and permits required.
  - .3 The Contractor must furnish certificates and permits when requested.

#### 1.13 Reference Documents

- .1 The most recent publication or edition of any document referenced in this specification must be used unless otherwise specified.

#### 1.14 Required Submissions

- .1 A summary of the minimum mandatory submissions required can be found in *Appendix B – Summary of Submittals*. This summary is not an exhaustive list of all submissions required for the duration of the project. Additional submissions may be required after award.

## **SECTION: 013300 SUBMITTAL PROCEDURES**

### **PART 1 - GENERAL**

#### 1.1 General

- .1 This section specifies general requirements and procedures for the Contractor's submissions of documents to the CCG PA for review.
- .2 For each phase of the project, work must not progress until all mandatory submittals required before the start of that phase have been received, reviewed, and accepted by CCG PA.
- .3 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 The Contractor must be responsible for errors and omissions in submission and is not relieved by the CCG PA's review of the submitted documents.
- .5 The Contractor must notify the CCG PA in writing at the time of submission, identifying deviations from the requirements of Contract Documents stating reasons for deviations.
- .6 The Contractor must be responsible for deviations in submission from the requirements of Contract Documents is not relieved by the CCG PA's review of submission, unless the CCG PA gives written acceptance of specific deviations.
- .7 The Contractor must make any changes to submissions that the CCG PA may require consistent with Contract Documents and resubmit as directed by the CCG PA.
- .8 The Contractor must provide the CCG PA with a written notice, when resubmitting, of any revisions other than those requested by the CCG PA.

#### 1.2 Submission Requirements

- .1 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.
- .2 Allow a minimum of three [3] working days, or as stipulated in the specifications, for the CCG PA to review the submission.
- .3 The Contractor's Engineer must seal and sign any submissions requiring a Professional Engineer's seal certifying his/her approval of samples, verification of field measurements, and compliance with Contract Documents.

# **SECTION: 013530 HEALTH AND SAFETY REQUIREMENTS**

## **PART 1 - GENERAL**

### 1.1 Scope

- .1 The Contractor must be responsible to develop, implement, and enforce a safety program which addresses all elements of the work.

### 1.2 References

- .1 Work under this section must be undertaken in strict conformance with the latest editions of all listed references. In the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canada Labour Code Part II.
  - .2 NRC-CNRC National Research Council Canada – Conseil National de Recherches Canada (NRC-CNRC) National Building Code of Canada.
  - .3 Ontario Occupational Health and Safety Act and Regulations.
  - .4 Any and all other Provincial/Territorial Regulations and Policies; Worker's Compensation Board Policies; Local municipal regulations; pertaining to the safety of the Contractor's workers.

### 1.3 Submittals

- .1 The Contractor must submit a Project Specific Safety Program.
  - .1 Deadline:
    - .1 With Construction Plan (Section 011100).
  - .2 Deliverables:
    - .1 Submit a Safety Program Document, including:
      - .1 A listing of all activities specific to this phase of the project and their Health & Safety risks or hazards.
      - .2 Detailed descriptions of how the activities are to be carried out as well as methods for mitigating hazards and risks.
      - .3 A listing of personnel responsible for health and safety measures, and emergency procedures.
      - .4 Material Safety Data Sheets for hazardous products to be utilized in the execution of the works.

- .5 Proof of training for employees engaged in specific dangerous tasks.
- .6 Proof that a Notice of Project has been filed with the Ontario Ministry of Labour.  
<https://www.enop.labour.gov.on.ca/ENOPWeb/ImportantNotice>
- .7 The Contractor must submit completed Field Level Hazard Assessment (FLHA) forms to the CCG upon request.

## **SECTION: 013543 ENVIRONMENTAL PROCEDURES**

### **PART 1 - GENERAL**

#### 1.1 Scope of Work

- .1 The Contractor must implement and enforce the following procedures throughout the duration of the work to mitigate potential negative impacts on the surrounding environment.

#### 1.2 References

- .1 Work under this section must be undertaken in strict conformance with all listed references. In the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canadian Environmental Protection Act.
  - .2 Canadian Council of Ministers of the Environment (CCME) Documentation.
  - .3 Canadian General Standards Board.
  - .4 Transportation of Dangerous Goods.

#### 1.3 Submittals

- .1 The Contractor must submit an Environmental Protection Plan.
  - .1 Deadline:
    - .1 With Construction Plan (Section 011100).
  - .2 Deliverables:
    - .1 Submit a plan addressing procedures to be implemented to mitigate any negative impact on the environment, including:
      - .1 Equipment features (age, spill containment);
      - .2 Staging, refueling, and cleaning areas;
      - .3 Clean-up and/or containment procedures (including concrete/grout);
      - .4 Sedimentation control measures;
      - .5 Waste disposal methods and sites;
      - .6 Dust and debris control measures; and,
      - .7 De-watering plan, if necessary.

## **PART 2 - PRODUCTS**

### **2.1 General**

- .1 The Contractor must avoid the use of hazardous products. Use environmentally-friendly products where practical.

## **PART 3 - EXECUTION**

### **3.1 Construction Area**

- .1 The Contractor must confine construction activities to as small of an area as practical.
- .2 The Contractor must establish material storage, cleaning, and refueling areas where impacts to the surrounding environment will be negligible or readily mitigated.

### **3.2 Stockpiling of Materials**

- .1 The Contractor must stockpile materials as far from the shoreline as practical. Tarps must be used to control dust and run-off.
- .2 The Contractor must stockpile excavated materials and skirt using filter fabric to control run-off of fines during rain.

### **3.3 Disposal of Wastes**

- .1 The Contractor must clean-up the site at the end of each working day.
- .2 The Contractor must dispose all waste material in a legal manner at a site approved by local authorities. Transporter/hauler must be appropriately licensed.
  - .1 Recycle or re-use materials where possible.
- .3 The Contractor must not create fires or burn rubbish on site.
- .4 The Contractor must not bury rubbish and waste materials on site.
- .5 The Contractor must ensure waste materials do not enter watercourse in any capacity.

### **3.4 Clearing and Grubbing**

- .1 The Contractor must avoid any unnecessary clearing of vegetation. Only clear vegetation that interferes with construction once approved to do so by the CCG PA.

### **3.5 Drainage**

- .1 The Contractor must provide temporary drainage and pumping as necessary to keep excavations and site free from water.

- .1 The Contractor must suspend works during periods of heavy rainfall and add temporary covers to discourage run-off.
- .2 Water pumped from excavation must be adequately treated to ensure that water returning to the watercourse contains minimal fines. Procedures anticipated for preventing the pump of fines must be identified in the Environmental Protection Plan, and may include the following:
  - .1 The use of filter bags;
  - .2 Straw bale check dams or silt fence,
- .3 The means for controlling silt run-off must be dependent on the site and the quantity of water pumped, and must be to the discretion of the CCG site staff.
- .4 Sediment control measures must be inspected and improved/cleaned/replaced as necessary.

### 3.6 Pollution Control

- .1 The Contractor must provide methods, means, and facilities to prevent the contamination of soil, water, and atmosphere from the discharge of pollutants produced by construction operations.
- .2 The Contractor must provide vehicles, machinery, and equipment in good repair, equipped with emission controls as applicable, and operate within regulatory requirements.
- .3 The Contractor must abide by local noise by-laws.
- .4 The Contractor must avoid unnecessary idling of vehicles or heavy machinery.
- .5 The Contractor must limit use of equipment around the shoreline where possible.
- .6 The Contractor must implement and maintain dust and particulate control measures in accordance with provincial requirements:
  - .1 All bulk material haul equipment must be appropriately tarped. Watertight vehicles must be used to haul wet materials.
- .7 The Contractor must designate a cleaning area for tools to limit water use and run-off and not allow deleterious materials to enter waterways. Ensure emptied containers are sealed and stored safely for disposal.
- .8 The Contractor must take all necessary precautions to guard against the release of any noxious substance or pollutant to the environment. In the event of any spill, the Contractor must take immediate action to contain the release and mitigate any impact.
  - .1 Materials and equipment to intercept, contain, and clean-up any spill or other release must be maintained on site throughout the construction period and must be readily accessible at all times.
  - .2 Any uncontrolled release of a known containment (spills, fire/smoke) must be reported to the appropriate Provincial Authority and the Canadian Coast Guard. Spills of deleterious

substances must be immediately contained and cleaned up in accordance with provincial regulatory requirements.

.3 Provincial Authority: Ontario Spills Action Centre 1-800-268-6060

### 3.7 Traffic

.1 The Contractor must minimize soil compaction by driving, parking vehicles, and walking, etc. on existing paved roadways and laneways. If soil is impacted by compaction, compensate by restoring areas with new soil, as required.

.1 The Contractor must avoid the use of heavy machinery in areas of sensitive slopes. Avoid using machinery on land during wet weather.

### 3.8 Lead-Based Paint

.1 The paint on the existing rear range tower has been determined to be lead-based. Since both towers were constructed at the same time and maintained together, it is assumed that the front range tower also contains lead-based paint. Therefore, the Contractor must exercise care to minimize exposure of paint dust or chips to the surrounding environment when demolishing both existing range towers.



## **SECTION: 014500 QUALITY CONTROL**

### **PART 1 - GENERAL**

#### 1.1 Inspection

- .1 The CCG PA or their representative must have access to the work at all times. If parts of the work are prepared off-site or in a shop, access must be given to such work throughout the duration of the project.

#### 1.2 Procedures

- .1 The Contractor must provide the CCG PA with advance notice whenever testing is required in accordance with these specifications, so that all parties involved can be present.
- .2 The Contractor must provide necessary manpower and installations for obtaining and handling samples and material on site.
- .3 The Contractor must provide access to the site if the site is of remote nature whereby the Contractor is responsible for providing access to the site.
- .4 The list below identifies key milestones where the Canadian Coast Guard will require an opportunity to take samples/inspect:
  - .1 Demolition: The CCG must have the opportunity to witness the demolition of the existing range towers.
  - .2 Demolition completion: The CCG must conduct an inspection of the site upon the completion of the demolition of the existing range towers.
  - .3 Location verification: The CCG must confirm correct location for installation of new sector light tower upon arrival of the Contractor at the site. The Contractor must provide access to the site at all times to CCG staff and consultants.
  - .4 Concrete forms and reinforcement installation: The Contractor must make the site available to the CCG after any formwork and/or reinforcements have been put in place for verification.
  - .5 Concrete testing: The Contractor must arrange for concrete testing to take place when concrete is poured on site. The results of the test must be shared with the CCG PA.
  - .6 Concrete pours to be witnessed by a CCG representative.
  - .7 Tower install: A CCG representative must witness the erection of the new sector light tower.
  - .8 Final completion: The CCG must conduct a final inspection of the site upon completion.

### 1.3 Rejected Work

- .1 The Contractor must remove defective work, whether incorporated into the work or not, which has been rejected by the CCG PA as failing to comply with the Contract Documents. Replace or re-execute in accordance with the Contract Documents.

### 1.4 Tests and Mixture Formulas

- .1 The Contractor must supply test reports and required mixture formulas.

### 1.5 Factory Tests

- .1 The Contractor must submit test certificates as prescribed in the relevant section of the specifications.

### 1.6 Acceptance of Work

- .1 The CCG PA will make acceptance visits of work executed by the Contractor at critical milestones identified in the following sections.
- .2 The Contractor must inform CCG PA at least three [3] working days before achieving these milestones to allow time for inspections to be coordinated.
- .3 All work must be completed in compliance with the specifications before requesting the visit for inspection. If the work is not completed or deemed non-compliant, the Contractor will be responsible for all costs incurred for subsequent inspections.
- .4 Care must be taken to minimize destruction to Crown property and appropriate remedies must be employed where such damage occurs at the Contractor's expense.

## **SECTION: 016100 COMMON PRODUCT REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 General**

- .1 The Contractor must secure CCG PA's approval of all products to be incorporated into the works. Work must not commence until product data and/or samples have received CCG PA approval.
- .2 The Contractor must supply and/or fabricate materials and equipment of prescribed quality, with performance conforming to established standards.
- .3 The Contractor must use new material and equipment unless otherwise specified.
- .4 The Contractor must ensure replacement parts be readily procured.
- .5 The Contractor must use products from one manufacturer for material and equipment of same type or classification, unless otherwise specified.

#### **1.2 Manufacturer's Instructions**

- .1 Unless otherwise specified, the Contractor must comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 The Contractor must notify CCG PA in writing of any conflict between these specifications and manufacturer's instructions; CCG PA will designate which document must be followed.

#### **1.3 Compliance**

- .1 When material or equipment is specified by standard or performance specifications, upon request from CCG PA, the Contractor must obtain an independent testing laboratory report from the manufacturer, stating that the material or equipment meets or exceeds specified requirements.

#### **1.4 Substitution**

- .1 Where specific products have been specified, proposals for substitution may only be submitted after award of contract. Such requests must include statements of respective costs of items originally specified and the proposed substitution.
- .2 No substitutions will be permitted without prior written approval of CCG PA. Substitutions will be considered by CCG PA only when:
  - .1 Materials specified in contract documents are not available; or,
  - .2 Delivery date of materials selected from those materials specified would unduly delay completion of contract; or,
  - .3 Alternative materials to those specified, which are brought to the attention of, and are considered by CCG PA as equivalent to the material specified where the value of such

material is less than the material specified, the difference is to be credited to the Contract amount.

- .3 Should the proposed substitution be accepted either in whole or in part, the Contractor will assume full responsibility and costs when such substitution affects other work on the project including any and all design or drawings changes required as a result of substitution.

1.5 Submittals

- .1 The Contractor must provide product specifications and/or samples upon request from CCG PA.

## **SECTION: 024116 DEMOLITION OF STRUCTURES**

### **PART 1 - GENERAL**

#### **1.1 Scope of Work**

- .1 Work under this section consists of the provision of all labour, materials, and equipment necessary to complete the following activities:
  - .1 Demolition of the existing front range in its entirety, including but not necessarily limited to the cylindrical concrete tower, concrete foundation, pier, one [1] aid light, two [2] associated batteries, one [1] solar panel, wiring, and daymark;
    - .1 The existing range is estimated to be 23'-3 1/2" [7.1m] above the concrete foundation;
    - .2 The existing concrete foundation is estimated to be 7'-6 1/2" [2.3m] high;
    - .3 The existing concrete foundation is resting upon a standalone pier located below the lake's surface.
  - .2 Following the completion and acceptance of the new sector light tower, the Contractor must stand down for a period of approximately three [3] days. CCG technicians will use this time to install the required SRAN equipment.
  - .3 Once the SRAN equipment is installed, calibrated, and accepted by the CCG PA, the Contractor must commence demolition of the existing rear range in its entirety, including but not necessarily limited to steel skeleton tower, four [4] concrete footings, daymark, and surrounding chain link fence;
    - .1 The existing range is estimated to be 59'-4 1/2" [18.1m] above the concrete footings;
    - .2 Concrete footings are 4-pile dolphin bases.
    - .3 The Contractor must remove and salvage all electrical equipment associated with rear range tower including aid light, associated batteries, solar panels, and wiring.
      - .1 All salvaged items must be transported by the Contractor to the CCG Prescott Base upon completion of the demolition.
  - .4 The Contractor must dispose of all waste at a licensed waste disposal facility.

#### **1.2 References**

- .1 Work under this section must be undertaken in strict conformance with the latest edition of all listed references. In the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canada Labour Code Part II.
  - .2 NRC-CNRC National Building Code of Canada.

- .3 Ontario Occupational Health and Safety Act and Regulations.
- .4 CSA S350-[M1980(R1998)], Code of Practice for Safety in Demolition of Structures.

### 1.3 Submittals

- .1 The Contractor must provide a Demolition Plan.
  - .1 Deadline:
    - .1 With Construction Plan (Section 011100).
  - .2 Deliverables:
    - .1 Method of demolition including all associated tasks and schedule;
    - .2 Methods for protecting the site from demolition debris;
    - .3 Methods for lead paint abatement;
    - .4 The ultimate disposal location of all waste materials and debris.
      - .1 Include documentation detailing regulatory approval for waste disposal facility and transporter.
- .2 Work under this section must not proceed until written approval of the demolition plan has been received, reviewed, and accepted by the CCG PA.
- .3 The Contractor must submit copies of certified receipts from the disposal sites for all material removed from the work no later than thirty [30] calendar days following substantial completion of the installation.

### 1.4 Existing Conditions

- .1 Photographs of the existing site are included in *Appendix A – Site Locations and Photographs*.

## **PART 2 - EXECUTION**

### 2.1 General

- .1 Work under this section must be continuous and proceed without interruption unless otherwise approved by the CCG PA.
- .2 Towers must not be felled. Due to the towers being in close proximity to houses and in the water, the Contractor must include detailed methods of demolition in the Demolition Plan as previously stated.
- .3 The Contractor must ensure that demolition is undertaken safely. If at any period during demolition the safety of the Contractor's staff cannot be maintained, the Contractor must take preventative measures, stop work, and immediately notify the CCG PA.

- .4 The Contractor must ensure that demolition work does not adversely affect adjacent watercourses, groundwater, wildlife, properties, or contribute to excess air and noise pollution.
- .5 If the safety of the structure being demolished appears to be endangered, the Contractor must take preventative measures, stop work, and immediately notify the CCG PA.
- .6 At the end of each day, the Contractor must leave work in a safe and stable condition.

## 2.2 Protection

- .1 The Contractor must capture pictures of the site conditions before the commencement of any fieldwork. These pictures must be submitted to the CCG PA before the completion of the demolition.
  - .1 The pictures will be used as a reference for restoration of the site post construction.
- .2 The Contractor must prevent movement, settlement, or damage of adjacent structures/vegetation.
- .3 The Contractor must implement effective controls to catch/collect all tower debris during demolition, specifically concrete.
- .4 The Contractor must implement effective controls to prevent injury to workers and mariners.

## 2.3 Preparation

- .1 The Contractor must erect warning signs and barricades as applicable.
- .2 The Contractor must ensure all environmental protection/mitigation measures are in place.

## 2.4 Demolition

- .1 The Contractor must demolish and dispose of the existing front range tower.
- .2 The Contractor must demolish and dispose of the existing rear range tower, following the new sector light installation by CCG personnel.

## 2.5 Disposal

- .1 The Contractor must ensure all material is disposed of off-site at a licensed disposal or recycling facility.

## 2.6 Restoration

- .1 The site in its entirety must be restored to an equal or greater condition after completion of construction activities.

## **SECTION: 033000 CONCRETE WORK**

### **PART 1 - GENERAL**

#### 1.1 Scope of Work

- .1 Work under this section includes the supply of all labour, material, and equipment necessary to complete the:
  - .1 Installation of reinforced concrete features stipulated in the Contractor's approved foundation design.
  - .2 The Contractor must supply, install, and maintain any and all measures to ensure that curing is adequate for adequate strength development, durability, and impermeability.

#### 1.2 Relation Sections

- .1 Section 310099 – Foundations.
  - .1 Section stipulates design requirements.

#### 1.3 References

- .1 Work under this section must be undertaken in strict conformance with all listed references, in the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canada Labour Code Part II.
  - .2 NRC-CNRC National Building Code of Canada.
  - .3 Ontario Occupational Health and Safety Act and Regulations.
  - .4 CAN/CSA-A23.1 Concrete Materials and Methods of Concrete Construction.
  - .5 CAN/CSA-A23.2 Methods of Test and Standard Practices for Concrete.
  - .6 CAN/CSA-A23.3 Design of Concrete Structures.
  - .7 CAN/CSA-G30.18 Billet Steel Bars for Concrete Reinforcement.
  - .8 CAN/CSA-S269.2 Concrete Formwork.
  - .9 ACI Specification 306 Cold Weather Concreting (if relevant)

#### 1.4 Submittals

- .1 The Contractor must provide a Concrete Placement Plan:
  - .1 Deadline:



- .1 With Construction Plan (Section 011100).
- .2 Deliverables:
  - .1 The Contractor must provide a high level summary of:
    - .1 Mix properties and admixtures;
    - .2 Demonstrate compliance with CCG criteria and completed foundation design;
    - .3 Identify the location of the source of ready mix concrete, the haul route, and any other relevant information required to demonstrate a plan for getting the concrete into the forms in the required amount of time;
    - .4 Finishing procedures;
    - .5 Curing methods and schedule;
    - .6 Clean-up procedures; and,
    - .7 Mitigation measures to account for hot or cold temperatures where reasonably anticipated during the construction period.
  - .3 The Contractor must provide concrete test results:
    - .1 Air, Slump, and associated plastic properties.
      - .1 Deadline: as soon as practical upon completion of testing.
      - .2 Deliverables: Technicians field report.
    - .2 Strength.
      - .1 Deadline: with Maintenance Package (Section 011100).
      - .2 Deliverables: results of all concrete testing undertaken by the Contractor.

#### 1.5 Quality Assurance

- .1 The CCG's minimum inspection requirements are detailed below. The Contractor must be responsible to notify the CCG PA of the date and time that the works may be inspected.
  - .1 Upon completion of formwork and placement of reinforcements.
  - .2 During execution of concrete placement.
- .2 The Contractor must arrange for concrete testing on site the day of the pour. This must include at minimum a test for slump, air entrainment, and strength (3 cylinders, one [1] seven [7] day, and two [2] twenty-eight [28] day).

- .1 Testing is to be completed by a third party independent consultant and is to be completed by a certified technician in accordance with CSA Code A23.2. Test results are to be provided to both the CCG PA and the Contractor.

## **PART 2 - MATERIALS**

### **2.1 General**

- .1 The Contractor must ensure all materials conform to requirements of CAN/CSA-A23.1.

### **2.2 Formwork**

- .1 The Contractor must ensure all formwork is in accordance with CAN/CSA-S269.3.

### **2.3 Concrete**

- .1 The Contractor must ensure concrete supplier holds a valid "Certificate of Ready Mixed/Mobile Mix Concrete Production Facilities" as issued by the 'Ready Mixed Concrete Association of Ontario' (RMCAO)/Concrete Ontario.

- .1 Alternatively, pre-portioned or bagged concrete is suitable, upon written approval by the CCG PA.

- .2 Concrete performance criteria must be as determined by the Contractor and indicated on their approved engineering plans and drawings.

- .3 The Contractor must ensure calcium chloride is not used as an admixture.

### **2.4 Water**

- .1 Water utilized for the production of concrete must be potable, unless otherwise approved in writing by the CCG PA.

### **2.5 Reinforcement**

- .1 All reinforcements must be as specified by the Contractor's Engineer.
- .2 The Contractor must ensure reinforcement conforms to the requirements of CAN/CSA-A23.

## **PART 3 - EXECUTION**

### **3.1 General**

- .1 The Contractor must ensure concrete is placed, finished, and cured in accordance with the Contractor's submitted Construction Plan and the Contractor's engineered drawings.

### **3.2 Preparation**

- .1 The Contractor must remove all loose and deleterious material.

- .2 The Contractor must construct forms and reinforcement in accordance with the Engineer's specifications.
- .3 The Contractor must ensure all exposed edges are chamfered.

### 3.3 Placement

- .1 Concrete placement must not commence until formwork and reinforcement have been inspected and approved by a CCG representative.
- .2 The Contractor must place, finish, and cure concrete as per CAN/CSA-A23.1, making all adjustments necessary to account for climatic conditions anticipated during the curing period.
- .3 The Contractor must ensure concrete be placed in one continuous pour.
  - .1 The development of cold joints must be avoided. Alternately, cold joints must be previously approved in writing by the Contractor's Engineer.
- .4 The Contractor must ensure all exposed 90° edges be chamfered.
- .5 The Contractor must ensure exposed concrete surfaces are finished and provide a lightly brushed non-skid surface, unless otherwise specified.
- .6 The Contractor must cut control joints as specified.
- .7 The Contractor must finish concrete so as to slope gently away from the center of the slab. No water must pond on the finished surface.

### 3.4 Curing

- .1 Curing must be undertaken in accordance with CAN/CSA-A23.1 and the Contractor's approved Construction Plan.
  - .1 Curing regimen employed must take into account local climatic conditions reasonably anticipated to occur during the curing period.

### 3.5 Grout

- .1 The Contractor must supply and install load bearing grout between the top of the completed foundation and the tower base/anchor plates.
- .2 The Contractor must ensure edges of grout are chamfered.

## **SECTION: 133613 METAL TOWERS**

### **PART 1 - GENERAL**

#### **1.1 Scope of Work**

- .1 Work under this section includes the supply of all labour, material, and equipment required to complete the following:
  - .1 Collect the new AtoN at CCG DSL and transport same to the project site.
  - .2 Procurement of required hardware to assemble the new AtoN – anchor bolts, washers, nuts.
  - .3 Install the new AtoN and all appurtenances upon the completed foundation.
- .2 Tower and sector light will be provided by the CCG and the Contractor must collect same from the CCG DSL.

#### **1.2 References**

- .1 Work under this section must be undertaken in strict conformance with all listed references. In the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canada Labour Code Part II.
  - .2 NRC-CNRC National Building Code of Canada.
  - .3 CSA-S37 – Antenna Towers and Antenna Supporting Structures.
  - .4 CSA-Z259.2.4 – Fall Arresters and Vertical Rigid Rails.
  - .5 ASTM A780/A780M – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

#### **1.3 Submittals**

- .1 The Contractor must provide an Erection Package:
  - .1 Deadline:
    - .1 With Construction Plan (Section 011100).
  - .2 Deliverables:
    - .1 Written Plan: Outline all procedures and methods to be employed to:
      - .1 Erect the tower;
      - .2 Ensure structural integrity during hoisting incomplete structures;

- .3 Monitor that Turn of Nut has been completed;
- .4 Field remedies to address any damage to the coating system incurred during transportation and erection.
- .3 The Canadian Coast Guard reserves the right to request additional documentation verifying the suitability of the proposed labour and equipment anticipated to be employed in the erection of the tower. Certification required may include:
  - .1 Hoisting equipment type, capacity, and associated certification;
  - .2 Sealed drawings for erection plan.

#### 1.4 Quality Assurance

- .1 The CCG's minimum inspection requirements are detailed below. The Contractor must be responsible to notify the CCG PA of the date and time that the works may be inspected.
  - .1 During installation.

## **PART 2 - PRODUCTS**

### 2.1 Tower (Provided by CCG)

- .1 Tower is detailed in Appendix D – New AtoN Tower Drawings.
  - .1 Tower is fabricated in sections described in the engineered drawings provided in Appendix D – New AtoN Tower Drawings.
  - .2 Tower will be supplied in sections and must be assembled by the Contractor at the project location.
  - .3 Original engineered drawings are provided as reference for the purposes of determining foundation design.

### 2.2 Fall Arrest System (Provided by CCG)

- .1 Trylon TSF Cougar Rail Safety System.
  - .1 Rail Safety System will be supplied by CCG and must be installed by the Contractor.
  - .2 Manufacturer's latest installation instructions are included in Appendix E – Safety Rail System Installation Instructions.
- .2 All required fasteners relating to fall arrest system.

### 2.3 Bolts, Nuts & Washers (Provided by the Contractor)

- .1 As specified in Appendix D – New AtoN Tower Drawings.

### 2.4 Anchor Bolts (Provided by the Contractor)

- .1 As specified in Appendix D – New AtoN Tower Drawings.
  - .1 Anchor bolts must possess sufficient threaded length above the top of the foundation to allow configuration specified in the above mentioned drawings.
- 2.5 Grout (Provided by the Contractor)
  - .1 Sika M-Bed or approved equivalent.

## **PART 3 - EXECUTION**

### 3.1 Handling of Material and Transportation

- .1 Tower will be stored at the staging location until the Contractor is ready to transport to site.
- .2 The Contractor must take all necessary precautions to avoid damage to tower members or to tower coating during transport, unloading, and erection. All components or damaged members must be replaced to the satisfaction of the Canadian Coast Guard.
- .3 The Contractor must provide storage of materials on-site.

### 3.2 Site Preparation

- .1 The Contractor must complete installation of all foundation elements prior to tower erection.

### 3.3 Erection

- .1 The Contractor must erect the new tower in accordance with the Contractor's submitted Erection Package.
- .2 The Contractor must ensure the tower is plumb and level.
- .3 Each anchor bolt must have two [2] heavy hex steel nuts meeting the requirements of the engineered drawings in Appendix D – New AtoN Tower Drawings.
- .4 The Contractor must tighten the first nut in EACH connection using Turn of Nut method associated to the length of bolt provided. The second nut must be snug tight to lock into place the two nuts.
- .5 The Contractor must grout between tower base plate and prepared concrete foundation.

## **SECTION: 310099 FOUNDATIONS**

### **PART 1 - GENERAL**

#### **1.1 Scope of Work**

- .1 Work under this section includes the supply of all labour, material, and equipment required to complete the following:
  - .1 Installation of supporting foundation for the new AtoN.
    - .1 The Contractor must assume a reinforced concrete footing having surface dimensions of approximately 6'-6" x 6'-6" x 9'-10" [2m x 2m x 3m], as well as driven piles, for the purposes of initial estimation and project costing.
    - .2 Foundation is intended to be constructed to the same finished height as the existing foundation as detailed previously.

#### **1.2 Related Sections**

- .1 Section 033000 – Concrete Work.
  - .1 Section details requirements for concrete supply, placement, and finishing.

#### **1.3 References**

- .1 Work under this section must be undertaken in strict conformance with all listed references. In the case of any conflict or discrepancy, the more stringent requirements will apply.
  - .1 Canada Labour Code Part II
  - .2 NRC-CNRC National Building Code of Canada
  - .3 Ontario Occupational Health and Safety Act and Regulations

#### **1.4 Existing Conditions**

- .1 The existing front range is located within Presqu'île Bay offshore of Brighton, ON. The existing foundation appears to be resting upon a standalone pier which was placed on an underwater rock pile 54 years ago. Due to a lack of drawings, the exact construction of the existing foundation assembly is unclear. It is assumed that the existing pier has exceeded its expected service life. The site is only accessible by boat.

#### **1.5 System Description**

- .1 The foundation element must provide a stable base for the AtoN detailed in Appendix D – New AtoN Tower Drawings.
  - .1 Foundation elements shown are for bidding purposes only. Actual size and construction method must be determined in consideration of consultation with a professional engineer

and the findings of an appropriate geotechnical investigation completed by the successful Contractor.

#### 1.6 Design Requirements

- .1 Foundation must be designed to resist all anticipated dead and live loads.
- .2 Foundation must be designed to resist all anticipated ice loads for this location.
- .3 Design must be completed in consideration of the findings of the geotechnical investigation completed at this location.

#### 1.7 Performance Requirements

- .1 Expected service life of this element is 50 years+. The constructed foundation element is expected to perform as reasonably expected through this period.

#### 1.8 Submittals

- .1 The Contractor must provide a Geotechnical Report:
  - .1 Deadline:
    - .1 With Design Package (011100).
  - .2 Deliverables:
    - .1 Description of the soil strata according to the Unified Soil Classification System (USCS);
    - .2 Depths at which strata changes occur referenced to a site benchmark elevation;
    - .3 Standard Penetration Test (SPT) blow counts (N) for each soil layer;
    - .4 Soil density for each soil layer;
    - .5 Internal angle of friction for each soil layer;
    - .6 Cohesion for each soil layer;
    - .7 Ultimate bearing capacities for each soil layer or at the recommended bearing depth(s);
    - .8 Rock quality designation;
    - .9 Total core recovery percentage;
    - .10 For expansive soil conditions, the active zone of influence and recommendations for design;
    - .11 Anticipated sulphate content of groundwater and soils;
    - .12 Anticipated classification of the soils in accordance with Ontario Occupational Health and Safety Act;



- .13 Other pertinent soil design data and recommendations;
  - .14 Foundation recommendations in consideration of the anticipated loading, native material properties, access to the site, and contractor availability/expertise;
  - .15 General topographic information for the site, including photographs and rough topographic sketch detailing:
    - .1 Site benchmark location and elevations.
  - .2 The Contractor must provide a Foundation Installation Package:
    - .1 Deadline:
      - .1 With Design Package (Section 011100).
    - .2 Deliverables:
      - .1 Engineered drawings: Drawings must be sealed and signed by a professional engineer licensed to practice in the Province of Ontario.
        - .1 Drawings must detail:
          - .1 Plan, elevation, and relevant section views of the proposed installation;
          - .2 All incorporated products and performance parameters for bulk materials (i.e. ready mix concrete);
          - .3 Any pertinent commentary concerning construction of the proposed foundation and anchorage element of the proposed facility.
        - .2 Summary report (if necessary). The summary report must contain all additional technical references and requirements not otherwise detailed within the engineered drawings (ie. manufacturer's installation instructions of a selected chemical adhesive anchor).
  - .3 The Contractor must provide a Foundation and Anchorage Maintenance Package:
    - .1 Deadline:
      - .1 With Maintenance Package (Section 011100).
    - .2 Deliverables:
      - .1 Amended project design drawings noting adherence, or any approved deviation completed during construction.
- 1.9 Quality Control
- .1 The CCG's minimum inspection requirements are detailed below. The Contractor must be responsible to notify the CCG PA of the date and time that the works may be inspected.
    - .1 Onsite throughout installation of all critical foundation elements.

## **PART 2 - PRODUCTS**

### 2.1 General

- .1 Products must be as stipulated by the Contractor's Engineer.
  - .1 Where concrete products are stipulated, they are expected to conform to the requirements indicated in Section 033000, unless otherwise approved in writing by CCG PA.

## **PART 3 - EXECUTION**

### 3.1 General

- .1 Installation must be undertaken in accordance with the Contractor's engineered drawings and accompanying materials as contained in the Contractor's Construction Plan.