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SOW – LIGHTHOUSE DEMOLITION & FOUNDATION CONSTRUCTION

LL 1378 LIGHTHOUSE ISLAND

GRAVENHURST, ON

MARITIME AND CIVIL INFRASTRUCTURE

Prepared by: BY

Approved by: BY

Revision: 1

File: EWTM 8010-1378000

Rev Date: 10 JUL 17



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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 shall apply.
- .1 Meet or exceed requirements of:
 - .1 Contract documents;
 - .2 Specified standards, codes and referenced documents.

1.2 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;
 - .2 Demolish and dispose of the existing lighthouse and foundation;
 - .3 Install one [1] reinforced concrete foundation consisting of:
 - .1 Strip footing; and,
 - .2 Interior floor slab
- .2 The following work will be undertaken by others and is hereby excluded:
 - .1 Installation of a new lighthouse onto the above listed foundation.

1.3 Submittals

- .1 Mandatory submittals and schedule for submission are detailed below and in Appendix B. The following identifies general requirements only. The relevant sections must be consulted for a complete listing of mandatory content.
- .2 Detailed Schedule:
 - .1 Deadline:
 - .1 No later than ten (10) working days following award.
 - .2 Deliverables:
 - .1 The contractor shall furnish a high level schedule outlining the major construction milestones. Schedule shall clearly define the anticipated start and finish of the project.



.3 Proof of Qualifications:

.1 Deadline:

- .1 No later than ten [10] working days following award.

.2 Deliverables:

- .1 Contractor shall furnish proof of vessel registration.
.2 Contractor shall furnish listing of all subcontractors.
.3 Contractor shall furnish proof of experience, only upon request.

.4 Construction Plan:

.1 Deadline:

- .1 No less 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 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 Detailed demolition plan (Section 024116);
.4 Detailed construction plan (Section 033000);

1.4 Contractor Qualifications

- .1 The work shall be carried out under the supervision and responsibility of a sole specialized Contractor. Upon request the contractor may be asked to provide proof that they have successfully completed projects involving the following elements. This will not be evaluated at bid;

.1 Demolition;

.2 Construction of cast-in-place reinforced concrete.

- .2 The contractor shall furnish a vessel in conformance with the requirements identified in Appendix D.

- .3 The Contractor shall designate a project manager or main point of contact for the contract.

- .4 The Contractor shall provide a detailed list of all subcontractors being used to complete the work described herein.



1.5 Site Location

- .1 The location of the site is as follows:
 - .1 Lat./Long.: 44°57'17.70"N, 79°24'23.14"W
 - .2 The closest settlement is Gravenhurst, Ontario.
 - .3 The site is located on an island, offshore in Lake Muskoka.

1.6 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 sites.
- .3 Photographs of the existing site are included in Appendix A.
- .4 Drawings of the existing light-house are provided in Appendix C.

1.7 Contractor's Access to Site

- .1 Contractor is 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 Coast Guard.
- .2 The Site is accessible by water. The site is located on an island in Lake Muskoka, 4 km North-west of Gravenhurst, ON.
- .3 The Contractor is responsible for sourcing appropriate marine access to support all construction work. Contractors are also responsible for meeting all the requirements set out in *Appendix D – Marine Access Requirements*.
 - .1 Contractor shall provide proof of vessel registration in the 'proof of qualifications' submittal.

1.8 Completion, Scheduling and Planning of the Works

- .1 The contractor's schedule must be coordinated with the Canadian Coast Guard 1 month prior to commencing.
- .2 Work must be scheduled to occur in the fall of 2017 and at times suitable to the Canadian Coast Guard who will be responsible for staging their works around the contractor's schedule.
- .3 All field work must be complete by 13 OCT 17.

1.9 Coast Guard Staging Location

- .1 Items itemized as supplied by, or salvaged to Coast Guard shall be collected or delivered by the Contractor to the following staging location. The Contractor shall be responsible for all transportation costs between the project site and the identified staging location.



.2 Material drop off or access to stored goods outside of regular operating hours shall be at the discretion of Coast Guard and may be subject to cost recovery:

- .1 Staging location: CCG Base – Parry Sound, 28 Waubeek St, Parry Sound, ON P2A 1B9.
- .2 Advise Coast Guard at least three (3) working days prior to pick-up/delivery
- .3 Shipping/Receiving hours: Monday through Friday, 9:00AM to 3:00PM.

1.10 Temporary Facilities

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 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 Maintain emergency spills kit on-site at all times.

1.11 Fees, Permits, Certificates and Information

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

1.12 Reference Documents

- .1 The most recent publication or edition of any document referenced in this specification should be used unless the referencing clause states that this clause does not apply.

1.13 Required Submissions

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

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used



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 Coast Guard for review.
- .2 Do not proceed with the work until submitted documents or samples have been reviewed by Coast Guard.
- .3 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 Contractor's responsibility for errors and omissions in submission is not relieved by Coast Guard's review of the submitted documents.
- .5 Notify Coast Guard, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Coast Guard's review of submission, unless Coast Guard gives written acceptance of specific deviations.
- .7 Make any changes to submissions that Coast Guard may require consistent with Contract Documents and resubmit as directed by Coast Guard.
- .8 Provide Coast Guard with a written notice, when resubmitting, of any revisions other than those requested Coast Guard.

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 three (3) working days, or as stipulated in the specifications, for Coast Guard to review the submission.
- .3 The Contractor's Engineer shall stamp and sign any submissions requiring a Professional Engineer's seal certifying his 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 shall 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 shall be undertaken in strict conformance with all listed references, In the case of any conflict or discrepancy the more stringent requirements shall apply.
 - .1 Canada Labour Code Part II - January 2008
 - .2 NRC-CNRC National Building Code of Canada
 - .3 Ontario Occupational Health and Safety Act and Regulations, 2009.
 - .4 Any and all other Provincial/Territorial Regulations and Policies; Worker's Compensation Board Policies; Local municipal regulations; pertaining to safety of the contractors workers

1.3 Submittals

- .1 Project Specific Safety Program
 - .1 Deadline:
 - .1 With Construction Plan
 - .2 Deliverables:
 - .1 Safety Program Document, include:
 - .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.



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 shall be undertaken in strict conformance with all listed references, In the case of any conflict or discrepancy the more stringent requirements shall apply.

- .1 Canadian Environmental Protection Act

1.3 Related Sections

- .1 Not used.

1.4 Submittals

- .1 Contractor shall submit and environmental protection plan

- .1 Deadline:

- .1 With Construction Plan

- .2 Deliverables:

- .1 Submit a plan addressing procedures to be implemented to mitigate any negative impact on the environment. Detail:

- .1 Equipment features (age, spill containment);
- .2 Staging, refueling, and cleaning areas;
- .3 Clean-up and/or containment procedures (including concrete/grout);
- .4 Waste disposal methods and sites;
- .5 De-watering plan, if necessary.

PART 2 - PRODUCTS

2.1 General

- .1 Avoid use of hazardous products. Use environmentally friendly products where practical.



PART 3 - EXECUTION

3.1 Construction Area

- .1 Confine construction activities to as small an area as practical.
- .2 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 Materials must be stockpiled as far from the shoreline as practical. Tarps must be used to control dust and run-off.
- .2 Stockpiled excavated materials shall be skirted using filter fabric to control run-off of fines during rain.

3.3 Disposal of Wastes

- .1 Clean-up the site at the end of each working day.
- .2 All waste material to be disposed of in a legal manner at a site approved by local authorities. Transporter/hauler must be appropriately licensed.
 - .1 Recycle or reuse materials where possible.
- .3 Fires and burning of rubbish on site not permitted.
- .4 Do not bury rubbish and waste materials on site.

3.4 Clearing and Grubbing

- .1 Only clear vegetation that interferes with construction.

3.5 Drainage

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
 - .1 Suspend works during periods of heavy rainfall and add temporary covers to discourage run-off.
 - .2 Water pumped from excavation shall be adequately treated to ensure that water returning to the watercourse contains minimal fines. Procedures anticipated for preventing the pumping of fines shall 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 Discharge through naturally occurring vegetation.



- .3 The means for controlling silt run-off shall be dependent on the site and the quantity of water pumped, and shall be to the discretion of the CCG site staff.
- .4 Sediment control measures shall be inspected and improved/cleaned/replaced as necessary.

3.6 Pollution Control

- .1 Provide methods, means, and facilities to prevent the contamination of soil, water, and atmosphere from the discharge of pollutants produced by construction operations.
- .2 Vehicles, machinery, and equipment shall be in good repair, equipped with emission controls as applicable and operated within regulatory requirements.
- .3 Abide by local noise by-laws.
- .4 Avoid unnecessary idling of vehicles or heavy machinery.
- .5 Limit use of equipment around the shoreline where possible.
- .6 Implement and maintain dust and particulate control measures in accordance with provincial requirements:
 - .1 All bulk material haul equipment shall be appropriately tarped. Watertight vehicles shall be used to haul wet materials
 - .7 Designate a cleaning area for tools to limit water use and runoff. Do not allow deleterious materials to enter waterways. Ensure emptied containers are sealed and stored safely for disposal.
 - .8 The contractor shall 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 shall 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 shall be maintained on site throughout the construction period and must be readily accessible at all times.
 - .2 Any uncontrolled release of a known contaminant (spills, fire/smoke) shall be reported to appropriate Provincial Authority and Coast Guard. Spills of deleterious substances to be immediately contained and cleaned up in accordance with provincial regulatory requirements.
 - .3 Provincial Authority: Ontario Spills Action Centre 1-800-268-6060



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3.7 Traffic

- .1 Minimize soil compaction by driving, parking vehicles, and walking, etc. on existing paved roadways/laneways. If soil is impacted by compaction, compensate by restoring areas with new soil, as required.

- .1 Avoid the use of heavy machinery in areas of sensitive slopes. Avoid using machinery on land during wet weather.



SECTION: 014500 QUALITY CONTROL

PART 1 - GENERAL

1.1 Inspection

- .1 Canadian Coast Guard or its representative shall have access to the work at all times. If parts of the work are prepared off-site or in a shop, access shall be given to such work throughout the duration of the project.
- .2 In the event the work must be submitted to special testing, inspection or approvals prescribed by Canadian Coast Guard in these specifications or provided for in work-site regulations, the request for inspection must be made without unreasonable delay.
- .3 The below list identifies key milestones where the Canadian Coast Guard will require an opportunity to take samples/inspect:
 - .1 Location verification: The Coast Guard will confirm correct location for installation upon arrival of the barge at site. The contractor shall be required to provide access to the site at all times to CCG site staff.
 - .2 Pre-tensioning: The Coast Guard shall witness the pre-tensioning of the all-thread rods to the prescribed torque values.
 - .3 Installation of tower: The Coast Guard shall witness the erection of the new nav-aid tower and witness correct operation of the new light.

1.2 Procedures

- .1 Provide Canadian Coast Guard with advance notice whenever testing is required in accordance with these specifications, so that all parties involved can be present.
- .2 Provide necessary manpower and installations for obtaining and handling samples and material on site.
- .3 Provide access to site if the site is of remote nature whereby the contractor is responsible for providing access to the site

1.3 Rejected Work

- .1 Remove defective work, whether incorporated into the work or not, which has been rejected by Canadian Coast Guard 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 Supply test reports and required mixture formulas.

1.5 Factory Tests

- .1 Submit test certificates as prescribed in the relevant section of the specifications.



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1.6 Acceptance of Work

- .1 Canadian Coast Guard will make acceptance visits of work executed by the Contractor at critical milestones identified in the following sections.
- .2 The Contractor shall inform Canadian Coast Guard at least three (3) working days before these inspection visits.
- .3 All work shall 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 shall be responsible for all costs incurred for subsequent inspections.



SECTION: 016100 COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 General

- .1 Secure Coast Guard approval of all products to be incorporated into the works. Work shall not commence until product data and/or samples have received Coast Guard approval.
- .2 Supply and/or fabricate material and equipment of prescribed quality, with performance conforming to established standards.
- .3 Use new material and equipment unless otherwise specified.
- .4 Ensure replacement parts may be readily procured.
- .5 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, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify Canadian Coast Guard in writing of any conflict between these specifications and manufacturer's instructions; Canadian Coast Guard will designate which document is to be followed.

1.3 Compliance

- .1 When material or equipment is specified by standard or performance specifications, upon request of Canadian Coast Guard, obtain an independent testing laboratory report from the manufacturer, stating that 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 Canadian Coast Guard. Substitutions will be considered by Canadian Coast Guard 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 considered by Canadian Coast Guard as equivalent to the material specified will result in a credit to the Contract amount.



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

1.5 Submittals

- .1 Provide product specifications and/or samples upon request from Coast Guard.



SECTION: 024116 DEMOLITION OF STRUCTURES

PART 1 - 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 wooden lighthouse
 - .2 Demolition of the existing stone foundation;
 - .3 Disposal of all waste at a licensed waste disposal facility;
 - .4 Salvage of all lighting equipment to Parry Sound CCG base, including but not limited to the lantern, the battery(s), and the solar panels.

1.2 References

- .1 Work under this section shall be undertaken in strict conformance with all listed references, In the case of any conflict or discrepancy the more stringent requirements shall apply.
 - .1 Canada Labour Code Part II - January 2008.
 - .2 NRC-CNRC National Building Code of Canada 2005.
 - .3 Ontario Occupational Health and Safety Act and Regulations, 2009.
 - .4 CSA S350-[M1980(R1998)], Code of Practice for Safety in Demolition of Structures.

1.3 Submittals

- .1 Contractor to provide demolition plan.
 - .1 Deadline:
 - .1 With Construction Plan.
 - .2 Deliverables:
 - .1 Method of demolition including all associated tasks and schedule;
 - .2 Methods for protecting the site from demolition debris, specifically paint.
 - .3 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 shall not proceed until written approval of the demolition plan has been received from the Coast Guard.
- .3 Submit copies of certified receipts from the disposal sites for all material removed from the work site upon request.

1.4 Existing Conditions

- .1 The existing lighthouse beyond its life expectancy, and multiple sections of the lighthouse are heavily rotten, specifically the exterior platform. Contractor must ensure the lighthouse is dismantled and demolished in a safe manner.
 - .1 Photos of the existing lighthouse are included in Appendix A.
 - .2 Drawings of the existing lighthouse are included in Appendix C.

PART 2 - PART 2 - PRODUCTS

- 2.1 Not used.

PART 3 - PART 3 - EXECUTION

3.1 General

- .1 Work under this section shall be continuous and proceed without interruption unless otherwise approved by Coast Guard.
- .2 Contractor shall provide the utmost effort so as to avoid the disbursement of paint flakes and waste around the site and into adjacent watercourse throughout demolition.

3.2 Protection

- .1 Implement effective controls to catch/collect all tower debris during demolition, specifically paint.
- .2 Implement effective controls to prevent injury to workers, and mariners.

3.3 Preparation

- .1 Erect warning signs and barricades.
- .2 Ensure all environmental protection/mitigation measures are in place.
- .3 Ensure all items identified for salvage have been removed and stored.

3.4 Demolition

- .1 Demolish existing wooden lighthouse, and associated stone foundation in their entirety.
- .2 Remove and salvage all lighting equipment in their entirety.



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- .3 Demolish existing stone foundation in its entirety.
- .4 Ensure that demolition does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .5 Ensure demolition is undertaken safely. If at any period during demolition the safety of the Contractor's staff cannot be maintained take preventative measures, stop work and immediately notify Coast Guard.

3.5 Disposal

- .1 All material is to be disposed of off-site and a licensed disposal/recycling facility.



SECTION: 033000 CONCRETE WORK

PART 1 - GENERAL

1.1 Scope of Work

- .1 Work of this section includes the supply of all labour, material, and equipment, necessary to complete the installation of the tower foundation per the design provided herein.

1.2 References

- .1 Work under this section shall be undertaken in strict conformance with all listed references, In the case of any conflict or discrepancy the more stringent requirements shall apply.
 - .1 Canada Labour Code Part II - January 2008
 - .2 NRC-CNRC National Building Code of Canada 2010
 - .3 Ontario Occupational Health and Safety Act and Regulations
 - .4 CAN/CSA-A23.1-04 Concrete Materials and Methods of Concrete Construction
 - .5 CAN/CSA A23.2-04 Methods of Test and Standard Practices for Concrete
 - .6 CAN/CSA-G30.18 Billet Steel Bars for Concrete Reinforcement
 - .7 CAN/CSA S269.3 Concrete Formwork
 - .8 ACI Specification 306 Cold Weather Concreting (if relevant)

1.3 Submittals

- .1 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013530.
- .2 Concrete Mix Parameters:
 - .1 Deadline:
 - .1 With Construction Plan.
 - .2 Deliverables:
 - .1 Provide high level summary of mix properties and admixtures to demonstrate compliance with Coast Guard Criteria.
 - .2 Provide MSDS, (pre-mixed products only).
- .3 Concrete placement methods and curing procedures:
 - .1 Deadline:



.1 furnish with Construction Plan (Section 011100)

.2 Deliverables:

- .1 Anticipated haul routes and distances;
- .2 Placement methods and procedures to control consolidation/segregation;
- .3 Finishing procedures;
- .4 Curing methods and schedule;
- .5 Clean-up procedures;
- .6 Mitigation measures to account for hot or cold temperatures where reasonably anticipated during the construction period.

1.4 Quality Assurance

- .1 Coast Guards minimum inspection requirements are detailed below. The Contractor shall be responsible to notify Coast Guard of the date and time that the works may be inspected. Notice must be provided no less than three (3) working days in advance to permit scheduling of quality assurance testing. All deficiencies in the works identified at the time of inspection shall be remedied to the satisfaction of Coast Guard, by the Contractor at their expense. Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works.
 - .1 Upon completion of formwork and placement of reinforcement.
 - .2 During execution of concrete placement.

PART 2 - PRODUCTS

2.1 Formwork

- .1 Shall be in accordance with CAN CSA S269.3.

2.2 Concrete

- .1 Concrete shall possess the minimum characteristic detailed in the Contract Drawings.
- .2 Concrete employed shall be locally available ready-mix concrete.

2.3 Water

- .1 Water utilized for the production concrete must be potable, unless otherwise approved in writing by Coast Guard.

2.4 Reinforcement

- .1 Reinforcing steel must be as mandated in CAN CSA A23.1



- .1 Grade 400W unless otherwise identified in the Contract Drawings.
- .1 All bars shall be deformed, uncoated unless otherwise identified in the Contract Drawings.
- .2 Bar supports must be as mandated in CAN CSA A23.1, 6.6.7.2

PART 3 - EXECUTION

3.1 General

- .1 Concrete must be placed, finished, and cured in accordance with the Contractor's submitted construction plan.
- .2 Concrete must be placed, finished, and cured in accordance with the foundation drawing provided in Appendix C.
- .3 New foundation shall be installed in the same location and in the same orientation as the existing stone foundation slated to be demolished.

3.2 Preparation

- .1 Preparation shall not commence until bearing surfaces have been inspected by Coast Guard.
- .2 Remove all loose and deleterious material.
- .3 Construct forms as detailed in the submitted construction plan.
- .4 Place reinforcement in accordance with Contract Drawings.
- .5 If the rebar cage as detailed is not strong enough to maintain the designed shape, the contractor is responsible for installing additional bars to keep the cage in shape during construction.
 - .1 The cage shall be adequately supported to carry the weight of a worker, if the contractor intends on walking on the rebar.
- .6 75mm clearance shall be maintained on the top face, bottom face and on all sides.

3.3 Placement

- .1 Concrete placement shall not commence until formwork and reinforcement have been inspected by Coast Guard.
- .2 Contractor shall place finish and cure concrete as per CAN CSA A23.1 making all adjustment necessary to account for climatic conditions anticipated during the curing period.
- .3 Concrete shall be placed in one continuous pour.
 - .1 The development of cold joints shall be avoided. Alternately, cold joints must be previously approved in writing by CCG.



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- .4 Finish exposed concrete surfaces to provide a lightly brushed non-skid surface.
- .5 Cut control joints where specified.
- .6 Contractor shall provide samples as required during placement operation for the performance of quality assurance testing.
- .7 Concrete shall be finished so as to slope gently towards the center of the slab. No water shall pond on the finished surface.
- .8 .All exposed 90° edges shall be chamfered.

3.4 Curing

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



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APPENDIX A: SITE LOCATION AND PHOTOGRAPHS

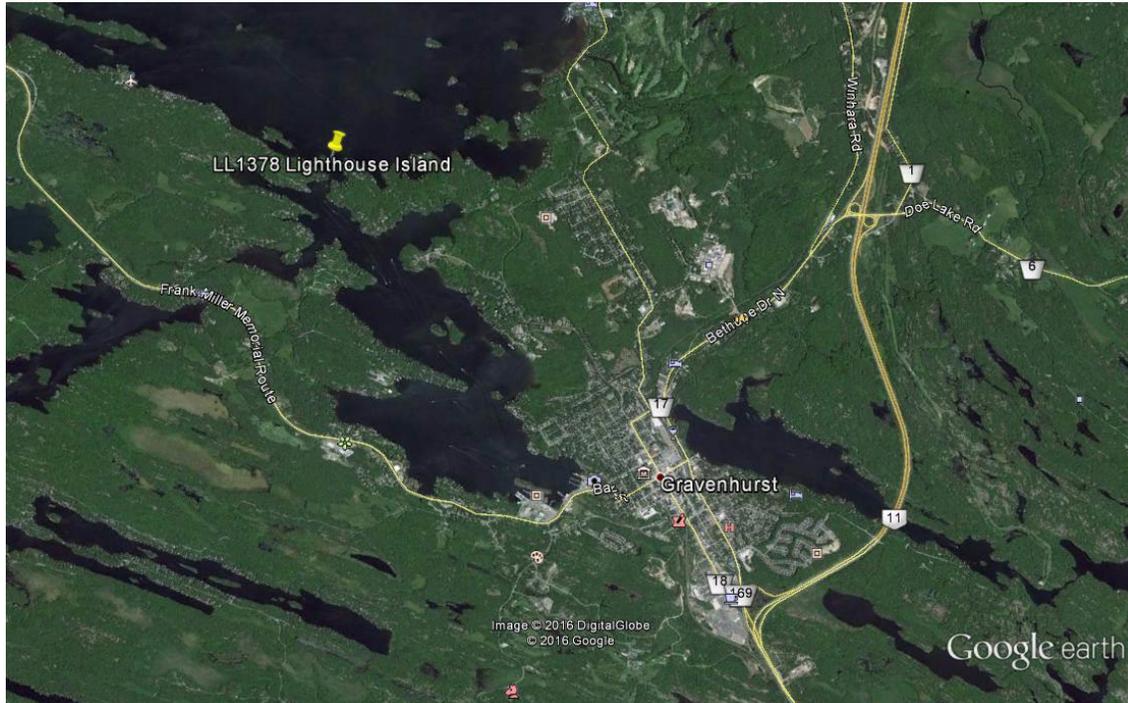


Figure 1: LL1378 Lighthouse Island Location
44°57'17.70"N, 79°24'23.14"W

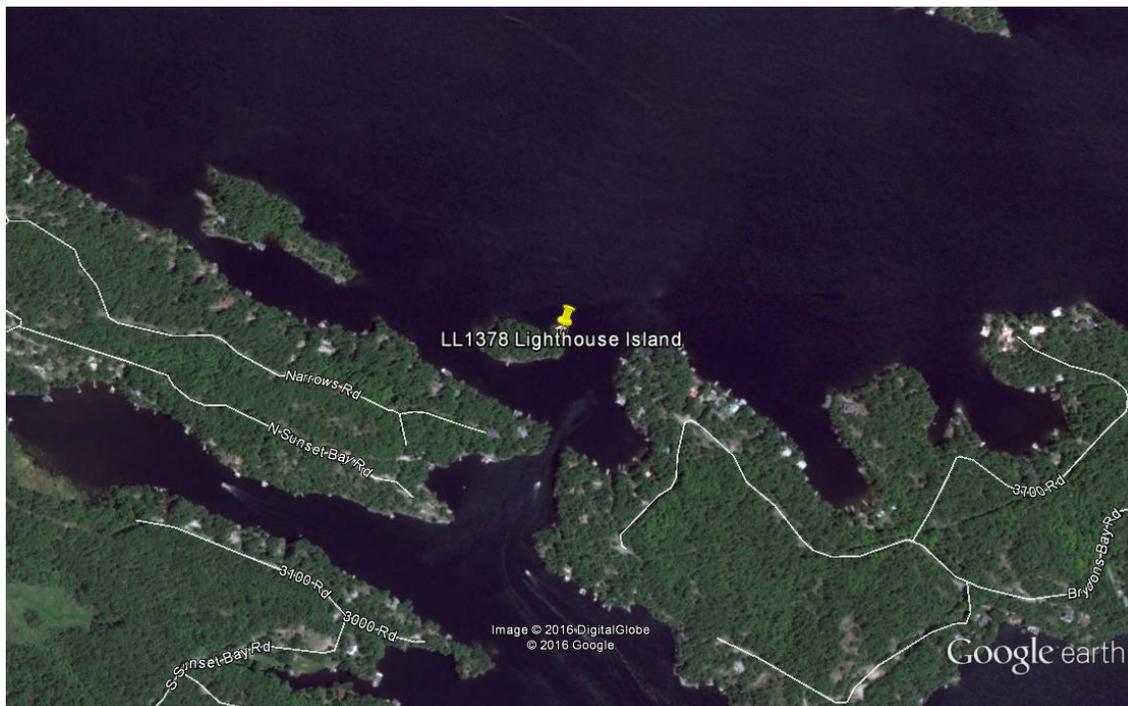


Figure 2: LL1378 Lighthouse Island Location



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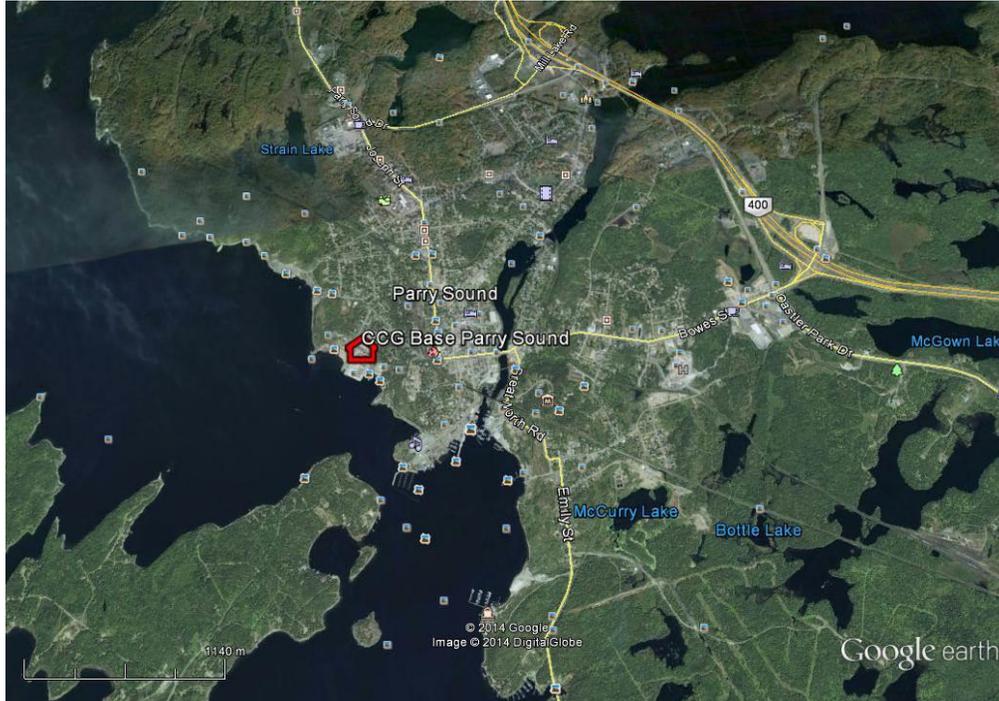


Figure 3: Coast Guard Staging Area
CCG Base Parry Sound
28 Waubeek St. Parry Sound, ON P2A 1B9
45°20'38.93"N - 80° 2'34.46"W



Figure 4: Coast Guard Staging Area



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Figure 5 – Existing lighthouse to be demolished, 2016



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Figure 6, Existing lighthouse to be demolished, June 2017



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Figure 7, Site location, north approach, June 2017



Figure 8, Site location, June 2017



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Figure 9 – Stone foundation to be demolished. Height varies around perimeter of structure.



Figure 10 – Existing tower, interior rott



APPENDIX B – SUMMARY OF SUBMITTALS

Following Contract Award	
Submission Description	Section(s)
Deadline: 10 working days following award	
Detailed schedule:	011100
Proof of qualifications:	
a) Proof of Experience	011100
b) Proof of Vessel Registration	011000
Deadline: 10 working days prior to mobilization	
Construction Plan	
a) Project site specific safety plan	013530
b) Project environmental protection program	013543
c) Detailed demolition plan	024116
d) Construction plan	033000
Deadline: 21 calendar days following acceptance of the works	
Waste disposal receipts	024116
As-built drawings	033000



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APPENDIX C – DRAWINGS

CONCRETE:

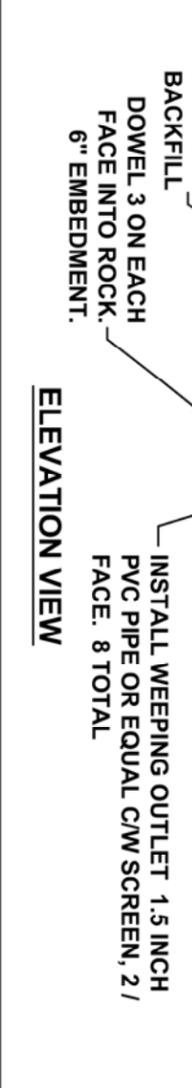
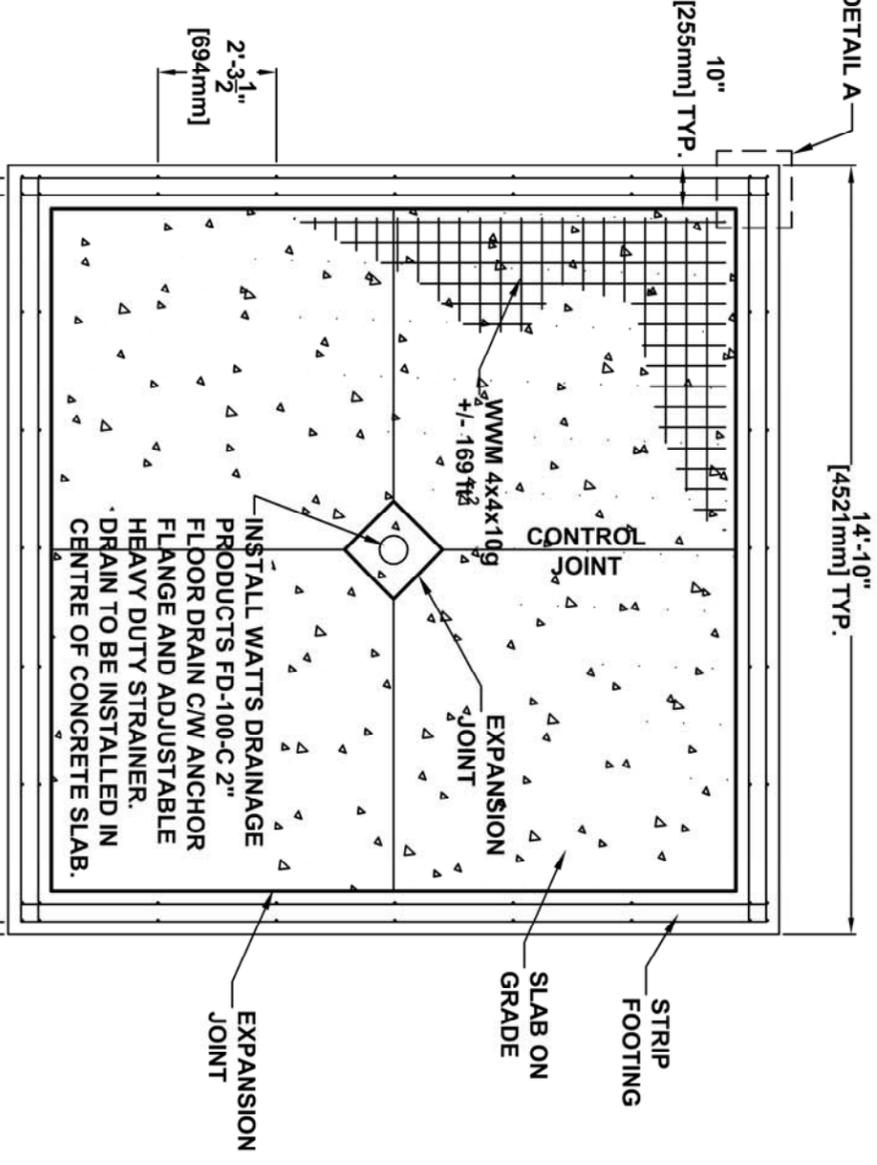
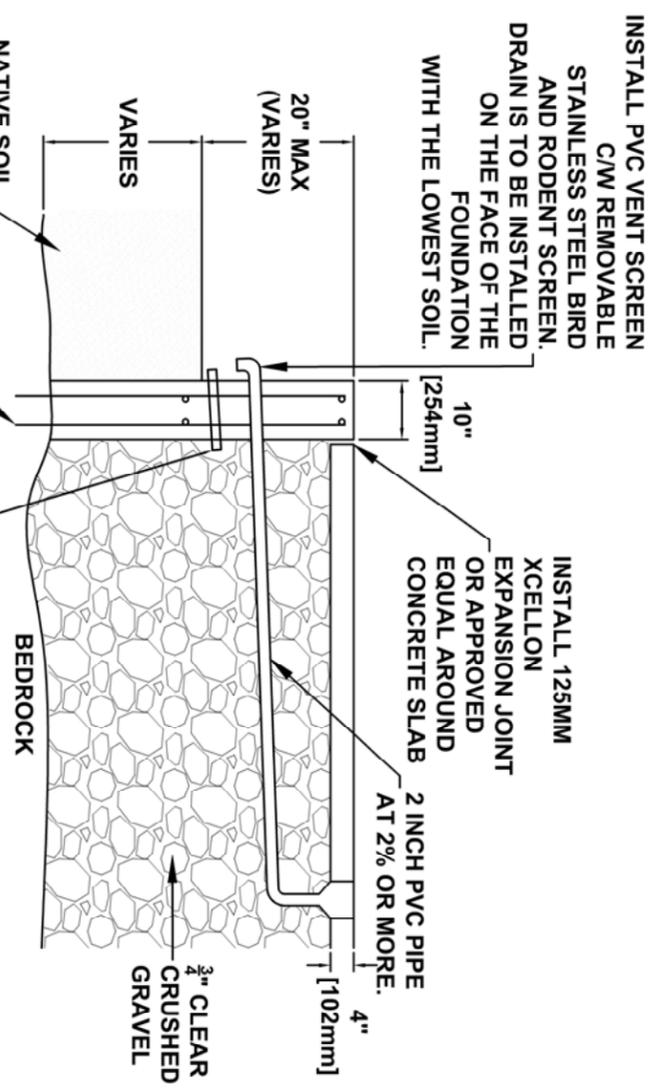
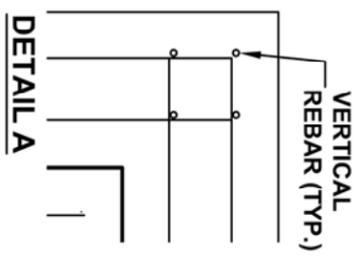
1. CONTRACTOR SHALL SUBMIT SUMMARY OF CONCRETE PROPERTIES WITH CONSTRUCTION PLAN.
 - 1.1. CONCRETE SUPPLIER MUST ASSUME RESPONSIBILITY FOR CONCRETE PERFORMANCE. MANDATORY CONCRETE PROPERTIES ARE DETAILED IN TABLE 1.
 - 1.2. CONCRETE MUST BE AIR ENTRAINED IN ACCORDANCE WITH CSA A23.1.
 - 1.3. SUPPLEMENTAL ADMIXTURES IMPACTING PLASTIC AND HARDENED PERFORMANCE SHALL BE SUBJECT TO APPROVAL OF COAST GUARD.
2. FORMWORK AND FALSEWORK SHALL BE AS DETAILED IN APPROVED CONSTRUCTION PLAN.
3. PLACEMENT MUST BE WITNESSED BY COAST GUARD.
 - 3.1. CONCRETE MUST NOT BE PLACED ON FROZEN SUBGRADE.
 - 3.2. CONTRACTOR TO ASSIST WITH COLLECTION OF SAMPLES FOR CONFIRMATION OF CONCRETE QUALITY.
4. FINISH CONCRETE WITH A NON-SKID BROOM FINISH.
5. CURING SHALL BE COMPLETED IN ACCORDANCE WITH APPROVED CONSTRUCTION PLAN AND SHALL ACCOUNT FOR EITHER HOT AND COLD WEATHER.
6. TOWER SHALL NOT BE ERECTED UNTIL CONCRETE TESTING INDICATES ADEQUATE STRENGTH DEVELOPMENT.
7. CONCRETE IS TO SLOPE AT LEAST 2% TOWARDS THE DRAIN IN THE CENTRE OF THE SLAB.

REINFORCEMENT:

1. REINFORCEMENT SHALL CONFORM TO TABLE 2. REINFORCING SCHEDULE, THIS PAGE.
2. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA G30.18, FY 400R.
3. MAINTAIN 75mm (3") COVER WHERE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH. MAINTAIN 50mm (2") COVER ALL REMAINING AREAS.
4. BAR SUPPORTS: CLASS "A".
5. DOWELS SHALL BE INSTALLED TO DEPTH SHOWN AND AFFIXED WITH ADHESIVE (HILTI HIT HY-200) IN ACCORDANCE WITH MANUFACTURE'S INSTRUCTIONS.
6. PLACEMENT OF REINFORCEMENT TO BE CONFIRMED BY COAST GUARD PRIOR TO CONCRETE PLACEMENT.

TABLE 1 - CONCRETE PROPERTIES			
STRENGTH	EXPOSURE	AIR ENTRAINMENT	SLUMP
32 Mpa (28 days)	F-1 CONCRETE EXPOSED TO FREEZING AND THAWING IN A SATURATED CONDITION NO CHLORIDES	5-8%	80 +/- 20 MM

TABLE 2 - REINFORCEMENT		
DIAM	LENGTH (MM)	QTY
10M	4421	16
10M	VARIES (500 - 1500)	56
-	WWM 4x4x10g	169 ft ²



FOUNDATIONS DESIGN
NAVAID REPLACEMENT

LL1378 LIGHTHOUSE ISLAND

Asset - Actif

rev	description	DU	By	date
1	ADD WWM, CONTROL JOINTS	DU		10 JUL 17

drawn - dessiné
BH
2016-06-06

designed - conception
B. YOUNG
2016-06-06

checked - vérifié
B. YOUNG
2016-06-06

approved - approuvé
B. YOUNG
2016-02-11

scale - échelle
VARIES

drawing no. - no. dessin
UNASSIGNED

sheet/feuille
01/01

rev
1

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APPENDIX D – MARINE ACCESS REQUIREMENTS

.1 Marine Access

- .1 Vessel(s) employed in the performance of the contract shall be certified as required by the Canada Shipping Act 2001 and its applicable regulations including Marine Personnel Regulation.
 - .1 The bidder shall ensure that the vessel(s) proposed for the work meets all requirements of the Canada Shipping Act 2001 and the applicable Regulations under the Canada Shipping Act.
 - .2 Bidders shall provide copies of the following documentation to facilitate evaluation and award:
 - .1 Proof of vessel registration as a commercial vessel in accordance with the Canada Shipping Act 2001. Either one of two registrations will be accepted:
 - .1 Proof of commercial vessel registration in the Small Vessel Register (SVR) if less than 15 Gross Tons or;
 - .2 Proof of commercial vessel registration in the Canadian Register of Vessels (CRV) if more than 15 Gross Tons.
 - .3 NOTE: Pleasure Craft and Fishing Vessels are not acceptable for the performance of this work – it must be a commercially registered vessel.
 - .2 Where the vessel is registered in the SVR the bidder shall also provide the following:
 - .1 Copy of vessel certification and any limitations the vessel is operating under. Where the vessel is restricted, the operator shall ensure that the vessel can be used to safely perform the work in this specification;
 - .2 Copy of inspection according to the Small Vessel Compliance Program; Bidder shall submit proof of enrolment in the compliance program and;
 - .3 Either a copy of the initial inspection report or the most recent copy of an annual inspection report and;
 - .4 Copy of the crew certification that will be operating the vessel. Crewing and certification of crew shall be in accordance with the Marine Personnel Regulations, latest edition.
 - .3 Where the vessel is registered in the CRV the bidder shall also provide the following:
 - .1 Copy of the latest Annual Inspection Certificate endorsement and;

- .2 Copy of any restrictions that the vessel is operating under and the general sailing limitations of the vessel. Where the vessel is restricted, the operator shall ensure that the vessel can be used to safely perform the work in this specification;
 - .3 Copies of the crew certification that will be operating the vessel. Crewing and certification of crew shall be in accordance with the Marine Personnel Regulations, latest edition.
- .2 Vessels and crew found to be in contravention of the act will not be permitted to be engaged in any elements of the works identified herein. In the event that a vessel or crew is found non compliant a suitable replacement vessel and/or crew will be retained by the Contractor at their sole expense.