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SOW – NORTH CHANNEL HELIPAD AND TOWER CONSTRUCTION

**LL1027 MILLS ISLAND
LL1028 WHITCHER ISLAND FRONT RANGE
LL1028.5 WHITCHER ISLAND REAR RANGE
LL1029 DECELLES ISLAND FRONT RANGE
LL1029.5 DECELLES ISLAND REAR RANGE**

ALGOMA MILLS, ON

MARITIME AND CIVIL INFRASTRUCTURE

Prepared by: BH

Approved by: BH

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TABLE OF CONTENTS

SECTION:	011100 GENERAL INSTRUCTIONS	1
SECTION:	013300 SUBMITTAL PROCEDURES	6
SECTION:	013530 HEALTH AND SAFETY REQUIREMENTS	7
SECTION:	013543 ENVIRONMENTAL PROCEDURES	8
SECTION:	014500 QUALITY CONTROL.....	11
SECTION:	016100 COMMON PRODUCT REQUIREMENTS	13
SECTION:	024116 DEMOLITION OF STRUCTURES.....	15
SECTION:	055000 METAL WORK	17
SECTION:	133613 METAL TOWERS.....	20
SECTION:	060573 WOOD TREATMENT	23
SECTION:	060899 ROUGH CARPENTRY FOR MINOR WORKS	25
APPENDIX B1:	SITE LOCATION AND PHOTOGRAPHS	30
APPENDIX B2:	SUMMARY OF SUBMITTALS	39
APPENDIX B3:	DRAWINGS	40
APPENDIX B4:	MARINE ACCESS REQUIREMENTS	41



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 sites with a work barge/vessel of appropriate size and certification;
 - .2 Transport and install five [5] new CCG supplied metal towers as per CCG provided design;
 - .3 Reinstall lanterns, batteries and solar panels onto new towers;
 - .4 Salvage and transport existing towers complete with all appurtenances to CCG base;
 - .5 Demolish and dispose of existing foundations where applicable;
 - .6 Install three [3] new 18' x 18' wood helipads as per CCG provided design;
 - .7 Demobilize.
- .2 The following work will be undertaken by others and is hereby excluded:
 - .1 Supply five [5] metal towers, lanterns, batteries and solar panels, supply of all steel baseplates for wooden helipads;
 - .1 Supplied items to be transported to site from staging location by contractor.

1.3 Submittals

- .1 Mandatory submittals and schedule for submission are detailed below and in Appendix B2. The following identifies general requirements only. The relevant sections must be consulted for a complete listing of mandatory content
- .2 Detailed Schedule:
 - .1 Deadline: No later than ten (10) working days following award.



- .2 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 Mandatory Technical Criteria Sheet:
 - .1 Deadline: With bid.
 - .2 Deliverables:
 - .1 Contractor shall fill out mandatory technical criteria sheet in Appendix B2 and supply all appropriate documentation with bid.
 - .1 Contractor shall furnish proof of vessel registration with bid. (Section 011100 1.7.3.1)
- .4 Construction Plan:
 - .1 Deadline: No less than ten [10] working days prior to mobilization.
 - .2 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 construction plan (Section 055000);
- .5 As Built and QA/QC:
 - .1 Deadline: No more than twenty one [21] calendar days after construction.
 - .2 The following documents shall be forwarded upon completion of the contract:
 - .1 Set of red-lined as built drawings.

1.4 Contractor Qualifications

- .1 The work shall be carried out under the supervision and responsibility of a sole specialized Contractor, capable of performing installations of structures on remote islands;
 - .1 Contractor shall have experience working in remote areas.
- .2 The Contractor shall designate a project manager or main point of contact for the contract.
- .3 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 sites are as follows:
 - .1 LL 1027 Mills Island Lat./Long.: 46° 7'49.90"N, 82°41'45.90"W.
 - .2 LL 1028 Whitcher Island Front Range Lat./Long.: 46° 8'26.60"N, 82°41'33.90"W.
 - .3 LL 1028.5 Whitcher Island Rear Range Lat./Long.: 46° 8'30.00"N, 82°41'31.20"W.
 - .4 LL 1029 Decelles Island Front Range Lat./Long.: 46° 7'58.00"N, 82°40'53.00"W.
 - .5 LL 1029.5 Decelles Island Rear Range Lat./Long.: 46° 7'56.30"N, 82°40'48.20"W.
- .2 The closest major settlement is Algoma Mills, Ontario.
- .3 The sites are located on a series of islands in the North Channel.

1.6 Existing Conditions

- .1 Bidders must make their own estimate of the difficulties associated with all phases of the works.
- .2 Bidders must include in their costs all expenses related to the difficulties of working at the sites.
- .3 Photographs of the existing sites are included in Appendix B1.

1.7 Contractor's Access to Site

- .1 Contractor is responsible for transportation of all labour, materials, and equipment to and from the site, including any and all material furnished or itemized for salvage by Coast Guard.
- .2 All sites are accessible by water. The sites are located approximately 11km to the southeast of Algoma Mills.
- .3 The Contractor is responsible for sourcing appropriate marine access to support all construction work. Contractors are also responsible for ensuring that all the requirements of Appendix B4 – Marine Access Requirements are met, failure to do so will result in the bid being deemed non-compliant.
 - .1 If the contractor chooses to use the CCG helicopter to lift materials onto the islands, a commercially registered vessel will still be required to transport workers to site.

1.8 Completion, Scheduling and Planning of the Works

- .1 Work may commence as early as practical following Coast Guards acceptance and approval of mandatory submissions.
- .2 Site work shall not commence without written authorization of Coast Guard Project Authority.
 - .1 Advise Project Authority at least two [2] weeks in advance of proposed installation date.



- .2 Field work shall not commence until all mandatory submittals have been received and approved by CCG.
- .3 Work shall be complete by December 15, 2019.
- .4 Demolition of the existing towers shall not begin until the new towers have been commissioned.

1.9 Coast Guard Staging Location

- .1 Items itemized as supplied by, or salvaged to Coast Guard shall be collected by or delivered to the following staging location by the contractor. The Contractor shall be responsible for all transportation costs between the project site and the identified staging location. 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 Project Authority at least three (3) working days prior to pick-up / delivery. Shipping/Receiving hours are 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 B2. This summary is not an exhaustive list of all submissions required for the duration of the project. Additional submissions may be required after award.



1.14 Use of Canadian Coast Guard Helicopter

- .1 Use of Canadian Coast Guard aircraft to transport materials can be arranged based on availability. Due to being unable to land at any of the sites in this contract, no passengers will be transported with the helicopters. It is at the pilot's discretion where the helicopter may or may not land for staging locations. In general, level, non-jagged surfaces are suitable. Bedrock that is curving or jagged is not suitable.
- .2 A contractor may request use of the helicopter ten [10] business days in advance of any helicopter work. CCG operational use of the helicopter will take precedence over contractor use, but reasonable efforts will be made to accommodate the contractor whenever possible. Should a conflict arise, except in the case of emergency, the contractor will be notified at the time of the request to use the helicopter. To avoid issues scheduling the work, the contractor should book any desired helicopter time as far in advance as possible.
- .3 The contractor shall credit back to CCG under this contract, the amount of helicopter charges incurred by the contractor. The helicopter is charged at an hourly rate. This hourly rate only applies to time in which the helicopter is running. Any time the helicopter is not running is not counted as billable time. For example, if a contractor were to spend 1 hour arranging the materials in a sling and the helicopter slings that material 15 minutes to the site, and then travels 15 minutes back to its staging location, only 30 minutes of that time are billable. Contractors will be responsible for flying time used in mobilizing and demobilizing the craft from Parry Sound. The contractor will be responsible for finding a secondary staging location close to the site, subject to approval from the pilot. It is an estimated 1 hour flight from the Parry Sound base to the general area of the sites. Flight time from a nearby staging location to the islands is estimated at 15 minutes.
- .4 The contractor shall adhere to all weight limits or other operational restrictions related to the use of the helicopter. All loads must be properly secured prior to lifting and must be approved for weight stability and proper rigging by the pilot. Loads shall not exceed the weight limits set by the pilot. Weight limits are reduced by the weight of fuel needed for the length of haul.
- .5 Use of the helicopter is limited to 14 hour duty days. This includes preflight and post flight work. Flying after dark is not permitted under this contract.
- .6 The following table gives details of both CCG helicopters available for use. Note that the approximate lifting limits are estimates based on the site locations.

	Bell 412	Bell 429
Projected Availability	Potentially available October, Likely available November and December	Available
Approximate Lifting Limit	2500lb	1800lb
Rate per Operating Hour	\$2000	\$1400



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 For each phase of the project, work shall not progress until all mandatory submittals required before the start of that phase have been received, reviewed and accepted by CCG
- .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; and,
 - .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.
 - .2 Proof that a Notice of Project has been filed with the Ontario Ministry of Labour.
 - .3 Contractor shall submit completed Field Level Hazard Assessment (FLHA) forms to 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 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
- .2 Canadian Council of Ministers of the Environment (CCME) Documentation
- .3 Canadian General Standards Board

1.3 Submittals

- .1 Contractor shall submit an 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 relevant).

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.
- .5 Waste materials must not enter watercourse in any capacity.

3.4 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 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.

3.5 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.



SECTION: 014500 QUALITY CONTROL

PART 1 - GENERAL

1.1 Inspection

- .1 Canadian Coast Guard (CCG) 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 CCG 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 CCG will require an opportunity to take samples/inspect:
 - .1 Location verification: The Coast Guard will confirm correct location for installation upon arrival of the contractor at site. The contractor shall be required to provide access to the site at all times to CCG site staff. This applies both to the location of towers and the location of helipads.
 - .2 Drilling: The Coast Guard shall witness the drilling of holes for anchor rod installation.
 - .3 Epoxy: Coast Guard shall witness the installation of epoxy and anchor rods.
 - .4 Installation of tower: The Coast Guard shall witness the erection of the new nav-aid tower and witness correct operation of the new light.
 - .5 Installation of helipads: Coast Guard shall witness the installation of all wooden helipads.

1.2 Procedures

- .1 Provide CCG 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 CCG 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.



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1.5 Factory Tests

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

1.6 Acceptance of Work

- .1 CCG will make acceptance visits of work executed by the Contractor at critical milestones identified in the following sections.
- .2 The Contractor shall inform CCG 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 replacements 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 CCG in writing of any conflict between these specifications and manufacturer's instructions; CCG 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 CCG, 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 CCG. Substitutions will be considered by CCG 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 CCG 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 - 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 Salvage and transport of existing towers, and all related appurtenances to Parry Sound CCG Base;
 - .2 Demolition of the existing concrete piers;
 - .3 Disposal of all waste at a licensed waste disposal facility.

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 2015
 - .3 Ontario Occupational Health and Safety Act and Regulations, 2016
 - .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;
 - .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.

PART 2 - PRODUCTS

- 2.1 Not used.

PART 3 - PART 3 - EXECUTION

3.1 General

- .1 Work under this section shall be performed directly following the installation of the new ATON towers and all appurtenances unless otherwise approved by Coast Guard.
- .2 Demolition work shall not commence until the new aids to navigation are complete and operational.

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 as applicable.
- .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 Salvage existing towers including all lighting equipment and related appurtenances. Ensure that lighting equipment and related appurtenances do not get damaged.
- .2 Demolish existing concrete foundation in its entirety.
 - .1 All existing exposed rebar shall be cut flush to grade.
- .3 Ensure that demolition does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .4 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: 055000 METAL WORK

1.1 Scope of Work

- .1 Work of this section includes the supply of all labour, material, and equipment, necessary to complete the following activities:
 - .1 Drilling and installation of vertical bars in to competent bedrock as per drawings provided in Appendix B3 for both helipad anchors and tower anchors.

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 G40.20-13 – General Requirements for Rolled or Welded Structural Quality Steel
 - .5 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles
 - .6 CAN/CSA A13.1-04 - Concrete Materials and Methods of Concrete Construction
 - .7 ASTM A36-14 - Standard Specification for Carbon Structural Steel
 - .8 ASTM A615-15 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete reinforcement

1.3 Submittals

- .1 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013530.
- .2 Drilling Plan:
 - .1 Deadline:
 - .1 With Construction Plan.
 - .2 Deliverables:
 - .1 Description of the equipment that will be utilized to drill into bedrock;
 - .2 Description of the methods that will be implemented to stabilize the drilling equipment, and to ensure verticality of holes;
 - .3 Description of how epoxying activities will occur;



- .4 Describe how works will be undertaken to mitigate impacts on the surrounding watercourse.
- .3 As Built Drawings:
 - .1 Deadline:
 - .1 21 Calendar days following the acceptance of the works.

1.4 Quality Assurance

- .1 Coast Guard's 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 Coast Guard is to confirm location of foundation prior to drilling;
 - .2 Coast Guard is to witness drilling and epoxying of anchor rods.

PART 2 - PRODUCTS

2.1 Anchor bolts, accompanying washers & nuts

- .1 All anchor bolts and accompanying appurtenances must be hot dip galvanized with minimum yield strength of 400 MPa, conforming to ASTM A325, unless otherwise noted on stamped drawings;
 - .1 Anchor bolts to be supplied as per appended drawings, CCG must be notified as to style of anchor bolt.

2.2 Epoxy Adhesive

- .1 Epoxy Adhesive used for anchor rods to be HILTI HIT-RE 500 V3 as per stamped drawings;
 - .1 Alternates must be approved by CCG PA.

PART 3 - EXECUTION

3.1 Fabrication

- .1 Hot dip galvanizing shall conform to CAN/CSA G164, most recent edition.

3.2 Installation

- .1 Installation shall be carried out as per the installation directions on the appended drawings.
- .2 The location for foundation placement to be verified by on-site CCG staff.



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- .1 Provisions shall be made to allow for variance in the lengths of the drilled rebar from that of the drawings, based on bedrock and field conditions.

- .3 For tower anchor rods, the anchors shall have a minimum embedment of 24 inches into solid bedrock. If voids are encountered, the sum of solid rock embedment must remain at least 24 inches. For example, if a 6 inch void were encountered, the anchor rod would need to extend at least 30 inches below the rock surface. Notify Coast Guard Project Authority when a void is encountered for documentation.

- .4 The contractor must clean out all drilled holes prior to placing epoxy to ensure proper bonding occurs.



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:
 - .1 The transportation of five [5] towers to site from the designated staging area;
 - .2 The installation of the towers as detailed in the appended Contract Drawings;
 - .1 The existing lanterns and associated solar panels and equipment are to be reinstalled on the new towers upon approval from Coast Guard to demolish the old tower.
 - .2 Work of this section excludes:
 - .1 Fabrication and supply of the towers, to be undertaken by CCG, hardware not included;

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
 - .2 NRC-CNRC National Building Code of Canada
 - .3 CSA S37-13 - Antenna Towers and Antenna Supporting Structures
 - .4 CAN/CSA S16.1 - Limit States Design of Steel Structures
 - .5 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles

1.3 Quality Assurance

- .1 Coast Guard's 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.
 - .1 Notice must be provided no less than three (3) working days in advance to permit scheduling of quality assurance testing.
 - .1 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.
 - .2 Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works:
 - .2 Upon completion of the work an inspection will take place to ensure tower is plumb and that light is operating correctly.



PART 2 - PRODUCTS

2.1 Materials

.1 Steel:

.1 The tower is structural grade steel 350W and 300W.

.2 Coatings:

.1 Galvanizing:

.1 All materials, structural steel, pipe and fittings, including bolts, nuts and washers shall be hot dip galvanized to the requirement of the National Building Code, CAN/CSA S16.1, and CSA-G164 and as otherwise specified therein.

PART 3 - EXECUTION

3.1 Fabrication

.1 Fabrication has been completed by the CCG. This includes everything shown on the drawing which comprises the tower in Appendix B3.

3.2 Protective Coatings

.1 Galvanizing:

.1 The tower and all hardware are hot dip galvanized. The contractor shall be prepared to make repairs to the coating as needed.

3.3 Handling of Material and Transportation

- .1 Estimated weight of each tower is 450 kg for the 20 ft towers and 375 kg for the 16 ft tower.
- .2 The Contractor shall take all necessary precautions to avoid damage to the tower members or to tower coating during transport, unloading and erection. All components or damaged members shall be replaced to the satisfaction of Coast Guard at the expense of the Contractor.
- .3 It is the responsibility of the Contractor to ensure that the tower sections, particularly the joints are protected from bending and alignment damage.
- .4 The contractor will be asked to identify how he would like the towers packaged for shipping shortly after award. This will be coordinated by CCG.

3.4 Placement of Tower

- .1 The tower shall be fitted to bedrock anchor rods
- .2 Each bolt shall have one [1] heavy hex levelling nut below tower base and two [2] heavy hex nuts above base.



- .1 Heavy flat washers shall be placed between heavy hex nuts and tower base.
 - .3 Levelling nuts shall be placed to provide minimum 50 mm gap between bedrock and tower base as per appended drawings. Should the terrain slope so dramatically that a thickness of grout exceeding the applicable range as set in the product specifications is required, hand-mixed concrete will be permitted if approved in writing by CCG.
 - .4 Contractor shall tighten the first nut using turn of nut method associated to the length of bolt provided. The second nuts shall be snug tight to lock into place the two nuts.
 - .5 Non-shrink, gassing, cementitious grout shall be placed between top of the bedrock and tower base.
-
- .1 Sika M-Bed Standard or equal.



SECTION: 060573 WOOD TREATMENT

PART 1 - GENERAL

1.1 References

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
- .2 NRC-CNRC National Building Code of Canada
- .3 American Wood-Preservers' Association (AWPA)
 - .1 AWPA M2-016, Standard for Inspection of Treated Wood Products.
 - .2 AWPA M4-15, Standard for the Care of Preservative-Treated Wood Products.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA O80 Series-97(R2007) - O80S2-05, Wood Preservation.
 - .2 CSA O80.201-M89, This Standard covers hydrocarbon solvents for preparing solutions of preservatives.
 - .3 CSA O322-15, Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.

1.2 Quality Assurance

- .1 For products treated with preservative by pressure impregnation submit following information certified by authorized signing officer of treatment plant:
 - .1 Information listed in AWPA M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.
 - .2 Moisture content after drying following treatment with water-borne preservative
 - .3 Acceptable types of paint, stain, and clear finishes that may be used over treated materials to be finished after treatment.
- .2 Coast Guard's 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.
 - .1 Each piece of lumber and plywood for preserved wood foundations to be identified by CSA O322 certified stamp.



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- .2 Inspection of SPF No.1 timber will be carried out by a qualified designated Canadian Coast Guard Representative
- .3 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.
- .4 Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works.

PART 2 - EXECUTION

2.1 Application: Field Treatment

- .1 Comply with AWPA M4 and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.
- .2 Treat all cut ends with hand applied preservative.



SECTION: 060899 ROUGH CARPENTRY FOR MINOR WORKS

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:
 - .1 Installation of one [1] 18'x18' wooden helipad at LL1027 Mills Island
 - .2 Installation of one [1] 18'x18' wooden helipad at LL1029.5 Decelles Island Rear Range
 - .3 Installation of one [1] 18'x18' wooden helipad between LL1028 and LL1028.5 on Whitcher Island
 - .4 All helipads must be installed with a staircase, in a location determined by CCG upon arrival on site.

1.2 References

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
- .2 NRC-CNRC National Building Code of Canada
- .3 CSA International
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O121-17, Douglas Fir Plywood.
 - .3 CSA O141-05(R2014), Softwood Lumber.
 - .4 CSA O151-17, Canadian Softwood Plywood.
 - .5 CAN/CSA-O325-16, Construction Sheathing.
 - .6 CAN/CSA-Z809-16, Sustainable Forest Management.
- .4 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .5 Green Seal Environmental Standards (GS)
 - .1 GS-11-15, Paints and Coatings.
- .6 National Lumber Grades Authority (NLGA)



.1 Standard Grading Rules for Canadian Lumber (2017).

.7 Sustainable Forestry Initiative (SFI)

.1 SFI-(2015-2021) Standard.

1.3 Submittals

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for rough carpentry work and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Sustainable Design Submittals:

.1 Construction Waste Management: With Construction Plan

.1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

.2 Wood Certification: submit vendor's Chain-of-Custody Certificate number for CAN/CSA-Z809 or FSC or SFI certified wood.

1.4 Quality Assurance

.1 Coast Guard's 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.

.2 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.3 Plywood identification: by grade mark in accordance with applicable CSA standards.

.4 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

.5 Sustainable Standards Certification:

.1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.

.6 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.

.7 Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works.



1.5 Delivery, Storage and Handling

- .1 Store materials off ground and in accordance with manufacturer's recommendations in a clean, dry, well-ventilated area.
- .2 Store and protect wood from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 Materials

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 15% or less in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
 - .3 CAN/CSA-Z809 or FSC or SFI certified.
- .2 Blocking, nailing strips, , fascia backing and sleepers:
 - .1 S2S is acceptable for blocking, nailing strips, and sleepers.
 - .2 Board sizes: "Standard" or better grade.
 - .3 Dimension sizes: "Standard" light framing or better grade.
 - .4 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
 - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
 - .1 Urea-formaldehyde free.
 - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
 - .1 Urea-formaldehyde free.
 - .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.
 - .1 Urea-formaldehyde free.
- .4 Wood Preservative:
 - .1 Surface-applied wood preservative: clear 5% pentachlorophenol solution, water repellent preservative.



- .2 Pentachlorophenol use is restricted to building components that are in ground contact and subject to decay or insect attack only. Where used, pentachlorophenol-treated wood must be covered with two coats of an appropriate sealer.
- .3 Structures built with wood treated with pentachlorophenol and inorganic arsenicals must not be used for storing food nor should the wood come in contact with drinking water.

2.2 Accessories

- .1 Fasteners: to CAN/CSA-G164, for exterior work pressure treated lumber.
- .2 Nails, spikes and staples: to CSA B111.
- .3 Bolts: Stainless steel (12.5) mm diameter unless indicated otherwise, complete with Stainless steel nuts and washers.
- .4 Proprietary fasteners: bolts, lag screws and Simpson Strong-Tie recommended for purpose by manufacturer.

PART 3 - EXECUTION

3.1 Location Verification

- .1 Once on site, a Coast Guard Representative will confirm the location of all helipads. Some brushing may be required to accommodate the construction of the helipads. No tree or brush shall extend beyond the height of the deck of the helipad within 2 horizontal meters from each edge of each helipad.

3.2 Examination

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

3.3 Preparation

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply pressure treated preservative for lumber in accordance to Section 060573 Wood Treatment.



- .3 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.
- .4 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation. Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minutes soak on lumber and 1 minute soak on plywood.
- .5 Treat material as indicated:
 - .1 Lumber post, beams, diagonals, blockings, planks and stair stringers and treads.

3.4 Installation

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.
- .2 Align and plumb faces of posts, beams, ties, braces and blocking to tolerance of 1:600.
- .3 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.



APPENDIX B1: SITE LOCATION AND PHOTOGRAPHS



Figure 1: Overall Site Map



Figure 2: LL1027 Mills Island



Figure 3: LL1029 and LL1029.5 Decelles Island Range



Figure 4: LL1028 and LL1028.5 Whitcher Island Range



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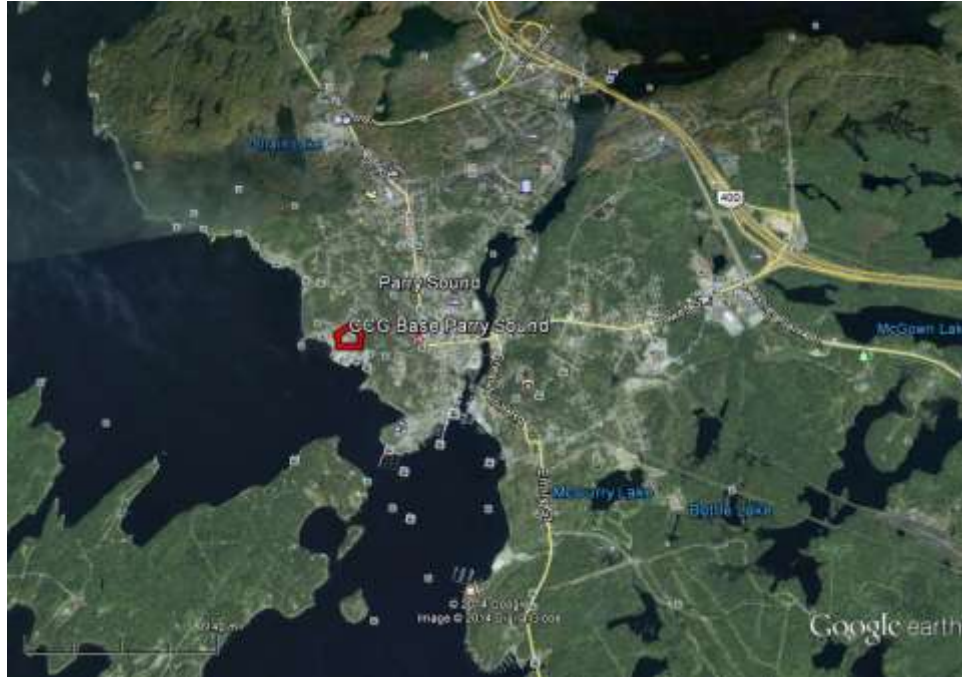


Figure 5: CCG Base Parry Sound
28 Waubeek St. Parry Sound, ON P2A 1B9
45°20'38.93"N - 80°2'34.46"W



Figure 6: Coast Guard Base



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Figure 7: LL1027 Mills Island – Helipad to be placed behind new tower, which will be placed directly adjacent to the existing tower



Figure 8: LL1027 Mills Island - Terrain at proposed helipad location



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Figure 9: LL1028 Whitcher Island Front Range - Existing foundation to be removed after new tower commissioned directly behind existing



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Figure 10: LL1028.5 Whitcher Island Rear Range – Existing foundation to be removed after new tower commissioned directly behind existing



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Figure 11: Whitcher Island Proposed Helipad Location – Proposed location is the “bald” rock spot shown near the tree line to the right of the rear range tower in this photo.



Figure 12: LL1029.5 Decelles Island Rear Range – Helipad to be placed to the left of the tower, new tower to be placed directly behind existing tower



Figure 13: LL1029 Decelles Island Front Range – Tower to be placed in front of existing tower (where shadow is shown in photo) and old foundation removed after commissioning of new tower



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Figure 14: LL1029.5 Decelles Island Rear Range Existing Foundation



APPENDIX B2: SUMMARY OF SUBMITTALS

Following Contract Award	
Submission Description	Section(s)
Deadline: With bid	
Vessel photo	<i>011100</i>
Mandatory technical criteria	<i>Appendix B4</i>
Deadline: 10 working days following award	
Detailed schedule:	<i>011100</i>
Deadline: 10 working days prior to mobilization	
Construction Plan	
a) Project specific safety plan	<i>011100</i>
b) Project environmental protection program	<i>011100</i>
c) Detailed demolition plan	<i>024116</i>
d) Drilling plan	<i>055000</i>
e) Construction waste management plan	<i>060899</i>
Deadline: 21 calendar days following acceptance of the works	
Waste disposal receipts	<i>024116</i>
As-built drawings	<i>055000</i>
Upon Request of Coast Guard	
Completed Field Level Hazard Assessment (FLHA) Forms	<i>013530</i>
Product Specifications or Samples	



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APPENDIX B3: DRAWINGS



APPENDIX B4: MARINE ACCESS REQUIREMENTS

Item #	Criteria
1	<p>The Bidder must propose one or more commercially registered vessels for the Work detailed in Annex “A”, Statement of Work.</p> <p>The Bidder must demonstrate that each proposed vessel meets all requirements of the Canada Shipping Act 2001 and the applicable Regulations under the Canada Shipping Act including Marine Personnel Regulations.</p> <p>To demonstrate this, for each proposed vessel, the Bidder must provide a proof of vessel registration as a commercial vessel in accordance with the Canada Shipping Act 2001.</p> <p>For each proposed vessel, either one of the following two registrations is acceptable:</p> <ol style="list-style-type: none"> 1. Proof of commercial vessel registration in the Small Vessel Register (SVR) if less than 15 Gross Tons; <p>OR</p> <ol style="list-style-type: none"> 2. Proof of commercial vessel registration in the Canadian Register of Vessels (CRV) if more than 15 Gross Tons. <p>Pleasure Craft is not acceptable for the performance of the Work detailed in Annex “A”, Statement of Work. The technical bid will be deemed as non-compliant if any Pleasure Craft is proposed.</p>
2	<p>The Bidder must propose a vessel crew for the Work detailed in Annex “A”, Statement of Work, who will operate the proposed commercially registered vessel(s).</p> <p>The Bidder must demonstrate that the proposed vessel crew meets all requirements of the Canada Shipping Act 2001 and the applicable Regulations under the Canada Shipping Act including Marine Personnel Regulations.</p> <p>To demonstrate this, the Bidder must provide the following:</p> <ol style="list-style-type: none"> 1. Proof of crew certification, including proof of <u>each</u> proposed vessel crew member’s completion of marine emergency duties (MED) training as applicable or, if applicable, Pleasure Craft Operator Card for the proposed vessel type and voyage classification, required as per the Canada Shipping Act 2001 and the applicable Regulations under the Canada Shipping Act including Marine Personnel Regulations to operate the proposed commercially registered vessel(s). <p>AND</p> <ol style="list-style-type: none"> 2. Proof of operator certification required as per the Canada Shipping Act 2001 and the applicable Regulations under the Canada Shipping Act including Marine Personnel Regulations to operate the proposed commercially registered vessel(s).