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SOW - PILE FOUNDATION INSTALLATION

LL 753 COURTRIGHT

GODERICH, ON

MARITIME AND CIVIL INFRASTRUCTURE

Prepared by: AB

Approved by: BY

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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 Install one [1] 16' pipemast foundation;
 - .3 Transport and Install one [1] new CCG supplied aid to navigation;
 - .4 Demobilize.
- .2 The following work will be undertaken by others and is hereby excluded:
 - .1 Supply one [1] aid to navigation tower c/w, self-contained lantern.

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:
 - .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 CWB certification for field and shop welding

.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 Concrete plan (Section 033000);
.4 Pile installation plan (Section 316233.13).

.5 Field Quality Control Document (Section 316233.13):

.1 Deadline:

- .1 Deadline: three [3] working days following installation of piles

.6 As-built Drawings:

.1 Deadline:

- .1 21 calendar days following acceptance of the works

.2 Deliverables:

- .1 Contractor shall mark their notes on drawings in Appendix B3

1.4 Bidder Qualifications

- .1 The work shall be carried out under the supervision and responsibility of a sole specialized Contractor, capable of performing installations of offshore drilled foundations.



- .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.
- .4 The Contractor shall provide CWB certification
- .5 The Contractor shall provide listing of certified marine equipment

1.5 Site Location

- .1 The location of the site is as follows:
 - .1 Lat./Long.: 42°48'23.13"N 82°28'42.53"W
 - .2 The closest settlement is Goderich, Ontario.
 - .3 The site is located on the shoall of the St. Clair River.
 - .4 Aerial photographs of the site are included in Appendix B1

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 B1.

1.7 Contractor's Access to Site

- .1 Contractor is responsible for transportation of all labour, materials, and equipment to and from the sites.
- .2 The Site is accessible by water. The site is located on a shoal in St. Clair River, 1.05 km South of Courtright line.
- .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.
 - .1 Contractor shall provide proof of vessel registration in the 'proof of qualifications' submittal.

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 Work shall be completed no later than October 10, 2017, unless otherwise negotiated and approved in writing.



1.9 Coast Guard Staging Location

- .1 The Contractor shall be responsible for the transportation and costs associated with transporting one [1] Nav-aid tower from CCG's staging location identified below and the project site:
 - .1 Staging location: CCG Base – Parry Sound, 28 Waubeek St, Parry Sound, ON P2A 1B9.
 - .2 CCG's personnel will place the 16' pipemast navaid into the Contractor's transport truck
 - .3 Advise Coast Guard at least three [3] working days prior to pick-up

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 The following permits have been acquired by Coast Guard and are not required to be provided by the Contractor:
 - .1 Permit for the development in the St. Clair Conservation Authority
 - .2 Contractor shall insure and 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.
 - .3 Contractor shall pay fees and obtain certificates and permits required.
 - .4 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.

PART 2 - PRODUCTS

2.1 Not Used



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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 the most recent publications of 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 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 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.



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.

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

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.



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- .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: 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.

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.

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.



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- .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 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 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: 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 required to complete the following:
 - .1 Supply and installation of concrete for four [4] steel piles;
 - .2 Supply and installation of one [1] reinforced concrete pile cap;
 - .3 Work includes any and all provisions necessary to ensure that the anticipated performance of the place concrete will be obtained if work is undertaken in cold weather.

1.2 References

- .1 Work under this section shall be undertaken in strict conformance with the most recent publications of 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 Occupational Health and Safety Act, R.S.O. 1990, c. O.1
 - .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

1.3 Related Section(s)

- .1 Section 316223.13, Concrete Filled Piles

1.4 Submittals

- .1 Concrete Construction plan
 - .1 Deadline: with Construction Plan
 - .2 Deliverables: provide the following documentation:
 - .1 Concrete supplier;



- .2 Summary of mix properties and admixtures;
 - .1 Detail material and sources of material to be used for each class of concrete.
 - .1 Format of submission as per OPSF 1350-1 or similar
- .3 Supplier of reinforcement
 - .1 Include documentation to demonstrate compliance with requirements detailed in Appendix B3, Drawings
- .4 Shop drawings for formwork and falsework;
 - .1 Drawings must be stamped by a licensed professional engineer when required by governing regulations
- .5 Concrete quality control plan detailing concrete placement methods and curing procedures, include:
 - .1 Mill test certificates for steel reinforcement;
 - .2 Haul routes and distances;
 - .3 Placement methods and procedures to control consolidation/segregation;
 - .4 Location of necessary cold joints;
 - .5 Finishing procedures;
 - .6 Curing methods and schedule;
 - .7 Strength requirements for structural stability;
 - .8 Clean-up procedures; and,
 - .9 Mitigation measures to account for hot or cold temperatures where reasonably anticipated during the construction period.

1.5 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 five [5] 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 Bearing strata upon the completion of piling activities
 - .2 Upon completion of formwork and placement of reinforcement;



- .3 During execution of concrete placement;
- .4 Following the removal of all formwork and prior to erection of the tower.
- .2 Coast Guard will be hiring a third party company to complete the quality assurance testing of concrete at their own expense. Marine transportation of the crew conducting the testing will be at the Contractor's expense. In the event that testing indicates a deficiency, all additional costs for supplemental testing will be at the sole expense of the Contractor.

PART 2 - PRODUCTS

2.1 Concrete Mix

- .1 As detailed in Appendix B3, Drawings

2.2 Formwork/Falsework

- .1 As detailed in approved concrete construction plan

2.3 Reinforcement

- .1 As detailed in Appendix B3, Drawings

2.4 Other concrete materials:

- .1 As detailed in CAN CSA A23.1

PART 3 - EXECUTION

3.1 General

- .1 Concrete must be placed, finished, and cured in accordance with the Contractor's submitted quality control plan.

3.2 Preparation

- .1 Preparation shall not commence until bearing surfaces have been inspected by Coast Guard and concrete supplier.
- .2 Remove all loose and deleterious material.
- .3 Construct forms and supporting falsework in accordance with approved Concrete Construction Plan.
- .4 Place reinforcement as detailed in Appendix B3, Drawings.
- .5 Surfaces to be heated as necessary to account for climatic conditions at the time of the pour.

3.3 Delivery

- .1 Concrete shall be delivered to site in accordance with the approved Concrete Construction Plan.



.1 Contractor must not modify maximum time limit without receipt of prior written agreement from Coast Guard.

.2 Contractor must ensure continuous concrete delivery.

3.4 Placement

.1 Concrete placement shall not commence until formwork and reinforcement have been inspected by Coast Guard's representative.

.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 Finish exposed concrete surfaces to provide a lightly brushed non-skid surface, unless otherwise specified in the submitted foundation design.

.4 Contractor shall provide samples as required during placement operation for the performance of quality assurance testing.

3.5 Curing

.1 Shall be undertaken in accordance with CAN CSA A23.1

.1 Weather is anticipated to be below the threshold detailed for cold weather concrete. Contractors submitted Concrete Construction Plan must clear detail how contractor will ensure the placed concrete is protected from early freezing; how temperature of the concrete will be monitored; and how insulation hoarding will be removed to minimize temperature differential.



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 Transportation of the tower and all associated hardware to site from the designated staging area;
 - .2 The installation of the tower detailed in the appended Contract Drawings;
- .2 Work of this section excludes:
 - .1 Fabrication and supply of the tower, by CCG.
 - .2 Placement of the tower on the Contractor's transport truck, by CCG.
 - .3 Supply and installation of the navigational lantern, by CCG.

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 S37-01 - 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 Submittals

- .1 No submittals required in this section

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 the work 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 (see Appendix B3 for drawings).
- .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.
- .3 Bolts, Nuts, Washers:
 - .1 Contractor shall supply four [4] structural grade A325 bolts including double heavy hex nut hardware, hot dip galvanized, to attached the tower base to the steel plate included in the pier design .

PART 3 - EXECUTION

3.1 Transportation of Tower

- .1 The Contractor shall be responsible for the transportation and costs associated with transporting one [1] Nav-aid tower from CCG's staging location identified below and the project site:
 - .1 Staging location: CCG Base – Parry Sound, 28 Waubeek St, Parry Sound, ON P2A 1B9.
 - .2 CCG's personnel will place the 16' pipemast navaid into the Contractor's transport truck
 - .3 Advise Coast Guard at least three [3] working days prior to pick-up

3.2 Fabrication

- .1 Fabrication has been completed by the Canadian Coast Guard. This includes everything shown on the drawing which comprises the tower.

3.3 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.



3.4 Handling of Material and Transportation

- .1 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.
- .2 It is the responsibility of the Contractor to ensure that the tower sections, particularly the joints are protected from bending and alignment damage.
- .3 The contractor will be asked to identify how he would like the tower packaged for shipping shortly after award. This will be coordinated by CCG.

3.5 Bolting the tower to the steel plate

- .1 The tower shall be bolted down to the pier's 1" thick plate using four [4] structural grade A325 bolts (galvanized).
- .2 Each bolt shall have two [2] heavy hex nuts (galvanized).
- .3 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.



SECTION: 316223.13 CONCRETE FILLED STEEL PILES

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 Supply and installation of four [4] concrete filled steel piles.

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 Quebec Commission of Occupational Health and Safety Act
 - .4 CAN/CSA S16.1 - Limit States Design of Steel Structures
 - .5 CAN/CSA G40.20/G40.21 General Requirements for Rolled or Welded Structural
 - .6 CAN/CSA W47.1 - Certification of Companies for Fusion Welding of Steel Structures
 - .7 CAN/CSA W59 - Welded Steel Construction (Metal-Arc Welding)
 - .8 ASTM A252 - Standard Specification for Welded and Seamless Steel Pipe Piles
 - .9 ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - .10 ASTM A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

1.3 Related Sections

- .1 Section 033000, Concrete Work

1.4 System Description

- .1 Concrete filled steel piles are comprised of four [4] concrete filled tubular steel piles driven to refusal as detailed in Appendix B3.
- .2 The location of the new foundation is indicated in drawing 1 of 3 in Appendix B3



1.5 Submittals

.1 Pile installation Procedures

- .1 Deadline: with Construction Plan
- .2 Deliverables: records of pile installation as detailed below.
 - .1 Listing of type of equipment and push load rating
 - .2 Mill test certificates for steel piles
 - .3 Pile supplier

.2 Field Quality Control Documents

- .1 Deadline: three [3] working days following pile installation
- .2 Deliverables: as defined in 3.6.

1.6 Existing Conditions

- .1 Three [3] abandoned timber foundations are located in the premises of the proposed location of the new foundation as shown in Figure 2 of Appendix B1

1.7 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 Throughout all phases of the installation.

PART 2 - PRODUCTS

2.1 Piles:

- .1 Steel piles shall be as per Drawings in Appendix B3

PART 3 - EXECUTION

3.1 Delivery and storage

- .1 Deliver, store and handle materials in accordance with manufacture's written instructions to prevent permanent deflection or damage to the supplied materials



3.2 Installation

- .1 Proceed with installation in accordance with approved pile installation plan and drawings in Appendix B3.
- .2 Installation of each pile will be subject to approval of Coast Guard's (CCG's) representative on site prior to removal of equipment.
- .3 Adequate measures shall be undertaken to insure piles are securely and accurately located in the correct position while maintaining the slope identified in drawing 2 of 3 in Appendix B3
- .4 Cut of piles neatly and squarely if required at elevations indicated in Appendix B3, Drawings.
 - .1 Remove and dispose cut-off lengths from site on the completion of the work.

3.3 Pile Driving Equipment

- .1 Shall be as per drawing 3 of 3 in Appendix B3

3.4 Refusal

- .1 As defined in drawing 3 of 3 in Appendix B3

3.5 Welding

- .1 If welding is to be undertaken by the Contractor, the following requirements shall be met:
 - .1 Welding to be completed in accordance with CSA W59 (which requires CWB certification to div 2)
 - .2 Welding certification of companies and welder to CSA W47.1

3.6 Field Quality Control

- .1 Contractor shall maintain accurate records of driving for each pile, including:
 - .1 Type and make of driving equipment and driving energy
 - .2 Sequence of driving piles in group.
 - .3 Final tip and cut off elevations
 - .4 Other pertinent information such as driving interruptions, pile damage, or splicing.

3.7 Repair and Restoration

- .1 Piles identified by the Coast Guard's representative as defective shall be remedied to the satisfaction of the Engineer; such remedies including; but not limited to:
 - .1 Pull out rejected piles and replace with new piles;



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- .2 No extra compensation will be made for removing and replacing or other work made necessary through the rejection of defective piles.



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APPENDIX B1: SITE LOCATION AND PHOTOGRAPHS



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Figure 1: Project Site
LL 1753 Courtright
42°48'23.13"N 82°28'42.53"W



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Figure 2: Existing abandoned dolphin foundations (not to be removed unless required)



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Figure 3: Detached and Sunken naavid (has been removed by CCG)



Figure 4: Sample 16' pipemast navaid (concrete base and solar powered lantern are not included)



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Figure 5: Typical strut connected to the top point of 16' pipemast navaid for transportation (strut supplied by CCG)



APPENDIX B2 – SUMMARY OF SUBMITTALS

Following Contract Award	
Submission Description	Section(s)
Deadline: ten [10] working days following award	
Detailed schedule:	<i>011100</i>
Proof of qualifications:	
a) Proof of CWB Certification	<i>011100</i>
b) Proof of Vessel Registration	<i>055000</i>
Deadline: ten [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) Concrete plan	<i>033000</i>
d) Pile installation procedure	<i>316223.13</i>
Deadline: Three [3] working days following installation of piles	
Field Quality Control Document	<i>316223.13</i>
Deadline: twenty-one [21] calendar days following acceptance of the works	
As-built drawings	<i>011100</i>



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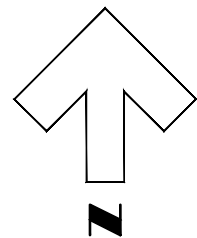
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APPENDIX B3 – DRAWINGS



APPROXIMATE LOCATION : LAT 42° 48' 23" N
LONG 82° 28' 42" W

ENVIRONMENTAL NOTES:

1. Do not re-fuel equipment on site.
2. Provide spill kit on barge.
3. Drive piles only between 8:00 a.m. and 7:00p.m.
4. Provide containment tarp to catch spilled concrete or other materials from entering water.
5. Cure concrete in forms for 96 hours before stripping forms.



1:250



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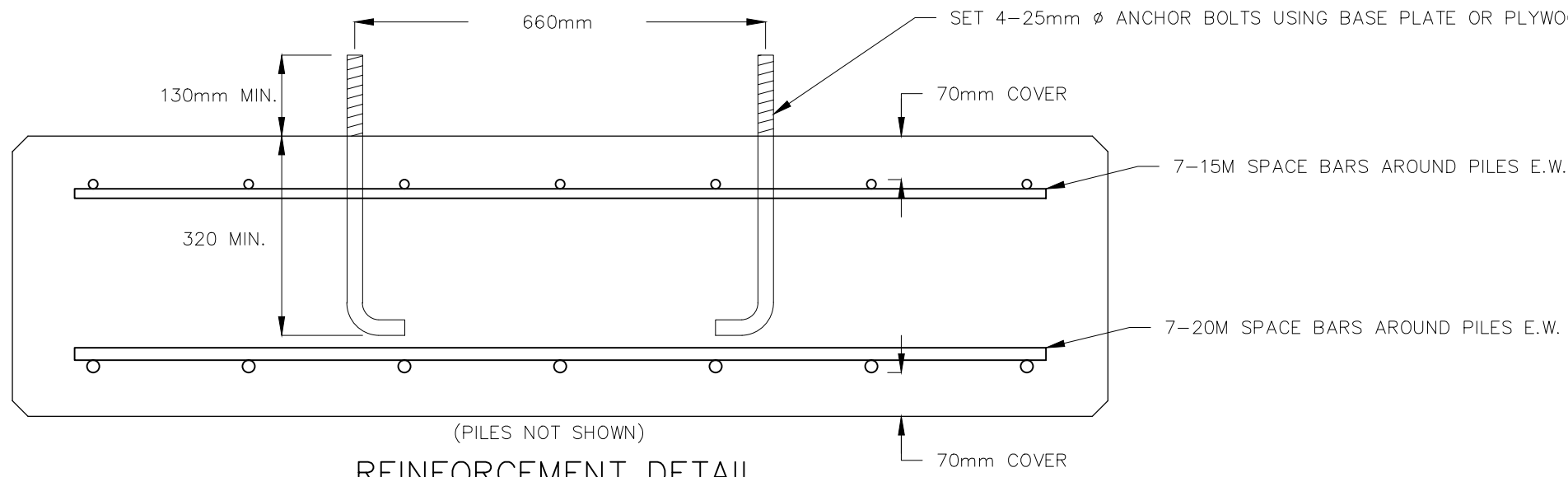
Navigation Aid
Foundation
LL 753 Courtright

DATE:
Jan. 26, 2017

SCALE
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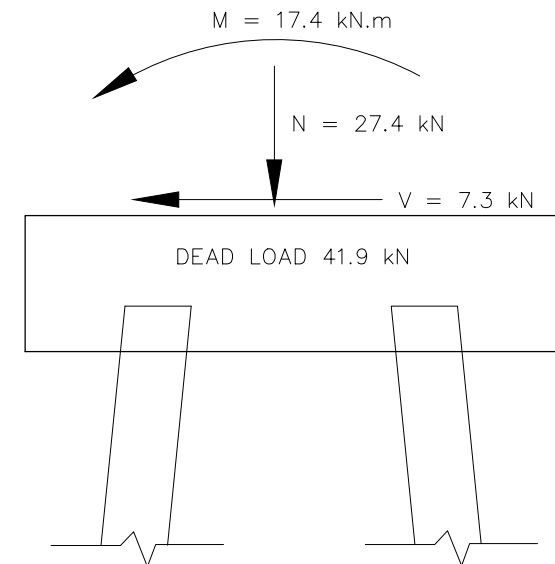
PROJECT No.
16260

DRAWING No.
1 of 3

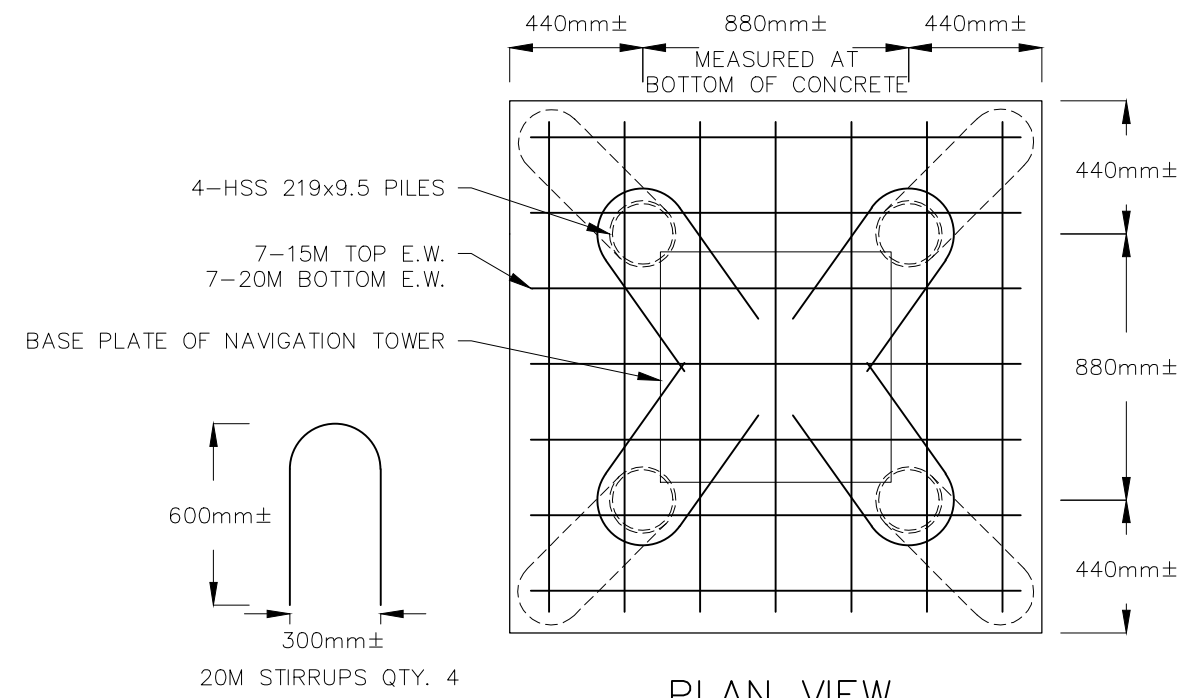
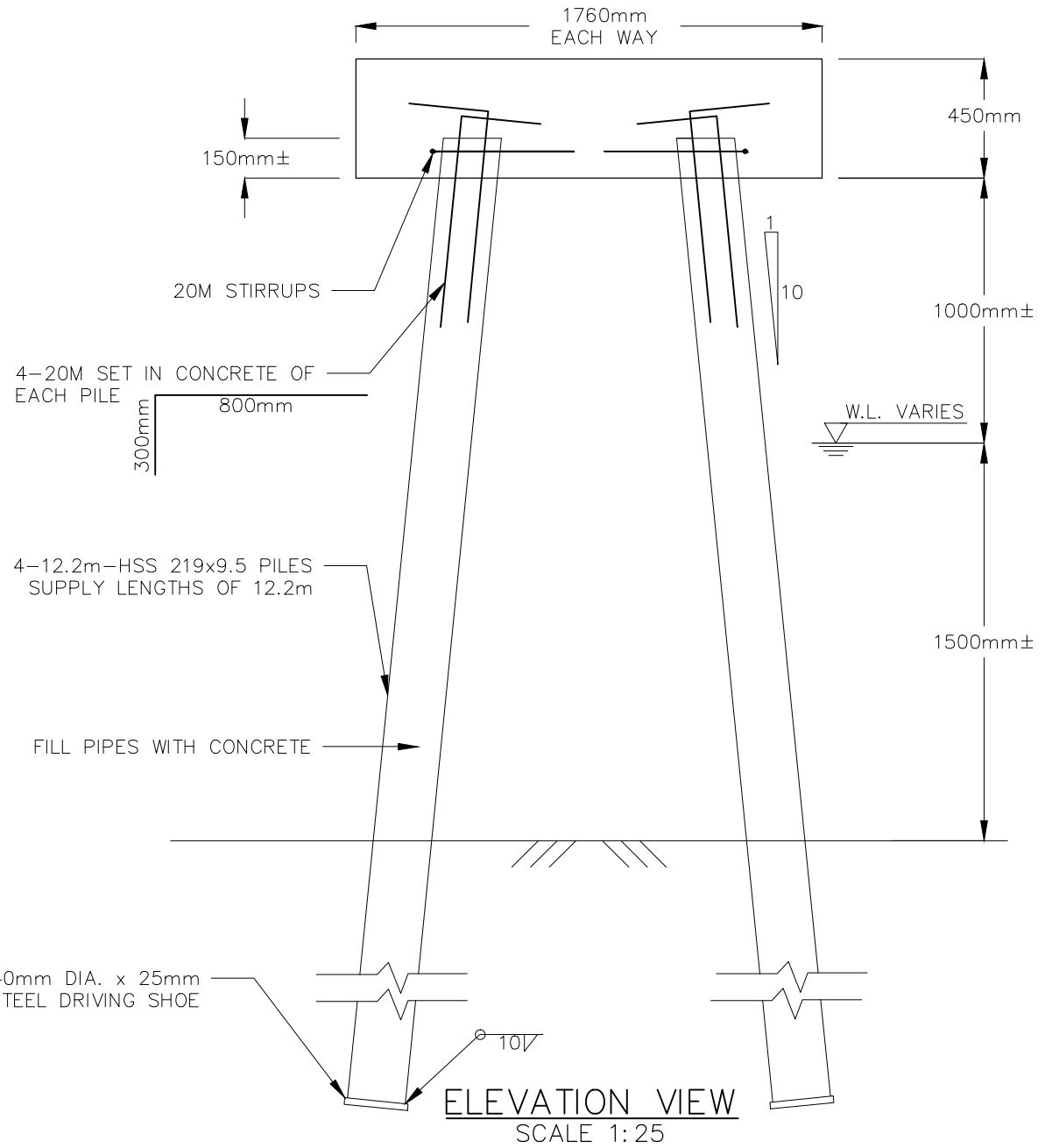


REINFORCEMENT DETAIL
SCALE 1:10

DESIGN LOADING NOTES:
1. Wind pressure of 600Pa was used in calculating factored load combinations. Ice accretion thickness of 50mm was used. All loads were factored per NBCC 2010.



16' PIPEMAST FOUNDATION DESIGN LOADS
NTS



PLAN VIEW
SCALE 1:25



Department of Fisheries and Oceans Canada
Navigation Aid Foundation
LL 753 Courtright

DATE: Jan. 26, 2017	PROJECT No. 16260
SCALE As Shown	DRAWING No. 2 of 3

**Note No. 12. in drawing No. 3 of 3 is omitted and will not apply to the
this contract.**

NOTES:

1. Work to be done in accordance with the latest revision of Ontario Provincial Standard Specifications for Structures.
2. Class of concrete:
Pile Cap and Pipe Infill: CSA exposure class C-1 (35 MPa compressive strength), air entrained.
3. Reinforcing steel shall be grade 400 deformed bars. Bars shall be pre-bent at suppliers plant.
4. Chamfer all exposed corners 25mm.
5. Cover to reinforcing steel 70mm ± 20mm except where noted.
6. Contractor may weld or bolt temporary form support structure to piles. Remove and grind smooth after. Remove all forms.
7. Lap splice information (unless noted otherwise)
Uncoated: 15M – 480mm; 20M – 640mm
8. Drive piles to refusal or 12.2m below cut off.
9. Pile driver to be a vibratory driver with push load of at least 8000kg, (78.4kN).
10. Refusal shall be defined as achieving not more than 20mm of set in 600 vibrations at a push load of 8000 kg. Example: Dawson EMV 3000 for 15 seconds.
11. Steel pipe piles grade G40.21, 350W. New material only.
12. Supply and Installation of the light tower will be by Coast Guard personnel.
13. Supply and installation of the anchors bolts will be by the contractor. Grade A325 or greater, hot dip galvanized. Supply washer and 2 nuts per bolt.



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Foundation
LL 753 Courtright**

DATE:
Jan. 26, 2017

SCALE
As Shown

PROJECT No.
16260

DRAWING No.
3 of 3

4

3

2

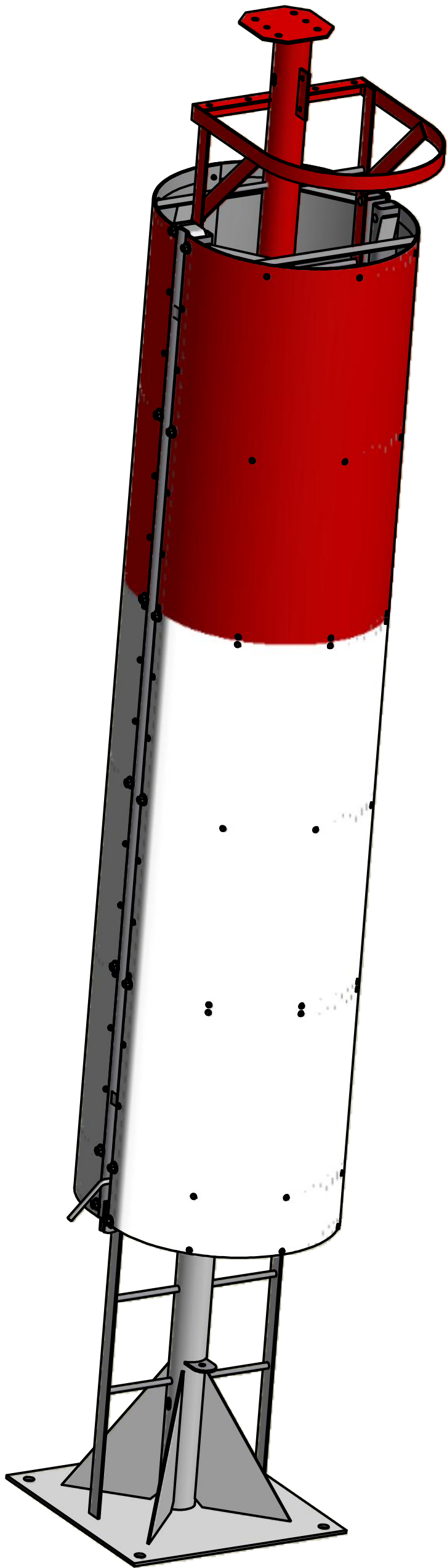
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16 FT PIPEMAST ANTI-CLIMB

FILE No.		EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	
Rv.	DATE	DESCRIPTION	DRAWN	APP'D		
0	29 FEB 12	DRAWING INITIATED	A.J.E.	A.W.W.		
1	23 MAR 12	FOR PRODUCTION	A.J.E.	A.W.W.		
2	27 JUN 12	SHEET THICKNESS REDUCED	M.H.	B.Y.		
3	04 JAN 13	P1 MODIFIED AND S2 CREATED	M.H.	B.Y.		
4	11 JAN 13	FINAL DRAWING COMPLETED	E.J.G.	B.Y.		

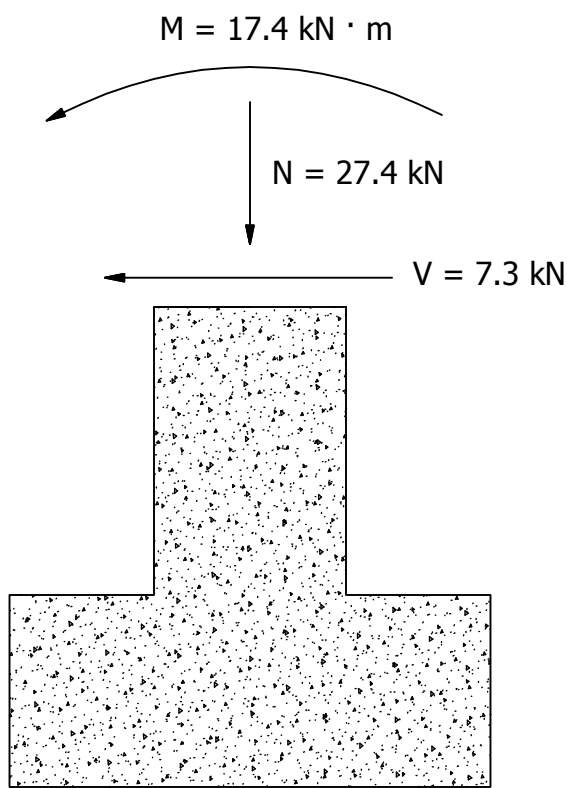
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3

2

1


PARTS LIST				
PART NO.	QTY	PART	DESCRIPTION	DRAWING NO.
A1	1	DOOR OF ANTI-CLIMB	SEE ASSEMBLY	3
A2	1	BACK OF ANTI-CLIMB	SEE ASSEMBLY	4
S1	2	RIBBING SKELETON SUB-ASSEMBLY	SEE SUB-ASSEMBLY	5
S2	10	RIBBING SUB-ASSEMBLY	SEE SUB-ASSEMBLY	6
S3	2	TOP RIBBING SUB-ASSEMBLY	SEE SUB-ASSEMBLY	7
S4	2	BOTTOM RIBBING SUB-ASSEMBLY	SEE SUB-ASSEMBLY	8
S5	1	LATCH SUB-ASSEMBLY	6 X 57mm[1/4 X 2 1/4in] FLAT BAR	9
P1	4	MALE HINGE	SEE PART	10
P2	4	FEMALE HINGE	SEE PART	11
P3	14	STANDARD RIB BRACING	6 X 51mm[1/4 X 2in] FLAT BAR	12
P4	8	DIAGONAL RIB BRACING	6 X 51mm[1/4 X 2in] FLAT BAR	12
P5	2	SECONDARY RIB BRACING	6 X 51mm[1/4 X 2in] FLAT BAR	12
P6	14	RIB	6 X 51mm[1/4 X 2in] FLAT BAR	13
P7	1	LATCH HOOK	SEE PART	14
P8	1	HANDLE	16mm[5/8in] ROUND BAR	15
P9	2	SHEETING	6 X 1254 X 1245mm[1/8 X 49 3/8 X 49in] SHEET - RED	16
P10	2	SHEETING	6 X 1254 X 1219mm[1/8 X 49 3/8 X 48in] SHEET - WHITE	16
P11	2	SHEETING	6 X 1254 X 813mm[1/8 X 49 3/8 X 32in] SHEET - WHITE	16
P12	1	DOOR REST	6 X 51mm[1/4 X 2in] FLAT BAR	17
P13	2	HSS VERT	129in LONG 6 X 51 X 76mm[1/4 X 2 X 3in] RECTANGULAR TUBE	18
P14	2	HSS VERT WITH HOLE	129in LONG 6 X 51 X 76mm[1/4 X 2 X 3in] RECTANGULAR TUBE	19
P15	1	RUBBER STOPPER	SEE PART	20
P16	2	SQUARE STOPPER	SEE PART	21
P17	2	TALL RIB REINFORCEMENT	6 X 51mm[1/4 X 2in] FLAT BAR	22



16' PIPEMAST FOUNDATION LOADS

STRUCTURAL NOTES:

1. WIND PRESSURE OF 600Pa WAS USED IN CALCULATING FACTORED LOAD COMBINATIONS. ICE THICKNESS OF 50mm WAS USED IN CALCULATING LOADING PER S37-01, ICE CLASS IV. ALL LOADS WERE FACTORED PER NBCC 2010
2. ALUMINUM ALLOYS SHALL CONFORM TO THE 'ALUMINUM ASSOCIATION' PUBLICATION 'ALUMINUM STANDARD AND DATA' AND HAVE A MINIMUM YIELD STRENGTH OF 240 MPa, GRADE 6061-T6.
3. ALL STRUCTURAL MEMBERS SHOWN ARE NEW.
4. METAL AND ARC WELDING SHALL CONFORM TO CSA W59.2 AND IS TO BE UNDERTAKEN TO CSA W47.2 DIVISION 1, 2.1, OR 2.2.
5. ENSURE THAT STRUCTURAL COMPONENTS AND WELDS ARE NOT OVER STRESSED DURING CONSTRUCTION.
6. FASTENERS SHALL BE GALVANIZED STEEL BOLTS A325 OR GREATER.
7. LARGE B/W/N REFERS TO A BOLT WASHER AND NUT ASSEMBLY CONSISTING OF 18-8 STAINLESS STEEL 1/2" X 4" ROUND HEAD CARRIAGE BOLT, 1/2" SMALL OD FLAT WASHER (1 1/4" OD) AND 1/2" NYLON INSERT LOCK NUT
8. SMALL B/W/N # 1 REFERS TO A BOLT WASHER AND NUT ASSEMBLY CONSISTING OF 18-8 STAINLESS STEEL 3/8" X 1" HEX CAP SCREW, 3/8" SMALL OD FLAT WASHER (1" OD) AND 3/8" NYLON INSERT LOCK NUT
9. SMALL B/W/N # 2 REFERS TO A BOLT WASHER AND NUT ASSEMBLY CONSISTING OF 18-8 STAINLESS STEEL 3/8" X 3/4" HEX CAP SCREW, 3/8" SMALL OD FLAT WASHER (1" OD) AND 3/8" NYLON INSERT LOCK NUT
10. UNLISTED BOLTS ARE 18-8 STAINLESS STEEL WITH NYLON INSERT LOCK NUTS
11. DRAWINGS NOT TO SCALE.

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16 FT PIPEMAST ANTI-CLIMB				
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	
		DWG No.	0	
Rv.	DATE	DESCRIPTION	DRAWN	APP'D
0	29 FEB 12	DRAWING INITIATED	A.J.E.	A.W.W.
1	23 MAR 12	FOR PRODUCTION	A.J.E.	A.W.W.
2	27 JUN 12	SHEET THICKNESS REDUCED	M.H.	B.Y.
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APPENDIX B4 – 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.