



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



SOW – PIER REPLACEMENTS
DESIGN - BUILD CONTRACT
LAKE OF BAYS VARIOUS SITES
Lake of Bays, ON

MARITIME AND CIVIL INFRASTRUCTURE

Prepared by: LL

Approved by: BY

Revision: 3

Files: EWA 8010-20-1415 & EWA 8010-20-1416

Rev Date: May 29, 2017



TABLE OF CONTENTS

SECTION:	011100 GENERAL INSTRUCTIONS	2
SECTION:	013300 SUBMITTAL PROCEDURES	7
SECTION:	013530 HEALTH AND SAFETY REQUIREMENTS	8
SECTION:	013543 ENVIRONMENTAL PROCEDURES	9
SECTION:	014500 QUALITY CONTROL.....	13
SECTION:	016100 COMMON PRODUCT REQUIREMENTS	15
SECTION:	024116 DEMOLITION OF STRUCTURES.....	17
SECTION:	033000 CONCRETE WORK	20
SECTION:	133613 METAL TOWERS.....	27
APPENDIX A:	SITE LOCATIONS AND PHOTOGRAPHS.....	30
APPENDIX B:	SUMMARY OF SUBMITTALS.....	32
APPENDIX C:	DRAWINGS.....	33
APPENDIX D:	MARINE ACCESS REQUIREMENTS	58



SECTION: 011100 GENERAL INSTRUCTIONS

PART 1 - GENERAL

1.1 Minimum Standards

- .1 Perform work in accordance with National Building Code of Canada (NBCC) and any other code of provincial, territorial 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; and
 - .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 Design and install two [2] foundations for the aids to navigation sites;
 - .3 Install two [2] new pipe masts on the new foundations;
 - .4 Remove existing pipe masts, foundations and abandoned foundations;
 - .5 Demobilize from site.
- .2 The following work will be undertaken by others and is hereby excluded:
 - .1 Supply of replacement towers, complete with fall arrest system; and
 - .2 Supply of self-contained lanterns for the aids to navigations;

1.3 Submittals

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



- .2 Deliverables:
 - .1 The contractor shall furnish a high level schedule outlining the major construction milestones. Schedule shall clearly define the anticipated start and finish dates of the project.
- .3 Proof of Qualifications:
 - .1 Deadline:
 - .1 No later than ten [10] working days following award.
 - .2 Deliverables:
 - .1 Proof of welding shop Certification (CWB div 2) for tower fabricator (Section 011100 – 1.4);
 - .2 Contractor shall furnish proof of vessel registration (Section 011100 – 1.7.3.1);
 - .3 The contractor shall provide a detailed list of all subcontractors being used to complete the work described herein (Section 011100 – 1.4).
- .4 Design Package:
 - .1 Deadline:
 - .1 No less than ten [10] working days prior to mobilization
 - .2 Deliverables:
 - .1 Geotechnical Investigation Report (Section 033000 – 3.2)
 - .2 Foundation design drawings (Section 033000 – 3.3.2)
- .5 Construction Plan:
 - .1 Deadline:
 - .1 No less than ten [10] working days prior to mobilization.
 - .2 Deliverables:
 - .1 A Construction Plan of sufficient detail to demonstrate that the Contractor has considered all the challenges of the project and is prepared to undertake the works in a competent and professional manner in accordance with all legislation, including:
 - .1 Project Specific Safety Program (Section 013530);
 - .2 Project Environmental Protection Plan (Section 013543);



- .3 Detailed Demolition Plan (Section 024116);
- .4 Excavation Plan (Section 033000).

.6 As-built and QA/QC:

.1 Deadline:

- .1 No more than twenty eight [28] calendar days after construction.

.2 Deliverables:

- .1 The following documents shall be forwarded upon completion of the contract:
 - .1 Set of red-lined as-built drawings;
 - .2 Concrete test results (Section 033000 – 1.4.4);

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 offshore drilled foundations.
- .2 Any steel fabrication must be completed by a shop certified to DIVISION 2 or greater by the Canadian Welding Bureau (CWB).
- .3 The Contractor shall designate the following key project members, including any subcontractors. The project members shall have completed projects of similar scope and complexity to the work described herein.
 - .1 Project Manager: Contact information for the main point of contact for the project shall be provided by the contractor.
 - .2 The contractor shall provide a detailed list of all subcontractors being used to complete the work described herein.
 - .3 Requests to amend the project team, following contract award, must be forwarded in writing. Coast Guard reserves the right to reject any proposal to amend the project team.

1.5 Site Location

- .1 All three sites are located in Lake of Bays, ON:
 - .1 LL1415 Gull Rocks: 45° 13'34.00"N, 79° 2'27.00"W
 - .2 LL1416 Bigwin Island West: 45° 14'5.50"N, 79° 2'44.00"W

1.6 Existing Conditions

- .1 The sites are located on shallow shoals. The shoals vary in depth and are typically shallow



enough to be hazardous to mariners. The shoals are comprised of large loose rock at the surface and it is not known what underlays the rock.

- .2 Each site hosts a lit aid to navigation, often referred to as a pipe mast. CCG workers are periodically required to access these sites by boat to maintain/replace components on the pipe masts.
- .3 Photographs of the existing sites have been included in Appendix A: Site Locations and Photographs.
- .4 Bidders must make their own estimate of the difficulties associated with all phases of the works.
- .5 The contractor must include in their costs all expenses related to the difficulties of working at the sites.

1.7 Contractor's Access to Site

- .1 Contractor is responsible for transportation of all labour, materials and equipment to and from the sites, including any and all material furnished or itemized for salvage by Coast Guard.
- .2 The sites are accessible by water and are located on Lake of Bays 20 Km South-East of Huntsville, Ontario.
- .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 D: Marine Access Requirements are met.

.1 Contractor shall provide proof of vessel registration after award of contract.

1.8 Completion, Scheduling and Planning of the Works

- .1 Work may commence as early as practical following Coast Guard's acceptance and approval of mandatory submissions.
- .2 The geotechnical report and preliminary foundation design shall be complete by July 28th, 2017.
- .3 Final Foundation design package shall be complete by August 31st, 2017
- .4 Construction work shall be completed no later than November 1, 2017, unless otherwise negotiated and approved in writing.
- .5 Demolition of existing and abandoned foundations is not to commence until the new aids to navigation have been fully commissioned.

1.9 Coast Guard Staging Location

- .1 Items to be supplied by, or salvaged to Coast Guard shall be collected or delivered by the



Contractor to the following staging location. The Contractor shall be responsible for all transportation costs between the project site and the identified staging location. Material drop off or access to stored goods outside of regular operating hours shall be at the discretion of Coast Guard and may be subject to cost recovery:

.1 Staging location:

CCG Base Parry Sound
28 Waubeek St.
Parry Sound, ON P2A 1B9

.2 Advise Coast Guard at least three (3) working days prior to pick-up/delivery

.3 Shipping/Receiving hours: Monday through Friday, 9:00AM to 3:00PM

.4 Staging location is located approximately 100 Km West of Lake of Bays

1.10 Temporary Facilities

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

1.11 Fees, Permits, Certificates and Information

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

1.12 Reference Documents

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

1.13 Required Submissions

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



SECTION: 013300 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 General

- .1 This section specifies general requirements and procedures for the Contractor's submissions of documents to 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 by 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, 2015;
 - .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 or Local municipal regulations pertaining to safety of the contractors workers.

1.3 Submittals

- .1 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013300.
- .2 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 General Standards Board (CGSB)
 - .2 Transportation of Dangerous Goods
 - .3 Canadian Council of Ministers of the Environment (CCME) Documentation
 - .4 Canadian Environmental Protection Act

1.3 Submittals

- .1 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013300.
- .2 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.



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 and to prevent excavation of soils below stockpiles.

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 once approved to do so by Coast Guard.

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



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



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 Spill 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.
- .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 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 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 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 Contractor at the sites. The contractor shall be required to provide access to the site at all times to CCG site staff.
 - .2 Pre-tensioning: Coast Guard shall witness the pre-tensioning of the all-thread rods to the prescribed torque values.
 - .3 Installation of towers: Coast Guard shall witness the erection of the new nav-aid towers and witness the operation of the new lights.

1.2 Procedures

- .1 Provide 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 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



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



.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 Coast Guard will make acceptance visits of work executed by the Contractor at critical milestones identified in the following sections.

.2 The Contractor shall inform Coast Guard at least three [3] working days before these inspection visits.

.3 All work shall be completed in compliance with the specifications before requesting the visit for inspection. If the work is not completed or deemed non-compliant, the Contractor shall be responsible for all costs incurred for subsequent inspections.



SECTION: 016100 COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 General

- .1 Secure Coast Guard approval of all products to be incorporated into the works. Work shall not commence until product data and/or samples have received Coast Guard approval.
- .2 Supply and/or fabricate material and equipment of prescribed quality, with performance conforming to established standards.
- .3 Use new material and equipment unless otherwise specified.
- .4 Ensure replacement parts may be readily procured.
- .5 Use products from one manufacturer for material and equipment of same type or classification, unless otherwise specified.

1.2 Manufacturer's Instructions

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify Coast Guard in writing of any conflict between these specifications and manufacturer's instructions; 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 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 Coast Guard. Substitutions will be considered by 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,



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



- .3 Alternative materials to those specified which are brought to the attention of and considered by Coast Guard as equivalent to the material specified will result in a credit to the Contract amount.
 - .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 Demolition of the pipe masts and foundations;
 - .2 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 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013300.
- .2 Contractor to provide a 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; and
 - .3 The ultimate disposal location of all waste materials and debris.
 - .1 Include documentation detailing regulatory approval for waste disposal facility and transporter.
- .3 Work under this section shall not proceed until written approval of the demolition plan has been received from the Coast Guard.



- .4 Submit copies of certified receipts from the disposal sites for all material removed from the work site upon request.

1.4 Existing Conditions

- .1 Photos of the existing aids to navigation are included in Appendix A.

PART 2 - PRODUCTS

- 2.1 Not used.

PART 3 - EXECUTION

3.1 General

- .1 Work under this section shall be continuous and proceed without interruption unless otherwise approved by Coast Guard.
- .2 It is preferred that pieces are lifted onto the barge whole, if possible, to avoid environmental issues.
- .3 Demolition work is not to commence until the new piers and aids to navigation are complete and fully 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, property, and local traffic.

3.3 Preparation

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

3.4 Demolition

- .1 Demolish existing piers in their entirety;
- .2 Removed and salvage existing towers in their entirety;
- .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



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



notify Coast Guard.

3.5 Disposal

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



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 Conduct a geotechnical investigation at each project site;
 - .2 Design and install an appropriately sized foundation at each project site;
 - .1 This document has been prepared under the assumption that concrete foundations would be designed for these works, however designs using other materials will also be considered by Coast Guard.

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
 - .4 ASTM A615-15 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete reinforcement
 - .5 CAN/CSA-A23.1-04 Concrete Materials and Methods of Concrete Construction
 - .6 CAN/CSA A23.2-04 Methods of Test and Standard Practices for Concrete
 - .7 CAN/CSA A23.3-04 Design of Concrete Structures
 - .8 CAN/CSA-G30.18 Billet Steel Bars for Concrete Reinforcement
 - .9 CAN/CSA S269.3 Concrete Formwork

1.3 Performance Requirements

- .1 The foundation shall be designed to perform as reasonably expected for a life of 50 years.

1.4 Submittals

- .1 Submittals shall be forwarded to Coast Guard in accordance with the provisions of section 013300.



.2 Design Package

.1 Deadline:

- .1 No less than ten [10] working days prior to mobilization.

.2 Deliverables:

.1 Geotechnical Investigation Report

- .1 A detailed report containing, at minimum, the information listed in Article 3.2 of this section. The report is to be stamped by a professional engineer licensed to practice in the province of Ontario
- .2 The Design Package shall include drawings showing plan and section views of the foundation
- .3 Drawings shall be sealed and signed by an engineer licensed to practice in the province of Ontario.

.3 Construction Plan

.1 Deadline:

- .1 No less than ten [10] working days prior to mobilization.

.2 Deliverables:

- .1 Contractor shall provide a high level summary of mix properties and admixtures to demonstrate compliance with Coast Guard criteria.
- .2 Excavation Plan detailing what methods will be used to excavate material as well as how the excavation will be protected from water.
- .3 Concrete Placement Plan identifying the location of the source of ready mix concrete, the haul route and any other relevant information required to demonstrate a plan for getting the concrete into the forms in a timely manner;
- .4 Finishing procedures;
- .5 Curing methods and schedule;
- .6 Clean-up procedures; and
- .7 Mitigation measures to account for hot or cold temperatures where reasonably anticipated during the construction period.

.4 Mill Test Certificates



- .1 For any works fabricated of steel, the Contractor shall provide Mill Test Certificates.
- .2 Deadline:
 - .1 Upon receipt of metal purchased.
- .3 Deliverables:
 - .1 The contractor shall furnish proof that all metal received for the project is in compliance with CSA and ASTM International standards.

1.5 Quality Assurance

- .1 Coast Guard's minimum inspection requirements are detailed herein.
- .2 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.
- .3 All deficiencies in the works identified at the time of inspection shall be remedied to the satisfaction of Coast Guard, at the Contractors expense. Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works.
- .4 The below list identifies key milestones for which Coast Guard will require an opportunity to take samples, inspect or witness testing:
 - .1 Subgrade verification: The Contractor is responsible to provide a Geotechnical Engineer to inspect the sub-grade upon completion of any excavating where a design bearing surface is to be achieved. The Engineer shall indicate in writing that the sub-grade surface conditions are acceptable.
 - .2 Concrete testing: The Contractor will be responsible to test concrete for air, slump and strength during the pour.
 - .1 The Contractor shall arrange for concrete testing on site the day of the pour. This shall include, at minimum, a test for slump, air entrainment and strength (3 cylinders: one [1] 7 day and two [2] 28 day).
 - .3 Final completion: The Coast Guard will conduct final inspection upon completion.



PART 2 - PRODUCTS

2.1 General

- .1 All concrete materials shall conform to specifications referenced in CAN/CSA-A23.1-04

2.2 Concrete

- .1 Concrete supplier shall be a holder of a valid "Certificate of Ready Mixed/Mobile Mix Concrete Production Facilities" as issued by the Ready Mixed Concrete Association of Ontario (RMCAO).
- .2 Concrete mix to be determined by Contractor and shall be indicated on engineering plans.
 - .1 The use of calcium chloride as an admixture is not permitted.

2.3 Anchor Bolts

- .1 All anchor bolts are to conform to ASTM A325.
- .2 The anchor bolts are to be hot dip galvanized and sized as indicated in drawings provided.
- .3 Threads shall be long enough to accommodate two heavy hex nuts as well as a heavy flat washer.

PART 3 - EXECUTION

3.1 General

- .1 Concrete must be placed, finished, and cured in accordance with the Contractor's submitted construction plan and the contractor's engineered drawings.

3.2 Geotechnical Investigation

- .1 At each project site, exploration is to be undertaken in a single location to an estimated minimum depth determined by the geotechnical engineer. The borehole is to be advanced until it reaches a layer suitable to properly represent the soil conditions at the site.
- .2 The submitted report shall be stamped by a professional engineer who is licensed to practice in the province of Ontario. The report shall detail the following information:
 - .1 Description of the soil strata according to the Unified Soil Classification System (USCS)
 - .2 Depths at which strata changes occur referenced to a site benchmark elevation
 - .3 Standard Penetration Test (SPT) blow counts (N) for each soil layer
 - .4 Soil density for each soil layer
 - .5 Internal angle of friction for each soil layer



- .6 Cohesion for each soil layer
- .7 Ultimate bearing capacities for each soil layer or at the recommended bearing depth(s)
- .8 Rock quality designation
- .9 Total core recovery percentage
- .10 For expansive soil conditions, the active zone of influence and recommendations for design
- .11 Elevation of free water encountered and the ground water depth below grade to be considered for design
- .12 Frost depth to be considered for design
- .13 Anticipated sulphate content of groundwater and soils
- .14 Anticipated classification of the soils in accordance with Ontario Occupational Health and Safety Act
- .15 Other pertinent soil design data and recommendations
- .16 Foundation recommendations in consideration of the anticipated loading, native material properties, access to the site; and contractor availability/expertise

3.3 Design Requirements

- .1 The Contractor's Engineer must design a suitable load bearing foundation for the pipe masts in consideration of the specific soil condition obtained through a subsurface geotechnical investigation.
 - .1 A foundation design based on "normal" soil conditions is unacceptable.
- .2 The Foundation Design Package submitted shall bear the seal of a professional engineer, licensed to practice in the province of Ontario. The finished package is expected to contain mainly drawings. Drawings shall clearly identify the following:
 - .1 Applicable codes and standards used in the design of the foundation/pier;
 - .2 Applicable codes and standards to be used in construction;
 - .3 All relevant material properties;
 - .4 All checks or inspections that are required to be complete on-site during construction;
 - .5 Climactic loading used in the design of the foundation/pier
 - .6 Canadian Coast Guard is a federal agency and, as such, the design shall be completed so as to account for all requirement of the Canadian Labor Code.



- .3 Tower loading is provided in Appendix C: Drawings. Each foundation design shall account for loads imparted by the pipe mast and loads that could be reasonably anticipated to affect the foundation. All loads shall be identified on the finalized drawing and as the lake is subject to freezing in the winter, particular attention should be paid to ice loading.
- .4 The Foundation/Pier design requires the top of the finished pier to stand at least 2ft [610mm] above the high water level. The Pier shall be designed to include a system which will allow workers to safely access the pipe-mast ladder, even in low water conditions. If the design calls for a tapered pier, the angle of taper must be steep enough to allow safe approach by boat.
- .5 The design process shall allow for two review/consultation phases with Coast Guard:
 - .1 First, upon completing and submitting the geotechnical subsurface investigation to Coast Guard, and completing some very preliminary design, Coast Guard should be consulted as to the determination of the foundation style. Calculations should be prepared with respect to feasibility of various foundation options.
 - .2 Secondly, upon completion of design, drawings should be prepared for final review prior to stamping.
 - .3 Coast Guard review will be focused mainly around constructability and access. Focus will be on keeping construction costs down, while ensuring that the pier works with our needs for accessing the site regularly by boat.

3.4 Preparation

- .1 Preparation shall not commence until bearing surfaces have been inspected by a geotechnical engineer.
- .2 Remove all deleterious material.
- .3 Construct forms and reinforcement in accordance with the engineer's specifications.
- .4 All exposed 90° edges shall be chamfered.

3.5 Placement

- .1 Concrete placement shall not commence until formwork and reinforcement have been inspected by Coast Guard.
- .2 Contractor shall place, finish and cure concrete as per CAN CSA A23.1 making all adjustments necessary to account for climatic conditions anticipated during the curing period.
- .3 Concrete shall be placed in one continuous pour.



- .1 The development of cold joints shall be avoided. Alternately, cold joints must be previously approved in writing by CCG.
 - .4 Finish exposed concrete surfaces to provide a lightly brushed non-skid surface, unless otherwise specified in the submitted design.
 - .5 Cut control joints where specified.
 - .6 Contractor shall provide samples as required during placement operation for the performance of quality assurance testing.
 - .7 Concrete shall be finished so as to slope gently away from the center of the slab. No water shall pond on the finished surface.
- 3.6 Curing
- .1 Shall be undertaken in accordance with CAN CSA A23.1 and the Contractor's approved construction plan.
 - .1 Curing regimen employed must take into account local climatic conditions reasonably anticipated to occur during the curing period.
- 3.7 Inspection
- .1 Concrete pour(s) to be witnessed by Coast Guard representative. Concrete testing to CAN/CSA-A23.2 by testing laboratory is the responsibility of the contractor. Contractor shall provide samples as required during concreting operation for test purposes.



SECTION: 133613 METAL TOWERS

PART 1 - GENERAL

1.1 Scope of Work

- .1 Work under this section includes the supply of all labor, material and equipment required to complete the following:
 - .1 Transportation of the towers and all associated accessories to the project sites from the designated staging area;
 - .2 Installation of the towers including all appurtenances. Appurtenances shall include but are not necessarily limited to:
 - .1 Fall arrest system; and
 - .2 Lighting system

1.2 References

- .1 Canada Labour Code Part II – January 2008
- .2 National Building Code of Canada – 2015
- .3 Ontario Occupational Health and Safety Act and Regulations, 2016
- .4 CAN/CSA S16.1 - Limit States Design of Steel Structures.
- .5 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.
- .6 CSA Z259.2.5-12 – Fall Arresters and Vertical Lifelines

1.3 Submittals

- .1 No submittals are required in this section.

1.4 Quality Assurance

- .1 Coast Guards minimum inspection requirements are detailed below:
 - .1 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
 - .2 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.



- .3 Work shall not progress until inspections have been completed and the Contractor has been provided with written notice to proceed with the works
- .2 Inspections shall take place upon completion of the work to ensure towers are plumb and that the lights are operating correctly.

PART 2 - PRODUCTS

2.1 Materials

.1 Steel:

- .1 The towers are 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 was undertaken by Coast Guard and includes everything shown on the tower drawing provided in Appendix C.

3.2 Protective Coatings

.1 Galvanizing:

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

3.3 Handling of Material and Transportation

- .1 The Contractor shall take all necessary precautions to avoid damage to the tower members or to the tower coating during transportation, unloading and erection. All components or damaged members shall be replaced to the satisfaction of Coast Guard, at the Contractor's expense.
- .2 It is the Contractor's responsibility to ensure that the tower sections, particularly the joints are protected from ending and alignment damage.
- .3 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 Tower Installation

- .1 Each anchor bolt shall have two [2] galvanized heavy hex nuts.
 - .1 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.
 - .2 The Contractor shall touch up in the field all areas of the towers where the galvanized finish has been scraped or chipped during erection using zinc-enriched or Galvicon paint, or an approved equal.
 - .3 The Contractor shall field paint all areas of the towers where the painted finish has been scraped or chipped during erection in the field.
 - .1 The Contractor shall be responsible for damage done by paint spraying or dripping on the Owner's or other's property.



APPENDIX A: SITE LOCATIONS AND PHOTOGRAPHS

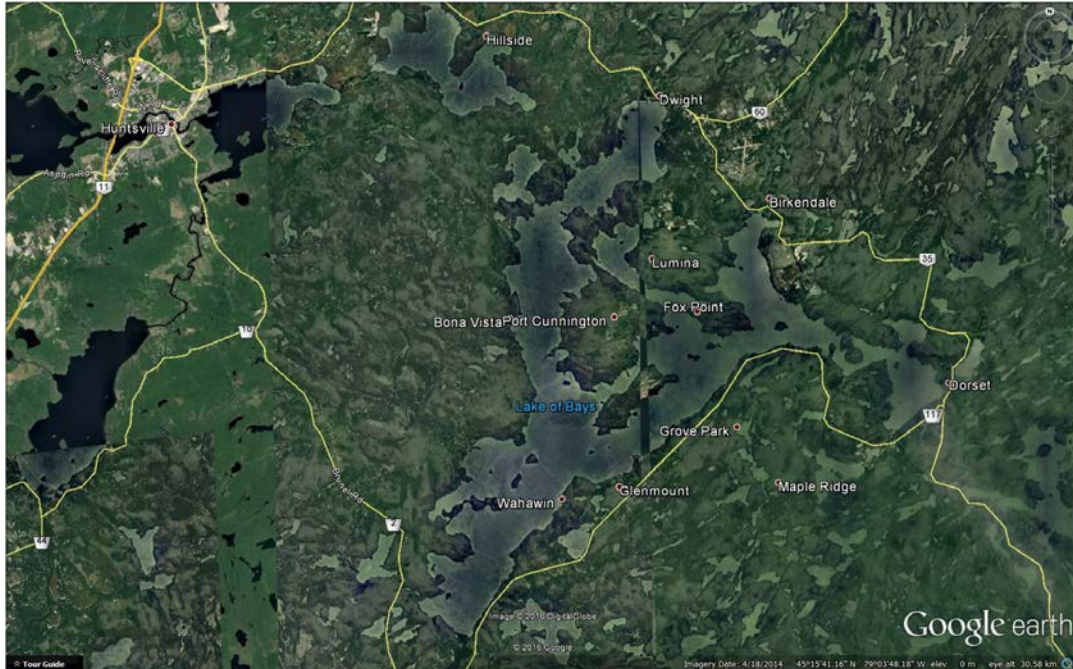


Figure 1: Project Sites
Lake of Bays, ON

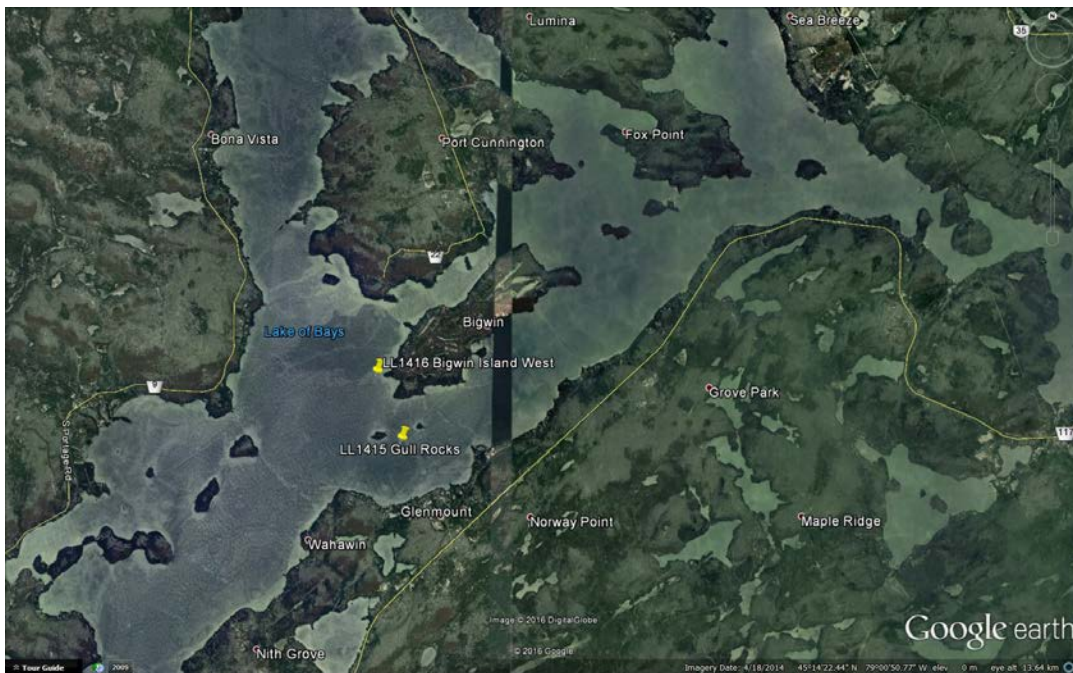


Figure 2: Project Sites

LL1415 Gull Rocks: 45° 13'34.00"N, 79° 02'27.00"W
LL1416 Bigwin Island West: 45° 14'05.50"N, 79° 02'44.00"W



Figure 3: LL1415 Gull Rocks



Figure 4: LL1415 Gull Rocks
Note abandoned foundation to be removed



Figure 5: LL1416 Bigwin Island West



APPENDIX B: SUMMARY OF SUBMITTALS

Following Contract Award

Deadline	Submission Description	Section(s)
10 working days following award	Detailed schedule	011100 – 1.3.2
	Proof of Qualifications	
	a) CWB div. 2 certification of fabrication shop	011100 – 1.4.1.1
	b) Vessel registration	011100 – 1.7.3.1
10 working days prior to mobilization	c) Listing of subcontractors	011100 – 1.4.2.2
	Foundation Design Package	
	a) Geotechnical Investigation Report	033000 – 3.2
	b) Foundation design drawings	033000 – 3.3
	Construction Plan	
	a) Project Specific Safety Program	013530
	b) Project Environmental Protection Plan	013543
c) Detailed Demolition Plan	024116	
28 calendar days after construction	d) Excavation Plan	033000 – 1.4.3
	As-built and QA/QC documents	011100 – 1.3.6
Upon receipt of metals purchased	Concrete test results	033000 – 1.5.4.3
	Mill Test Certificates	011100 – 1.3.5
Upon request of Coast Guard	Product specifications and/or samples	016100 – 1.5
	Copies of certified receipts from the disposal sites	024116 – 1.3



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



APPENDIX C: DRAWINGS

4

3

2

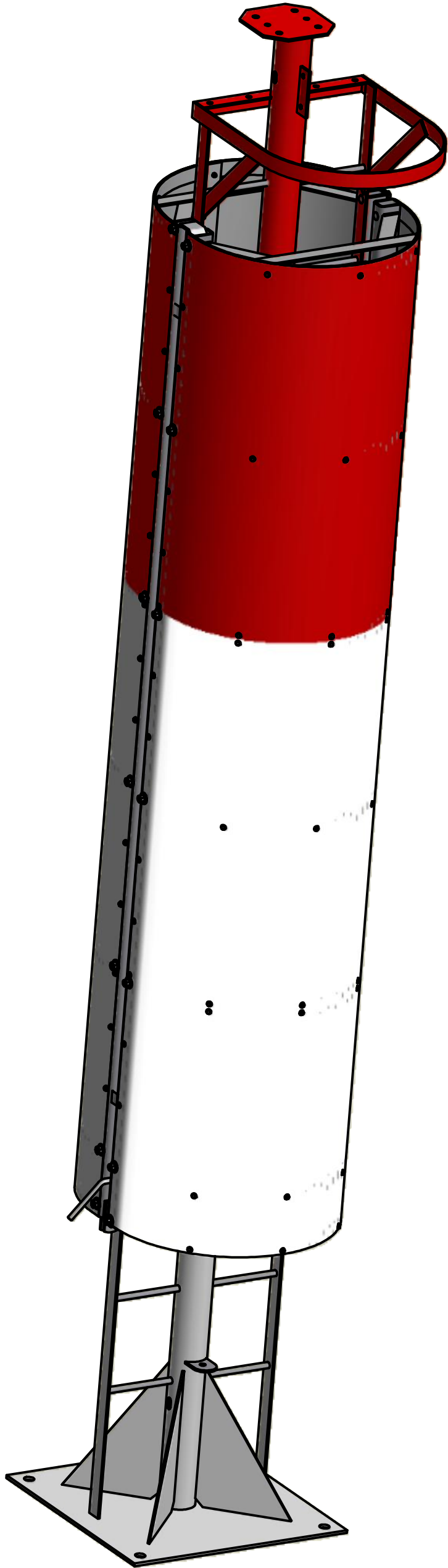
1


B

B

A

A




 Fisheries and Oceans Canada
 Pêches et Océans Canada
 Canadian Coast Guard
 Garde côtière canadienne
 Centre of Excellence for Arctic Operations
 Centre d'excellence pour les opérations arctiques
 Arctic and Northern Infrastructure
 Infrastructure arctique et du nord

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.		

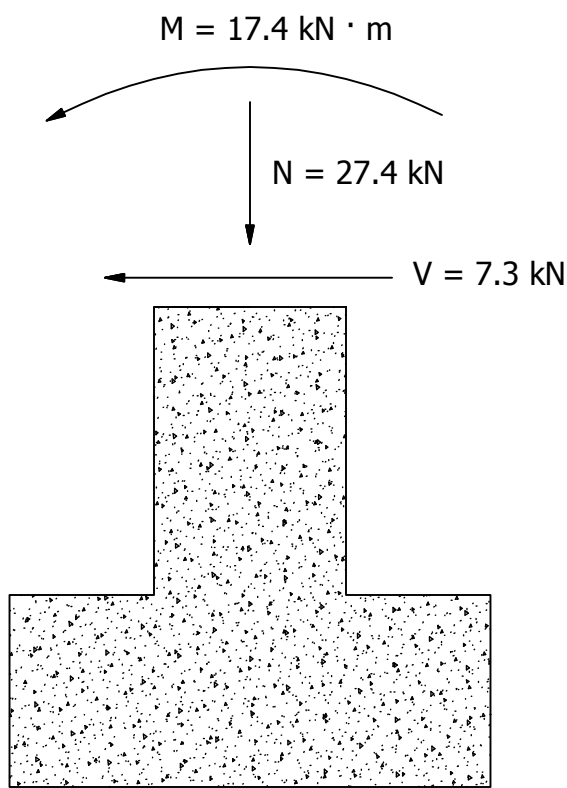
4

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



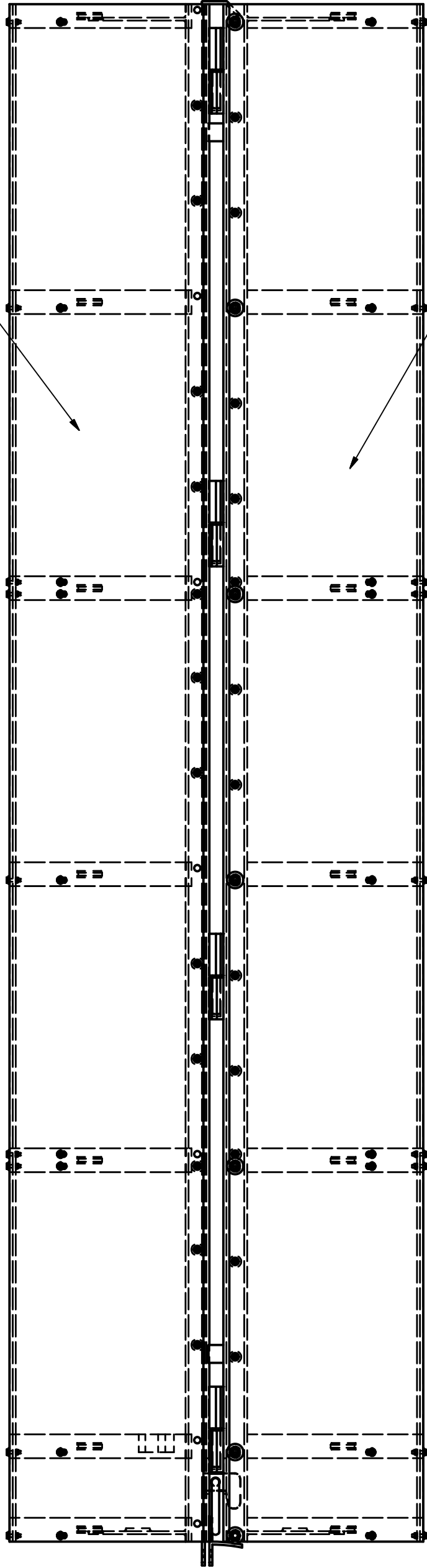
16' PIPEMAST FOUNDATION LOADS

STRUCTURAL NOTES:

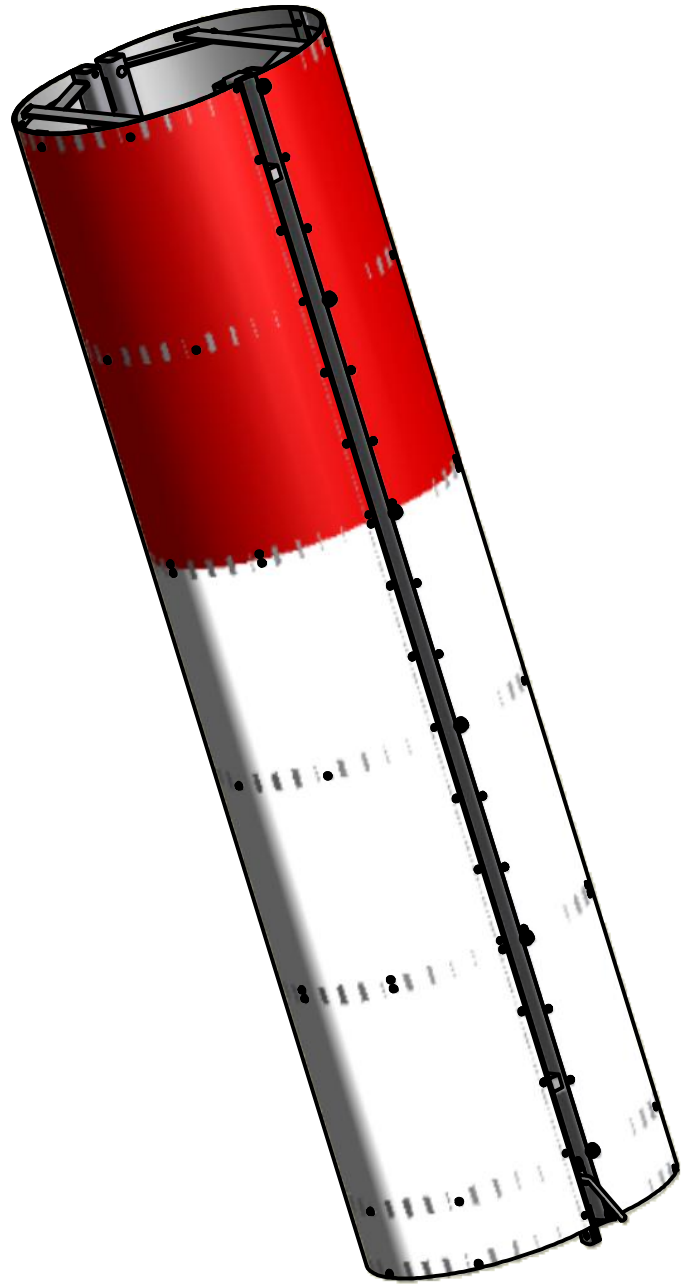
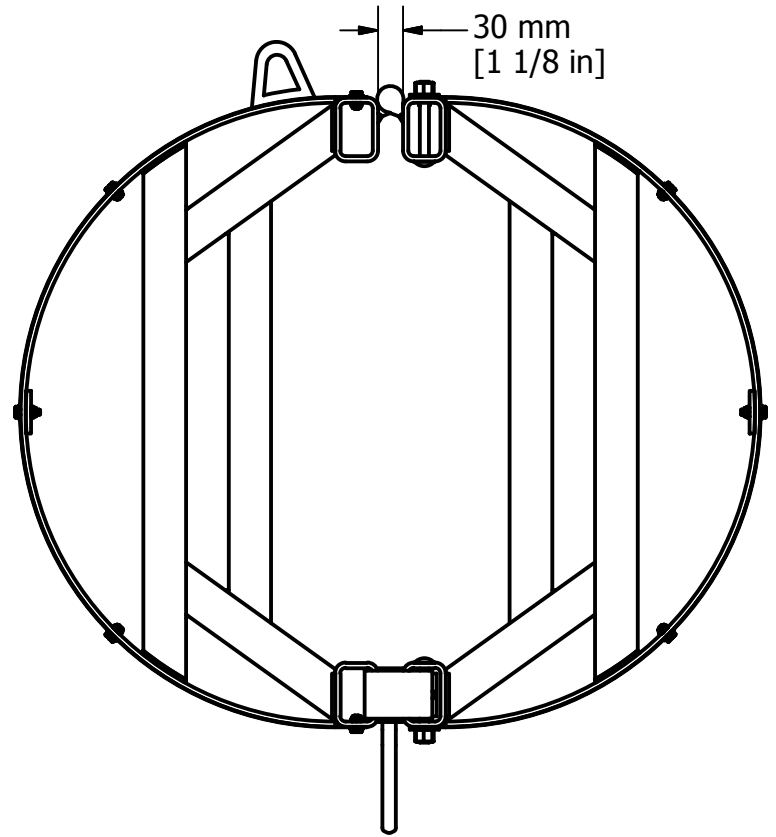
1. WIND PRESSURE OF 600Pa WAS USED IN CALCULATING FACTORED LOAD COMBINATIONS. ICE THICKNESS OF 50mm WAS USED IN CALCULATING LOADING PER S37-01, ICE CLASS IV. ALL LOADS WERE FACTORED PER NBCC 2010
2. ALUMINUM ALLOYS SHALL CONFORM TO THE 'ALUMINUM ASSOCIATION' PUBLICATION 'ALUMINUM STANDARD AND DATA' AND 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.


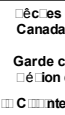
 is: eries and ceans Canada Canadian Coast Guard Centra Arctic e: ion artile and Cl in rastructure out it: amia		é: es et céans Canada Garde côtière canadienne é: ion du centre et de rti: ue C: é: nte: rated ec: nica: er: ices		
16 FT PIPEMAST ANTI-CLIMB				
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	
		DWG 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.
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.

4 3 2 1



VIEW A-A




 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Arctic Operations
 Fisheries and Coastal Infrastructure
 Integrated Technical Services
 Outfitting

 G ardie c otierre canadienne
 G ardie du centre et de l'Arctique
 G ardie c otierre canadienne
 G ardie du centre et de l'Arctique
 G ardie c otierre canadienne
 G ardie du centre et de l'Arctique

16 FT PIPEMAST ANTI-CLIMB
TOTAL ANTI-CLIMB ASSEMBLY

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.

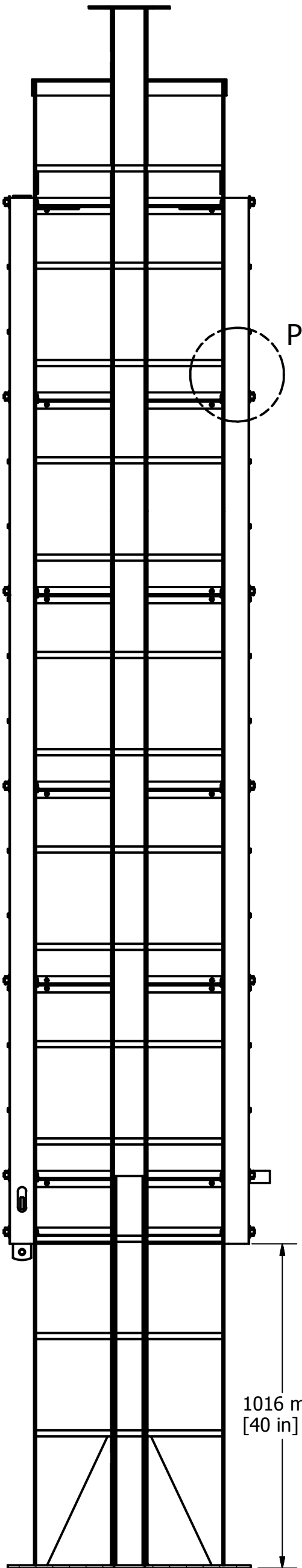
4 3 2 1

4

3

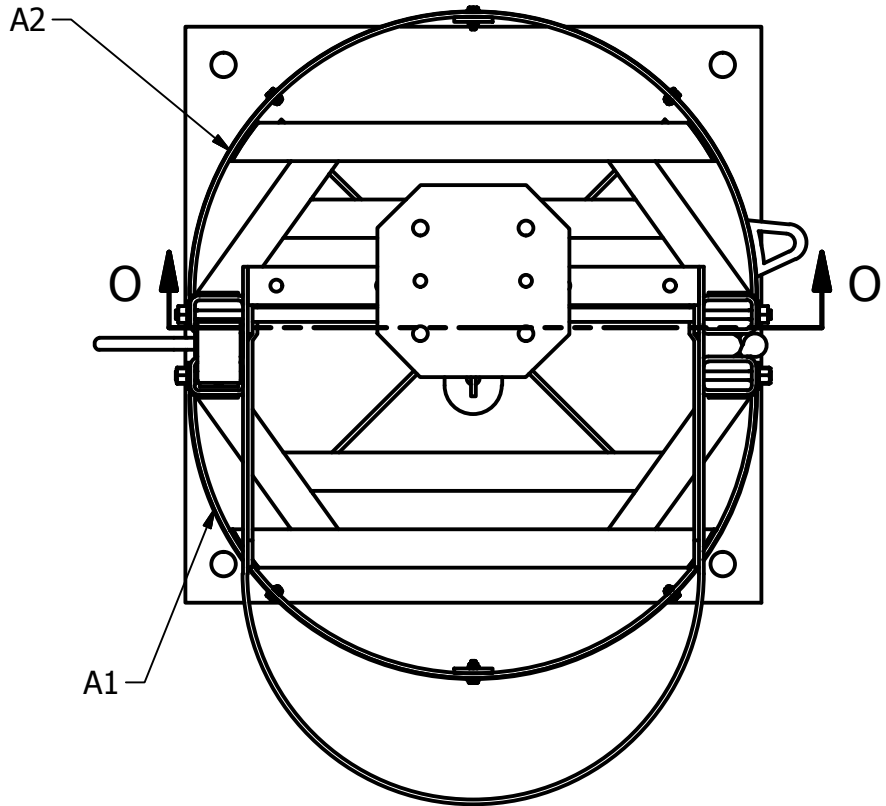
2

1



SECTION O-O

1016 mm
[40 in]




LARGE B/W/N THROUGH HSS
AND LADDER SIDE BAR HOLDING
ANTI-CLIMB BACK TO PIPEMAST

LADDER RUNG

STANDARD RIB

DETAIL P - TYP MOUNTING OF
ANTI-CLIMB CAGE


 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence
 Maritime and Coastal Infrastructure
 Integrated Technical Services
 Outcomes

16 FT PIPEMAST ANTI-CLIMB
MOUNTING INSTRUCTIONS

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	2
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.	

4

3

2

1

4

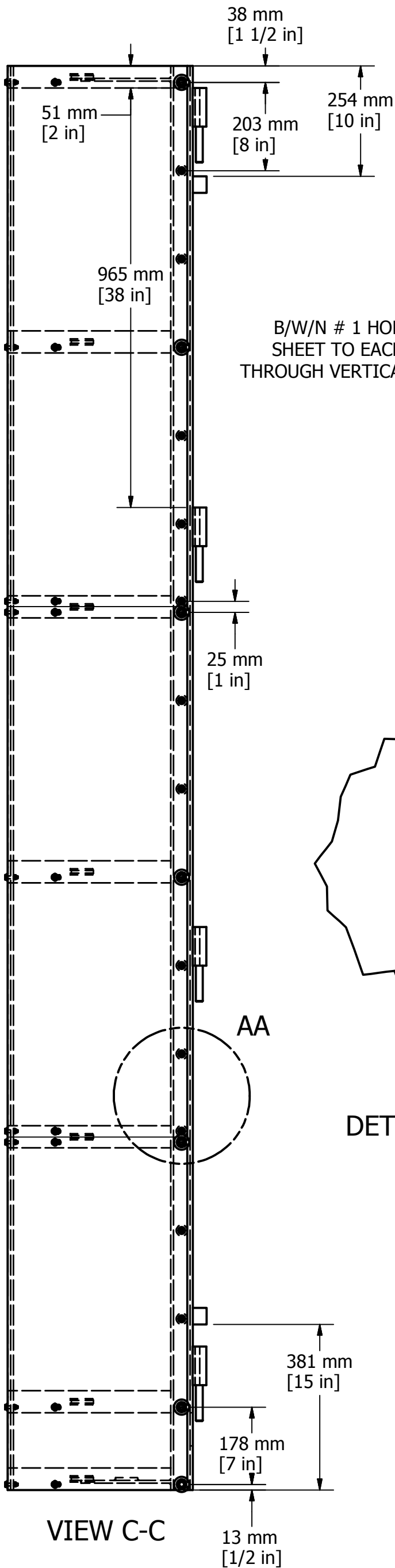
3

2

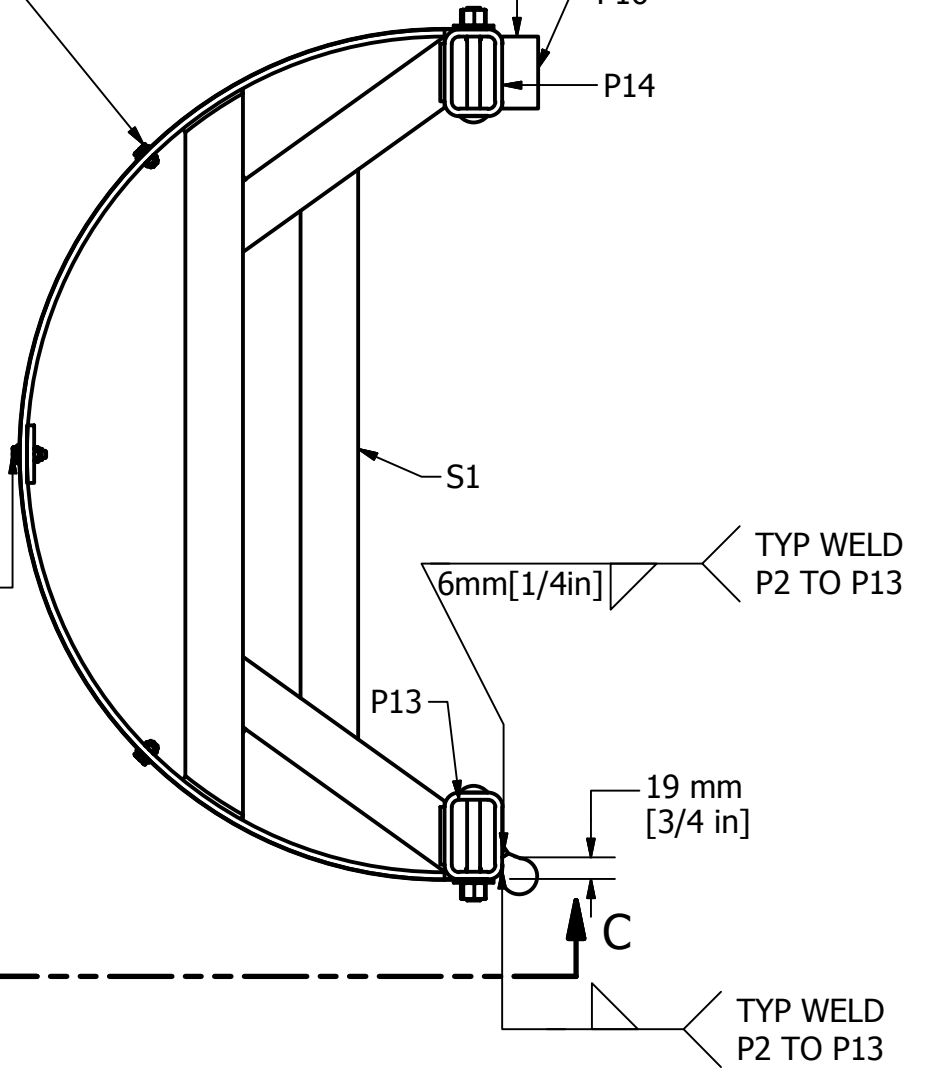
1

SMALL B/W/N #2 HOLDING SHEET TO EACH RIB (TYP)

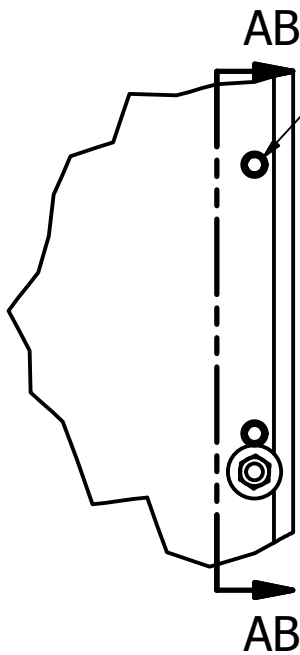
ATTACH P14 TO P12 WITH TWO 1/2" X 2" S.S. BOLTS



VIEW C-C



SECTION AB-AB




DETAIL AA

SMALL B/W/N # 2 TO HOLD SHEET TO HSS VERTS

1" DIAMETER HOLE DRILLED ON INSIDE FACE OF HSS VERT TO ALLOW ACCESS TO NUT INSIDE

LARGE B/W/N ATTACH SHEET THROUGH HSS VERT AT EVERY RIB


 is: eries and ceans Canada
 é: es et céans Canada
 Canadian Coast Guard
 Centra: rtic é: ion
 Garde côtière canadienne
 é: ion du centre et de rt: ue
 art: ie and Cl: n rastructure
 C: nte: rated ec: nica: er: ices
 out: t: amia

16 FT PIPEMAST ANTI-CLIMB
A1 - DOOR OF ANTI-CLIMB

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	3
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.	

4

3

2

1

4

3

2

1

ATTACH THROUGH SHEET TO RIB WITH TWO 1/2" X 1 1/4" S.S. BOLTS

144 mm [5 5/8 in]

13 mm [1/2 in]

965 mm [38 in]

203 mm [8 in] (TYP)

SMALL B/W/N WILL BE THE SAME AS FOR THE DOOR

25 mm [1 in] (TYP)

P9

P10

P11

P2 (TYP)

VIEW D-D

191 mm [7 1/2 in]

178 mm [7 in]

38 mm [1 1/2 in]

E

P15

76 mm [3 in]

TYP WELD P1 TO P13

19 mm [3/4 in]

P13

S1

P14

TYP WELD P1 TO P13

6mm [1/4in]

D

D

1/2" BOLT HOLES TO BE DRILLED THROUGH SHEETING AND HSS VERTS TO ATTACH ANTI CLIMB SYSTEM TO PIPEMAST

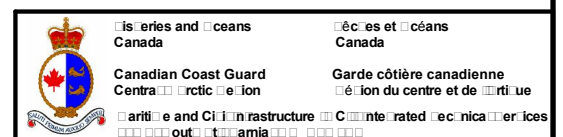
DETAIL E

P12

6mm [1/4in]

WELD P12 TO P14

VIEW F-F



16 FT PIPEMAST ANTI-CLIMB A2 - BACK OF ANTI-CLIMB

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	4
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.	

4

3

2

1

4

4

3

2

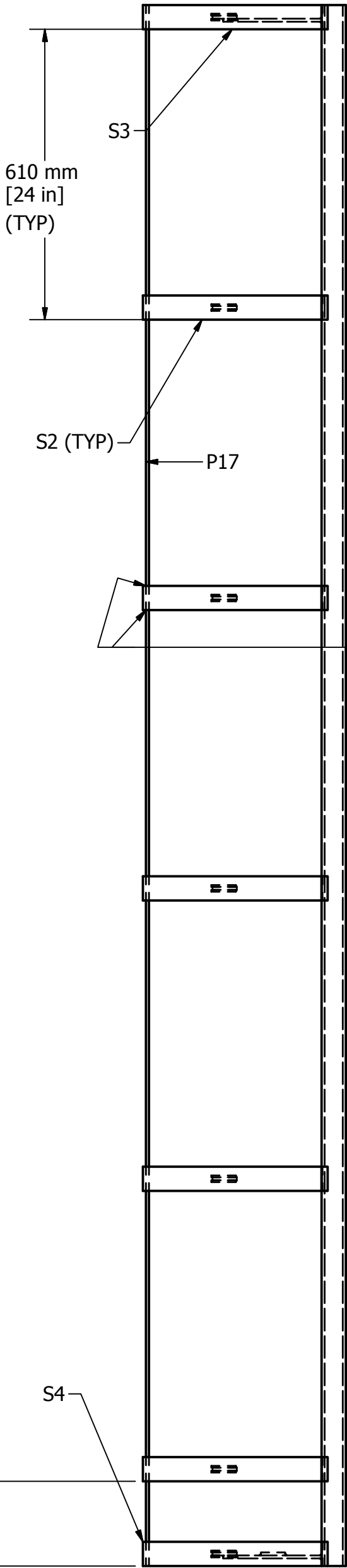
1

B

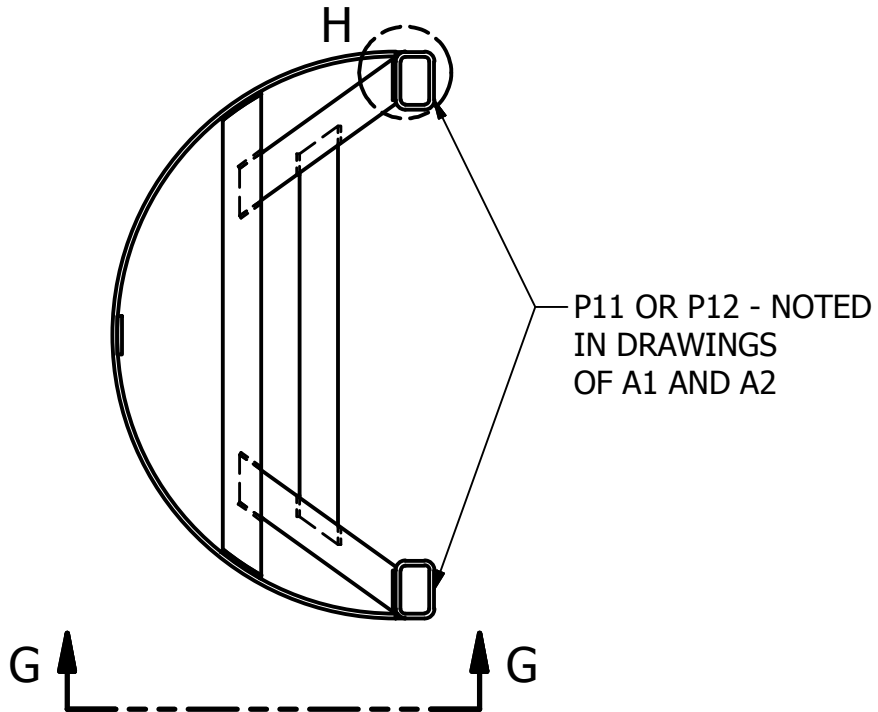
B

A

A




VIEW G-G



6mm [1/4in] TYP WELD S3, S4, S5 TO P15

TYP WELD S2, S3, S4 TO P11/12

DETAIL H TYP WELD S3, S4 TO P11/P12


 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence for Arctic Operations
 Fisheries and Aquaculture
 Centre of Excellence for Arctic Operations
 Fisheries and Aquaculture

16 FT PIPEMAST ANTI-CLIMB
S1 - RIBBING SKELETON SUB-ASSEMBLY

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	5
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.	

4

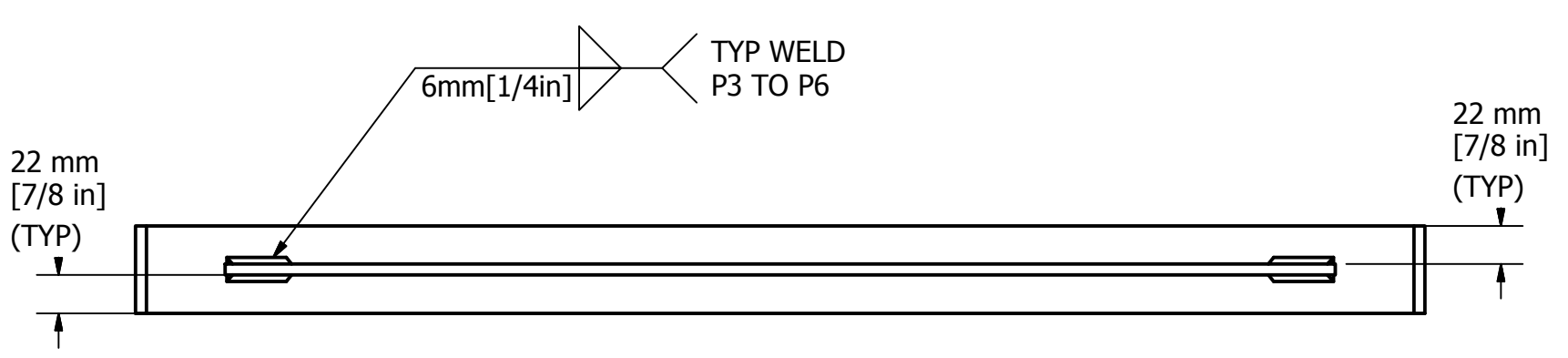
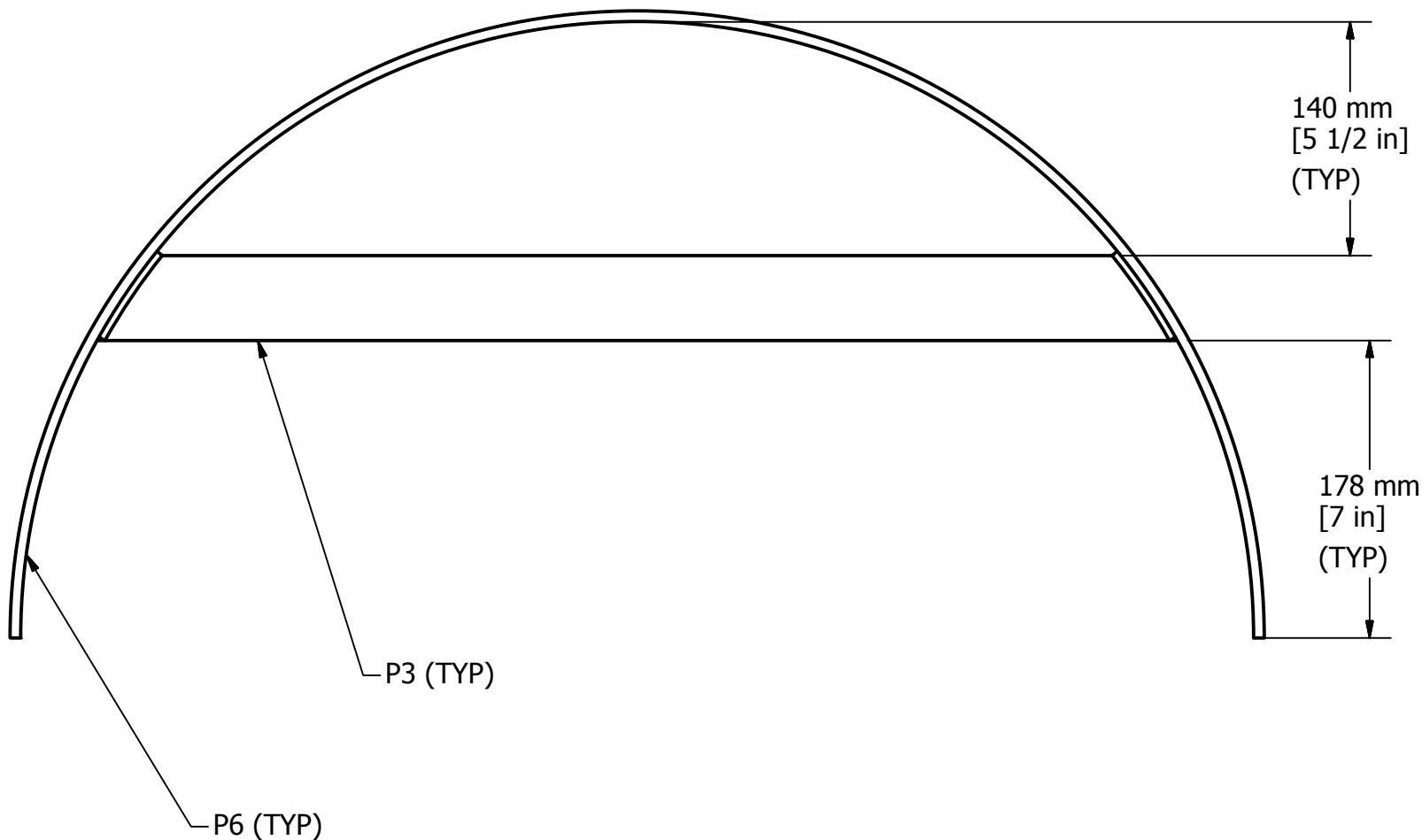
3

2

1

B

B



A


A

4

3

2

1


 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence and Construction
 Pêches et Océans Canada
 Garde côtière canadienne
 Centre de compétence et de construction
 Intégration des technologies et des connaissances

**16 FT PIPEMAST ANTI-CLIMB
S2 - RIBBING SUB-ASSEMBLY**

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 6	
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.

4

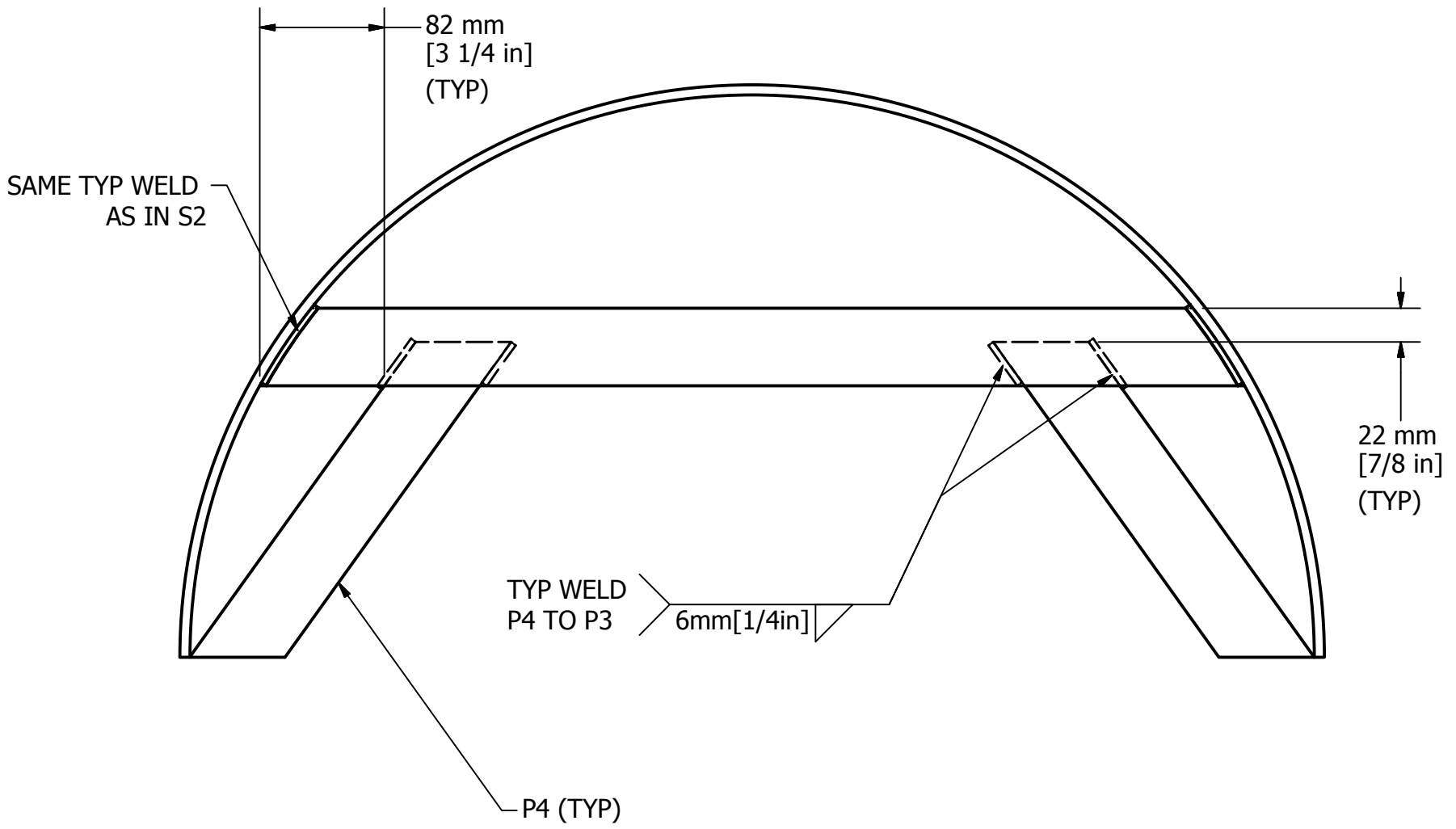
3

2

1

B

B



A

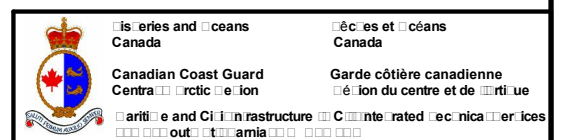
A

4

3

2

1



**16 FT PIPEMAST ANTI-CLIMB
S3 - TOP RIBBING SUB-ASSEMBLY**

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 7	
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.

4

3

2

1

SAME TYP WELDS
AS IN S3 & S2

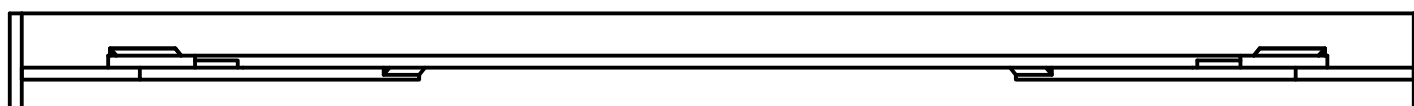
51 mm
[2 in]



76 mm
[3 in]

6mm[1/4in]

TYP WELD
P5 TO P4

P5




 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence for Arctic Operations
 Arctic and Coastal Infrastructure
 Integrated Technical Services
 Outfitting

 Pêches et Océans Canada
 Garde côtière canadienne
 Centre de compétence pour les opérations arctiques
 Infrastructure côtière et arctique
 Services techniques intégrés
 Équipement

**16 FT PIPEMAST ANTI-CLIMB
S4 - BOTTOM RIBBING SUB-ASSEMBLY**

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 8	
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.

4

3

2

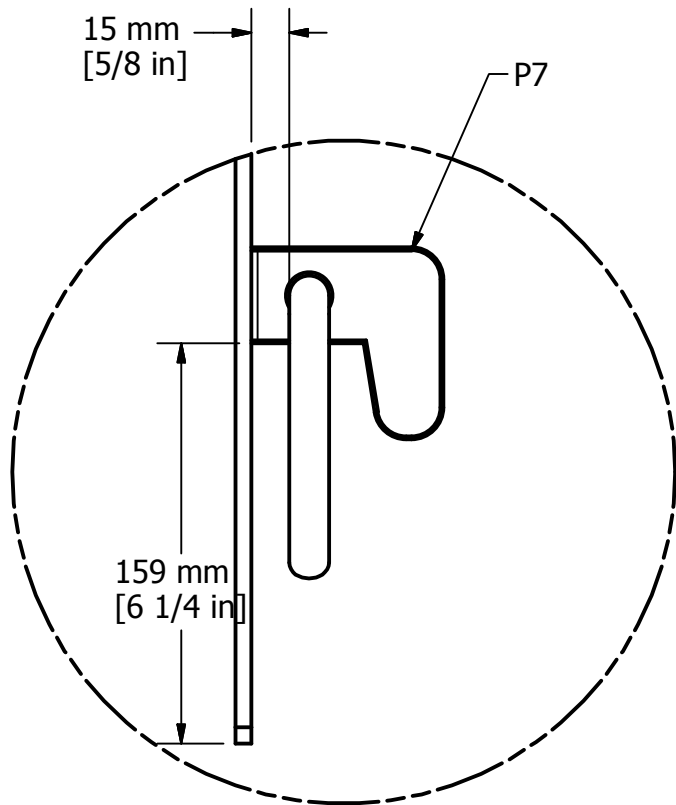
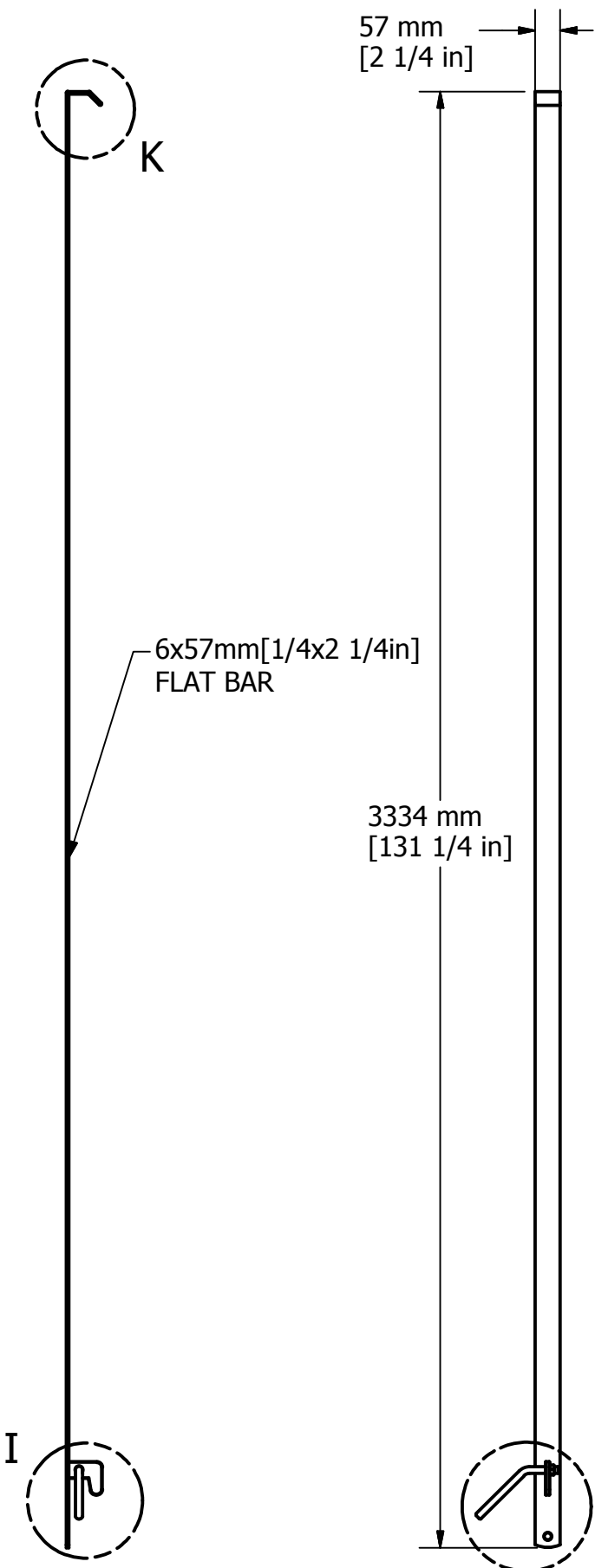
1

4

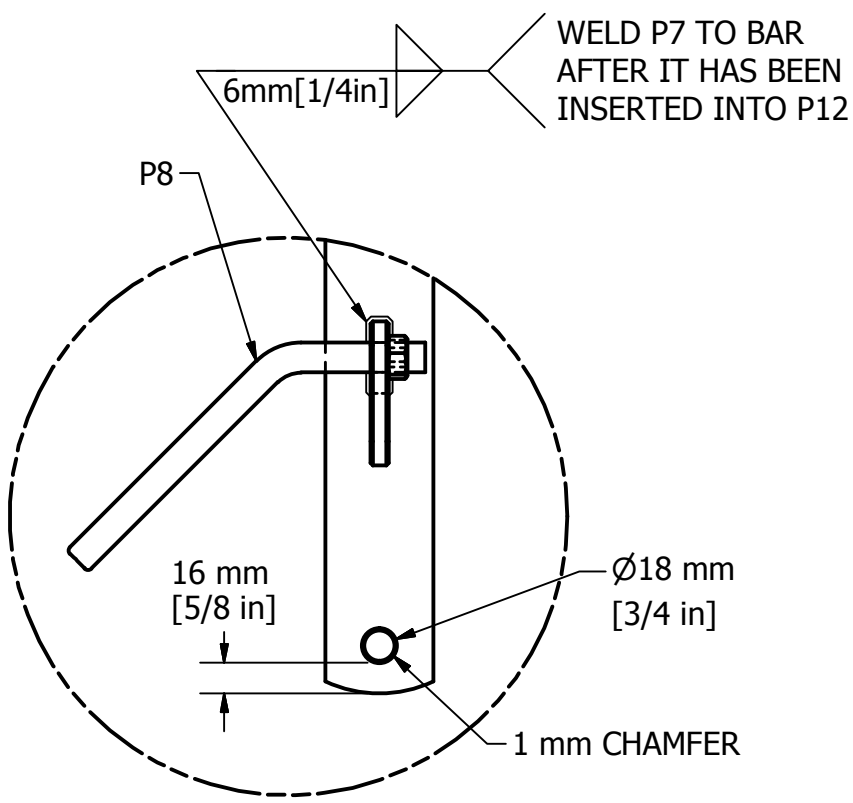
3

2

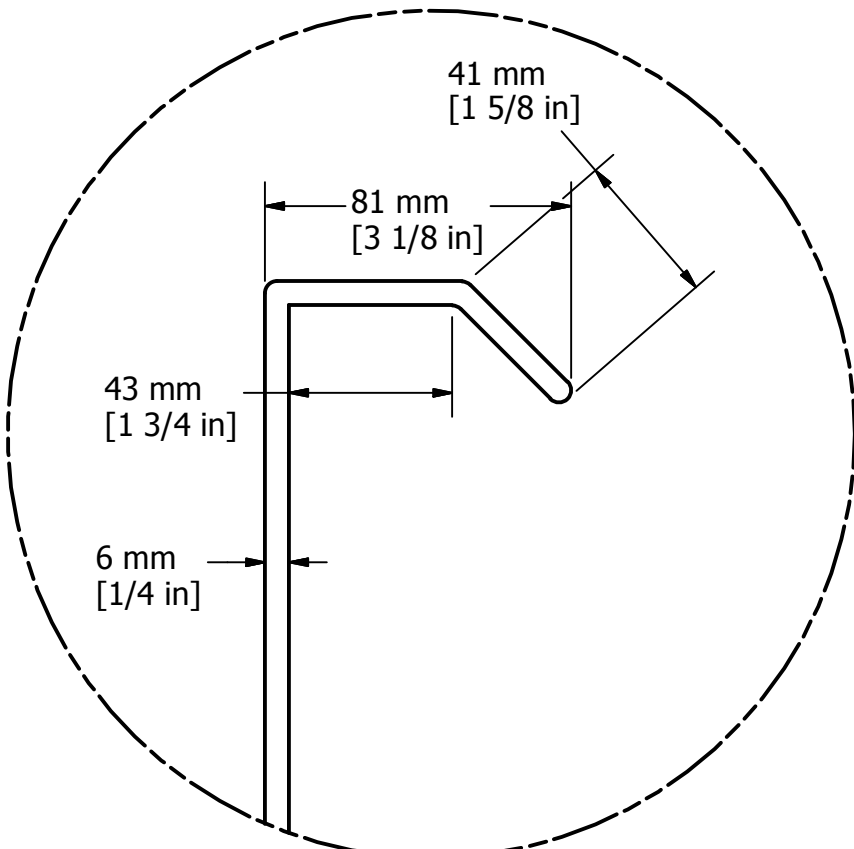
1




DETAIL I

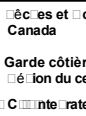


DETAIL J



DETAIL K


 Canadian Coast Guard
 Centre de Recherche et de Développement
 Arctic and Offshore Infrastructure Centre
 Outfitting


 Garde côtière canadienne
 Centre de Recherche et de Développement
 Infrastructure et Technologie
 Équipement

**16 FT PIPEMAST ANTI-CLIMB
S5 - LATCH SUB-ASSEMBLY**

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	9
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.	

4

3

2

1

4

3

2

1

10 mm
[3/8 in]

29 mm
[1 1/8 in]

89 mm
[3 1/2 in]

81 mm
[3 1/4 in]

VIEW K-K

1 mm CHAMFER

Ø16 mm
[5/8 in]

R16 mm
[5/8 in]

10 mm
[3/8 in]

6 mm
[1/4 in]

6 mm
[1/4 in]

K


K

B

B

A

A

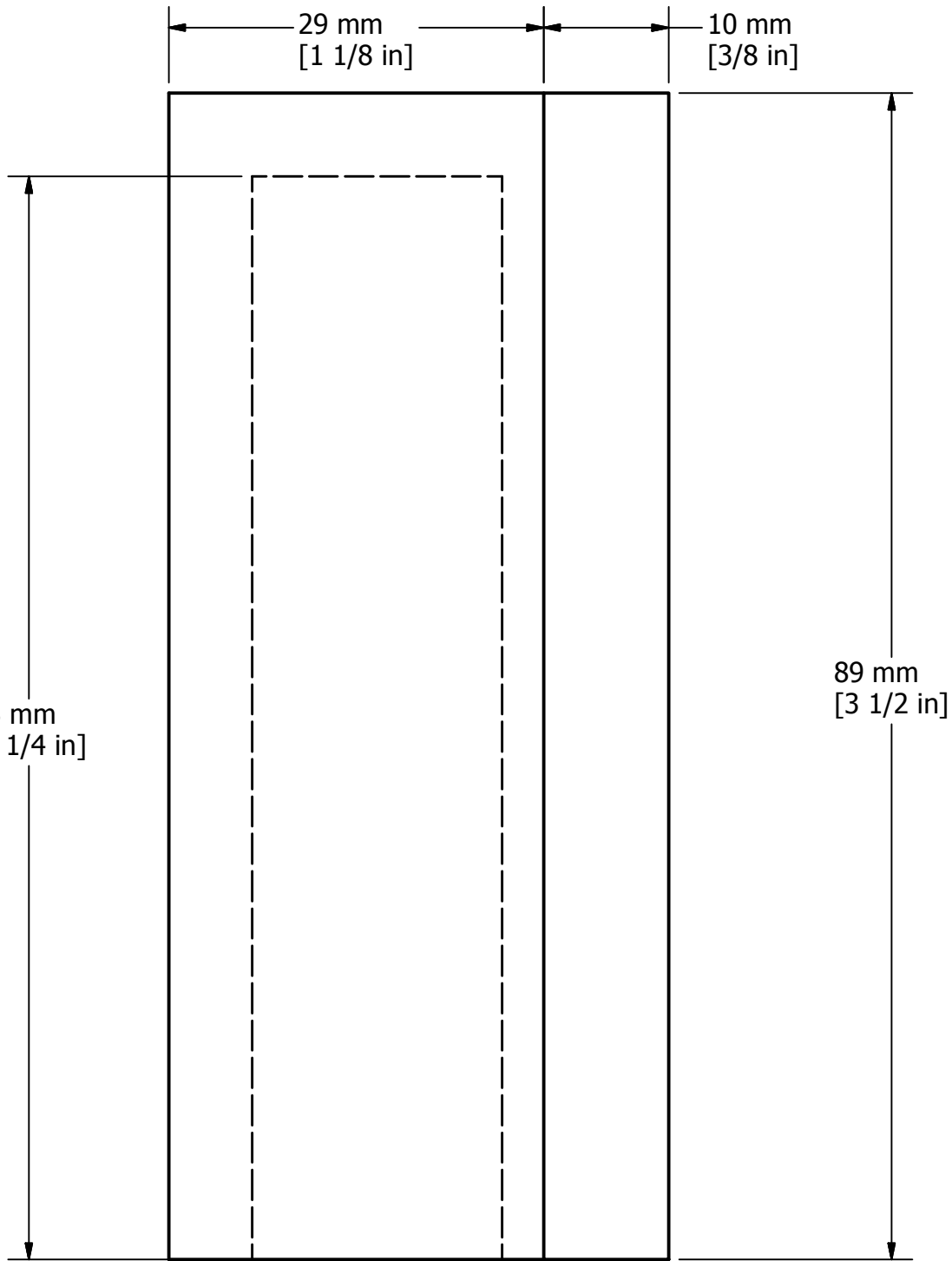
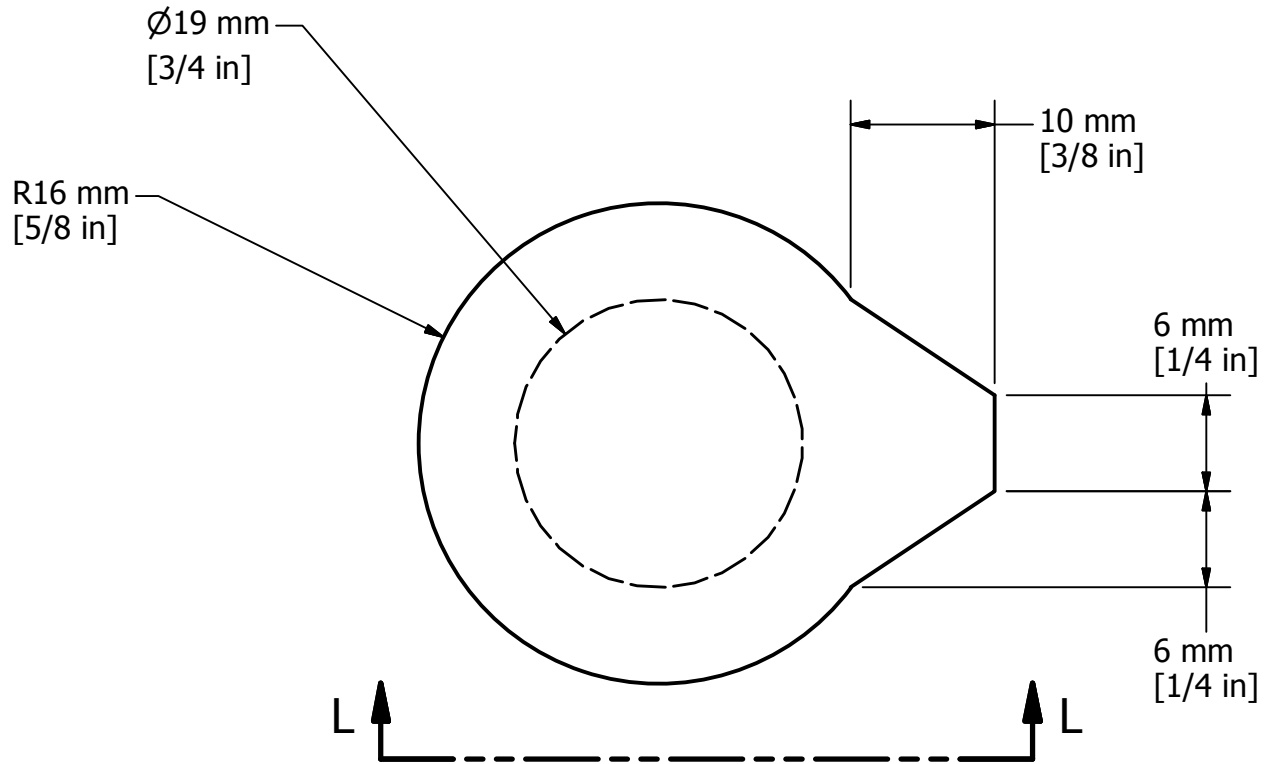
 Fisheries and Oceans Canada Canadian Coast Guard Garde côtière canadienne Centre of Excellence Centre d'excellence Centre of Excellence Centre d'excellence		Fisheries and Oceans Canada Garde côtière canadienne Centre of Excellence Centre d'excellence Centre of Excellence Centre d'excellence			
16 FT PIPEMAST ANTI-CLIMB P1 - MALE HINGE					
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	10
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.	

4

3

2

1



VIEW L-L

Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence for Arctic Operations
 Fisheries and Aquaculture
 Infrastructure and Operations

Pêches et Océans Canada
 Garde côtière canadienne
 Centre de compétence en opérations arctiques
 Infrastructure et Opérations

16 FT PIPEMAST ANTI-CLIMB
P2 - FEMALE HINGE

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 11	
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.

4

3

2

1

B

B

A

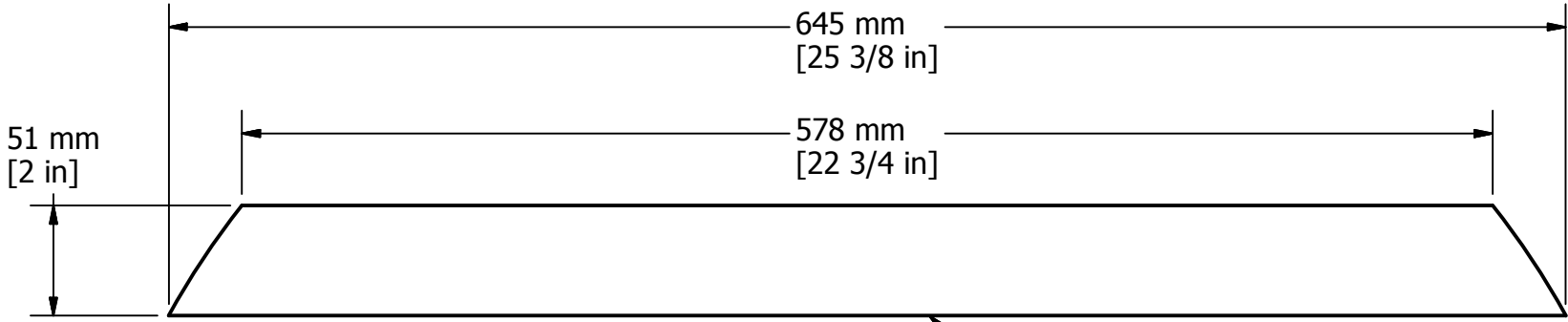
A

4

3

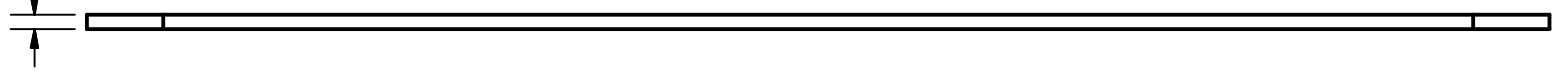
2

1

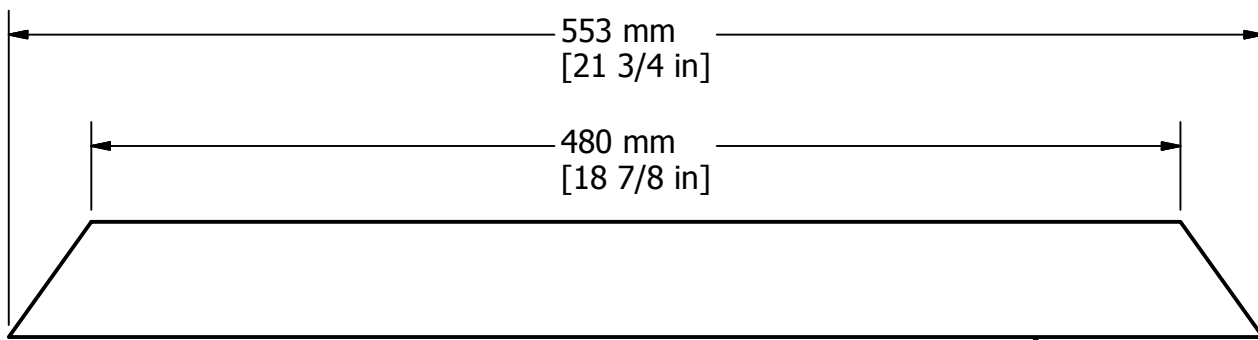


6x51mm[1/4x2in] FLAT BAR

6 mm [1/4 in]

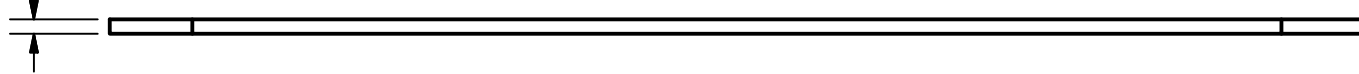


P3 - STANDARD RIB BRACING

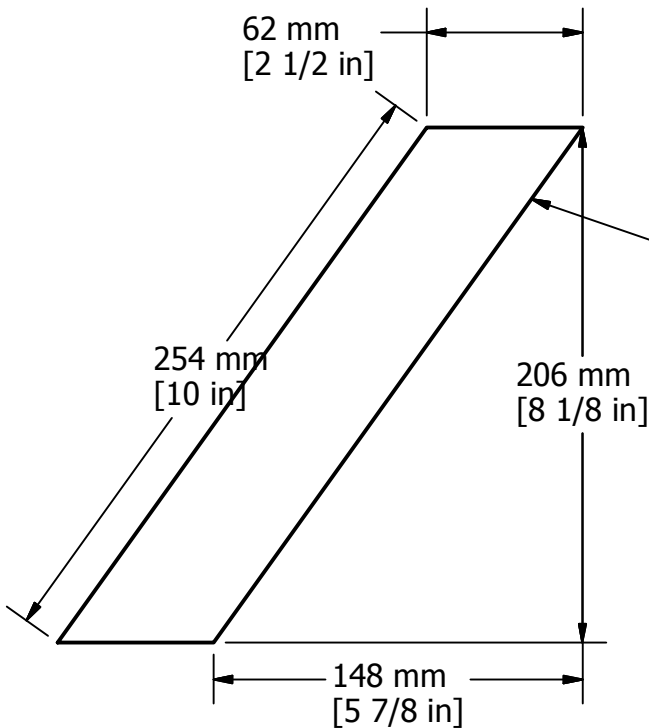


6x51mm[1/4x2in] FLAT BAR

6 mm [1/4 in]

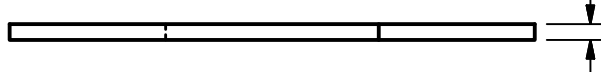


P5 - SECONDARY RIB BRACING

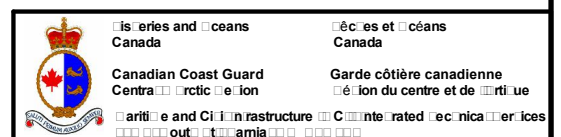


6x51mm[1/4x2in] FLAT BAR

6 mm [1/4 in]



P4 - DIAGONAL RIB BRACING



16 FT PIPEMAST ANTI-CLIMB P3-P5 - RIB BRACINGS

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	12
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.	

4

3

2

1

4

3

2

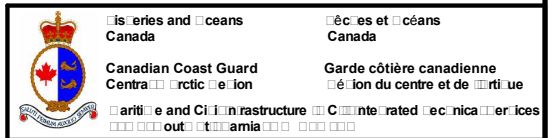
1

R375 mm
[14 3/4 in]

6 mm
[1/4 in]

51 mm
[2 in]

6x51mm [1/4x2in] FLAT BAR



**16 FT PIPEMAST ANTI-CLIMB
P6 - RIBBING**

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 13	
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.

4

3

2

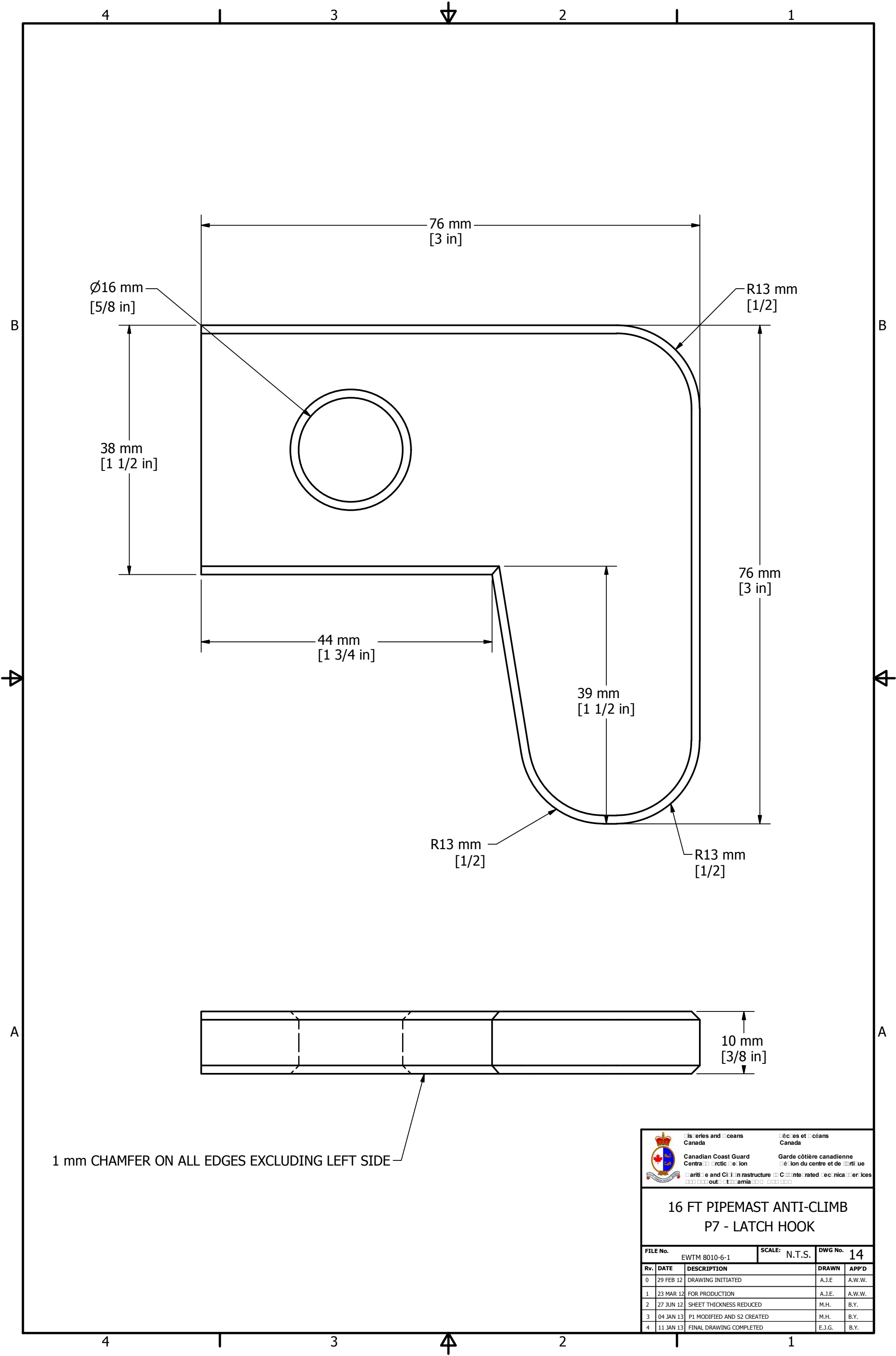
1

B



B

A

A



1 mm CHAMFER ON ALL EDGES EXCLUDING LEFT SIDE

 Fisheries and Oceans Canada Canadian Coast Guard Centre of Excellence Maritime and Coastal Infrastructure Infrastructure maritime		 Pêches et Océans Canada Garde côtière canadienne Centre de compétence Infrastructure maritime et côtière Infrastructure maritime		
16 FT PIPEMAST ANTI-CLIMB P7 - LATCH HOOK				
FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 14	
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.

4

3

2

1

B

B

A

A


66 mm
[2 5/8 in]

139 mm
[5 1/2 in]

135°

THREADED FOR NUT

Ø16 mm
[5/8 in]

 Fisheries and Oceans Canada Canadian Coast Guard Centre of Excellence and Certification		Gendarmes et gardes côtières Canada Garde côtière canadienne Division du centre et de certification Centre intégré de certification Centre de certification		
16 FT PIPEMAST ANTI-CLIMB P8 - HANDLE				
FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 15	
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.

4

3

2

1

4

4

3

2

1

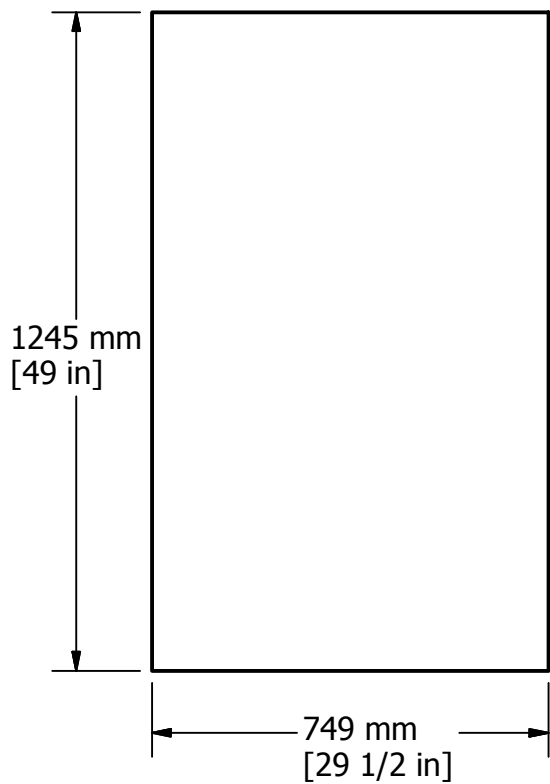
6x1254x3277mm [1/8x49 3/8x129in] SHEET

R375 mm [14 3/4 in]

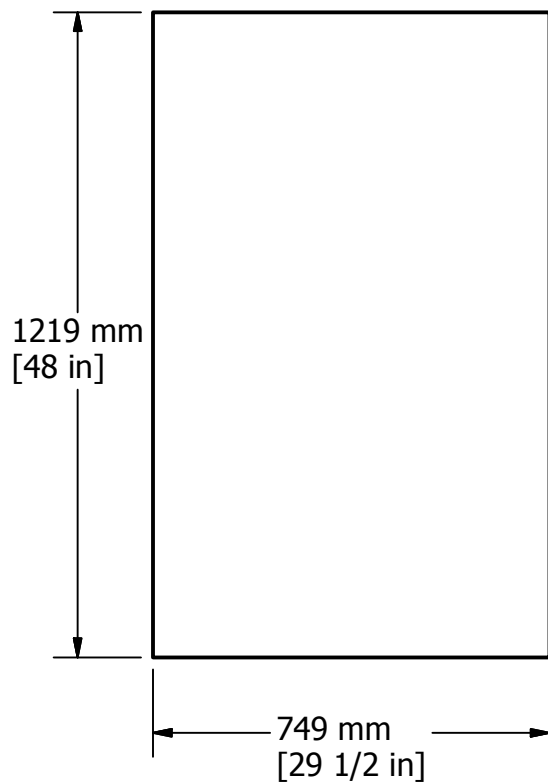
1 mm [1/32 in] (THICKNESS)

38 mm [1 1/2 in]

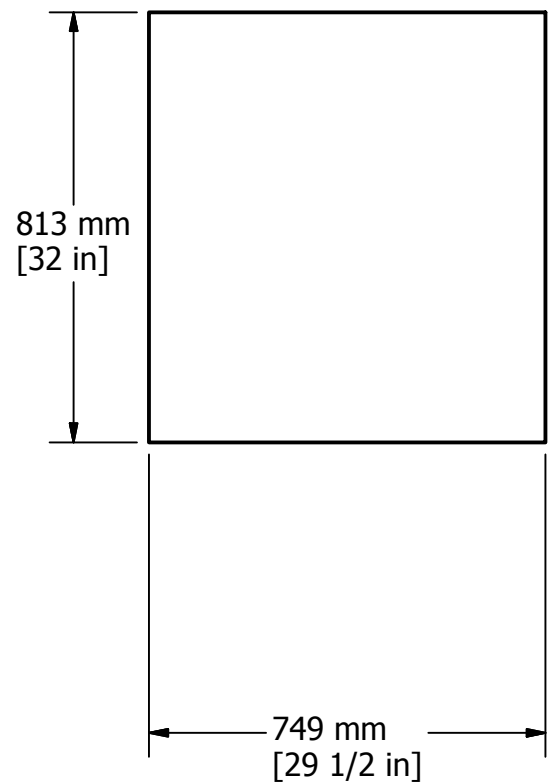
TOP VIEW OF P9-P11



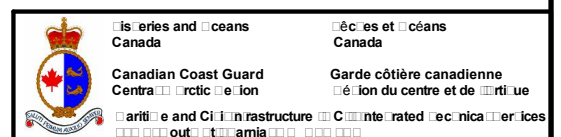
P9



P10



P11



16 FT PIPEMAST ANTI-CLIMB P9-P11 - SHEETING

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	16
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.	

4

3

2

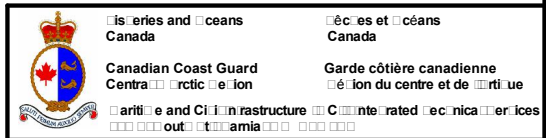
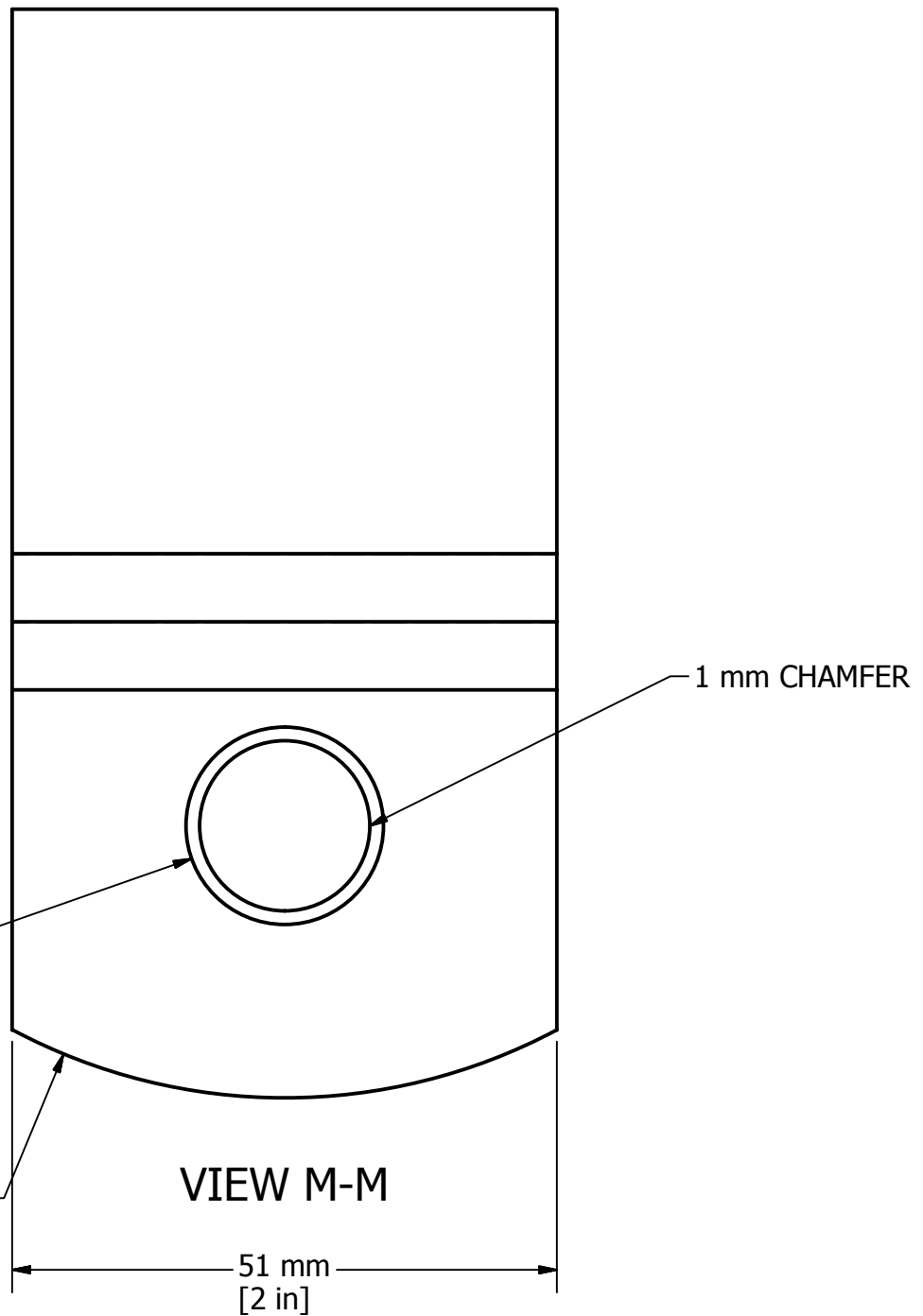
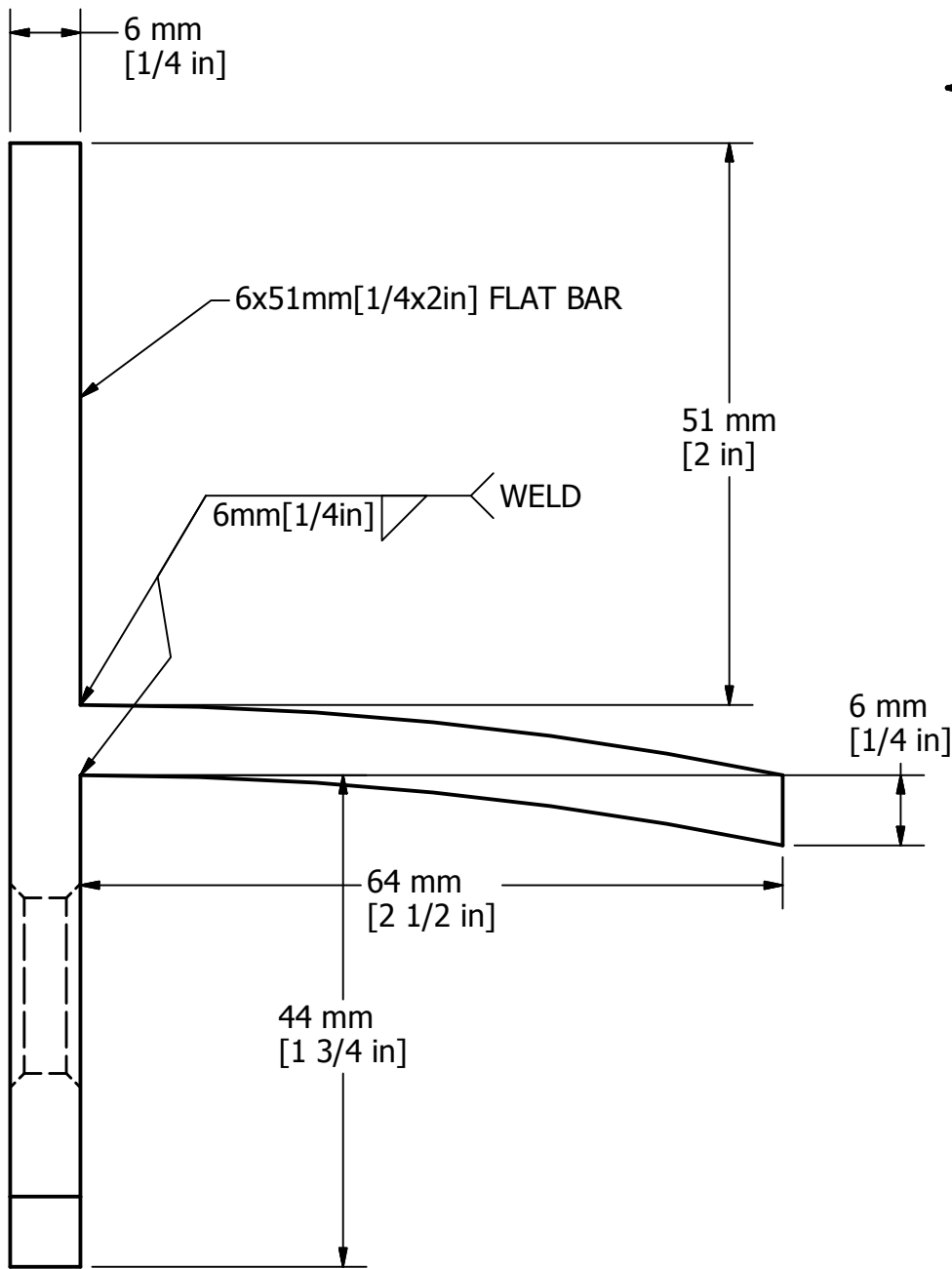
1

4

3

2

1



16 FT PIPEMAST ANTI-CLIMB
P12 - DOOR REST

FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	17
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.	

4

3

2

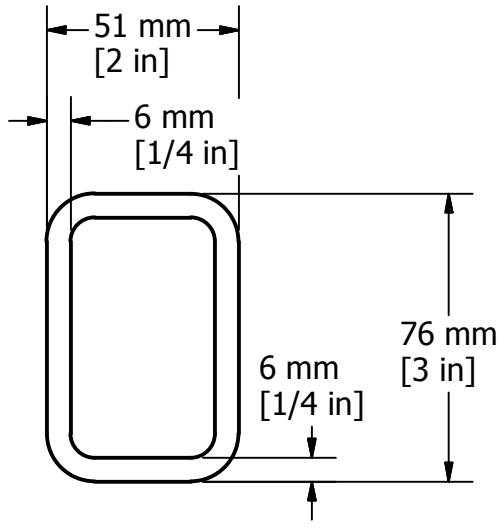
1

4

3

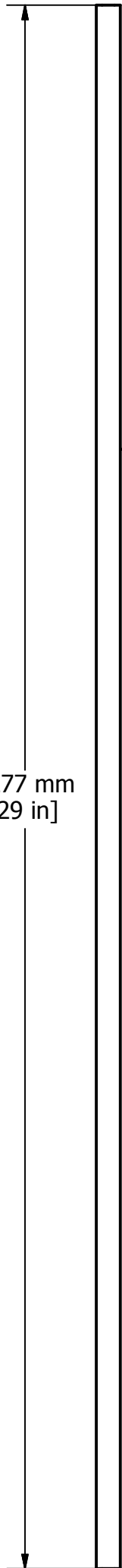
2

1



B

B



6x51x76mm[1/4x2x3in] RECTANGULAR TUBE

A

A

4

3

2

1

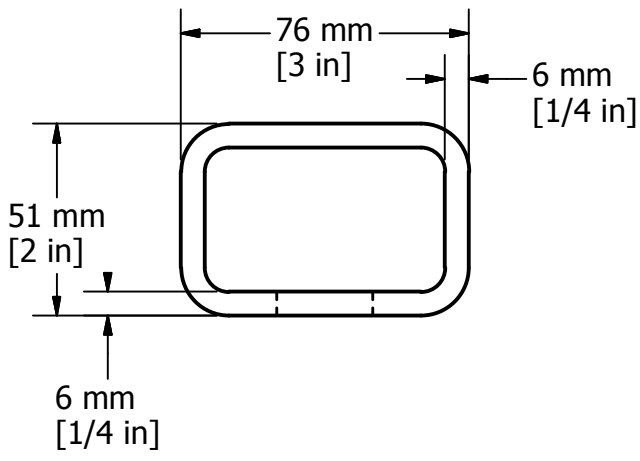
		Canada Canada		
Canadian Coast Guard Centrale Arctic Region		Garde côtière canadienne Région du centre et de l'ouest		
Maritime and Civil Infrastructure Infrastructure maritime		Integrated Technical Services Services techniques intégrés		
16 FT PIPEMAST ANTI-CLIMB P13 - HSS VERT 3x2x1/4				
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	
		DWG No.	18	
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.

4

3

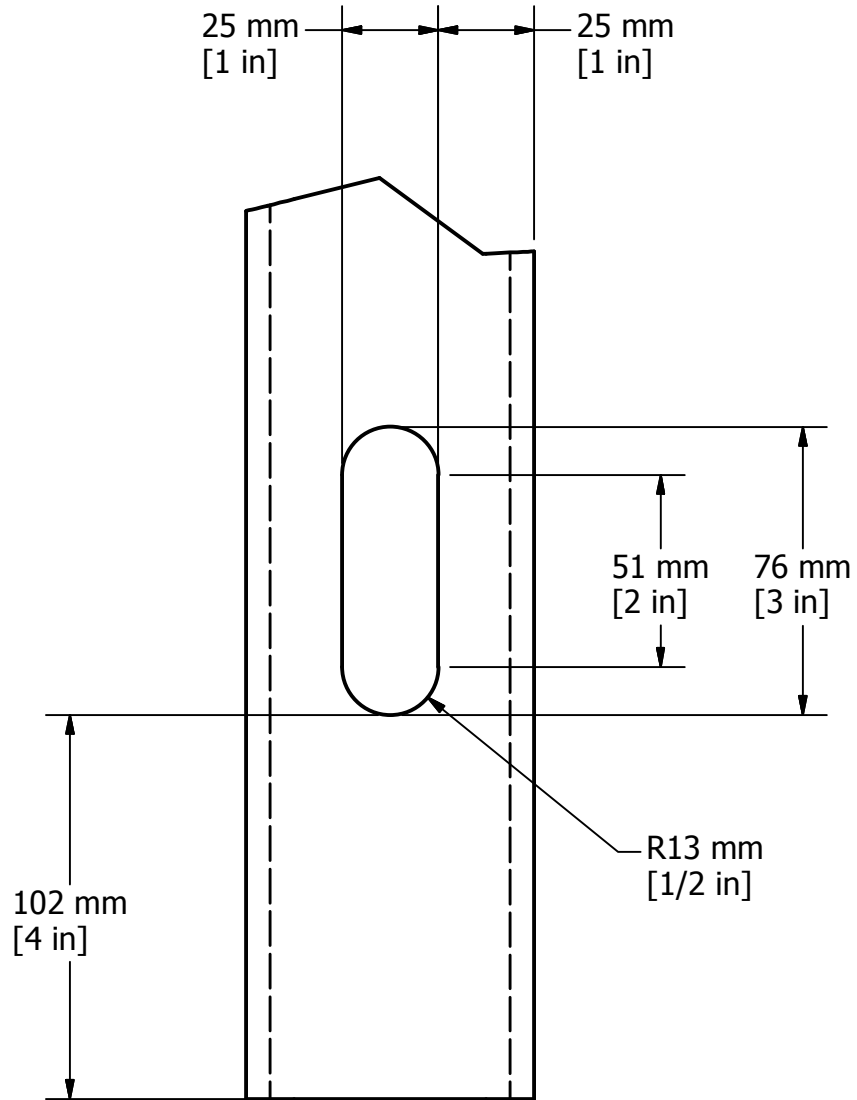
2

1



B

B



DETAIL N


3277 mm [129 in]


6x51x76mm [1/4x2x3in] RECTANGULAR TUBE

N

A

A


 Fisheries and Oceans Canada
 Canadian Coast Guard
 Centre of Excellence
 Maritime and Coastal Infrastructure
 Integrated Technical Services
 Outcomes


 Pêches et Océans Canada
 Garde côtière canadienne
 Centre de compétence
 Infrastructure maritime
 Services techniques intégrés
 Résultats

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 19	
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.

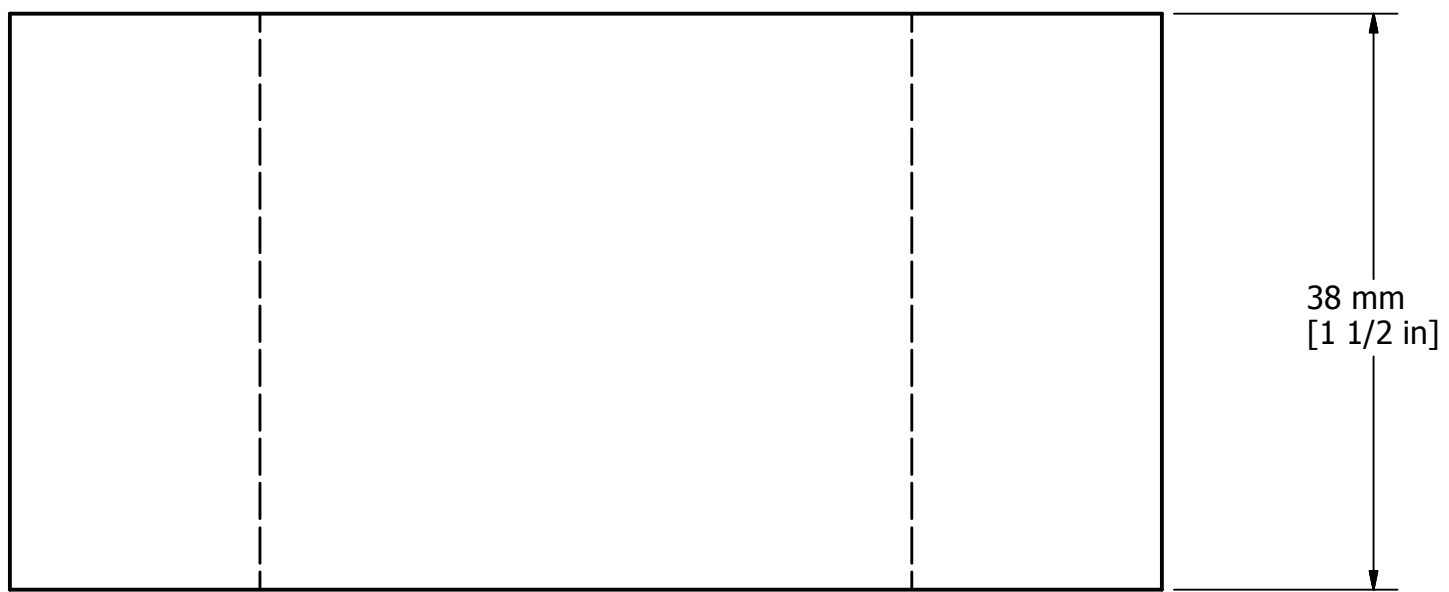
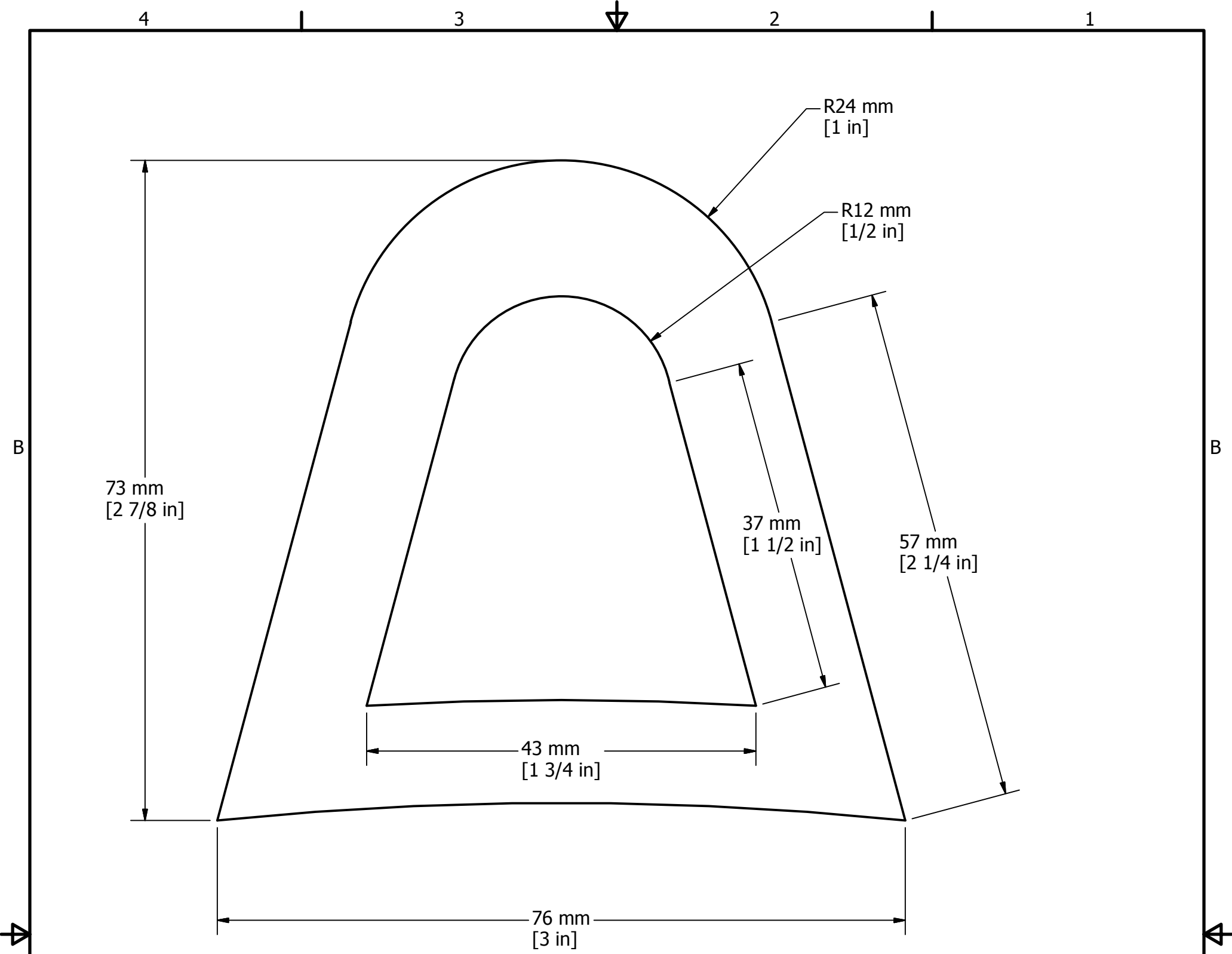
4



3

2

1

A



 Fisheries and Oceans Canada Canadian Coast Guard Centre of Excellence		 Pêches et Océans Canada Garde côtière canadienne Centre de compétence		
16 FT PIPEMAST ANTI-CLIMB P15 - RUBBER STOPPER				
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	
		DWG No.	20	
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.

4

3

2

1

B

B

64 mm
[2 1/2 in]

38 mm
[1 1/2 in]

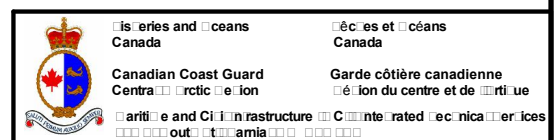
A

A

32 mm
[1 1/4 in]

A

A



**16 FT PIPEMAST ANTI-CLIMB
P16 - SQUARE RUBBER STOPPER**

FILE No. EWTM 8010-6-1		SCALE: N.T.S.	DWG No. 21	
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.

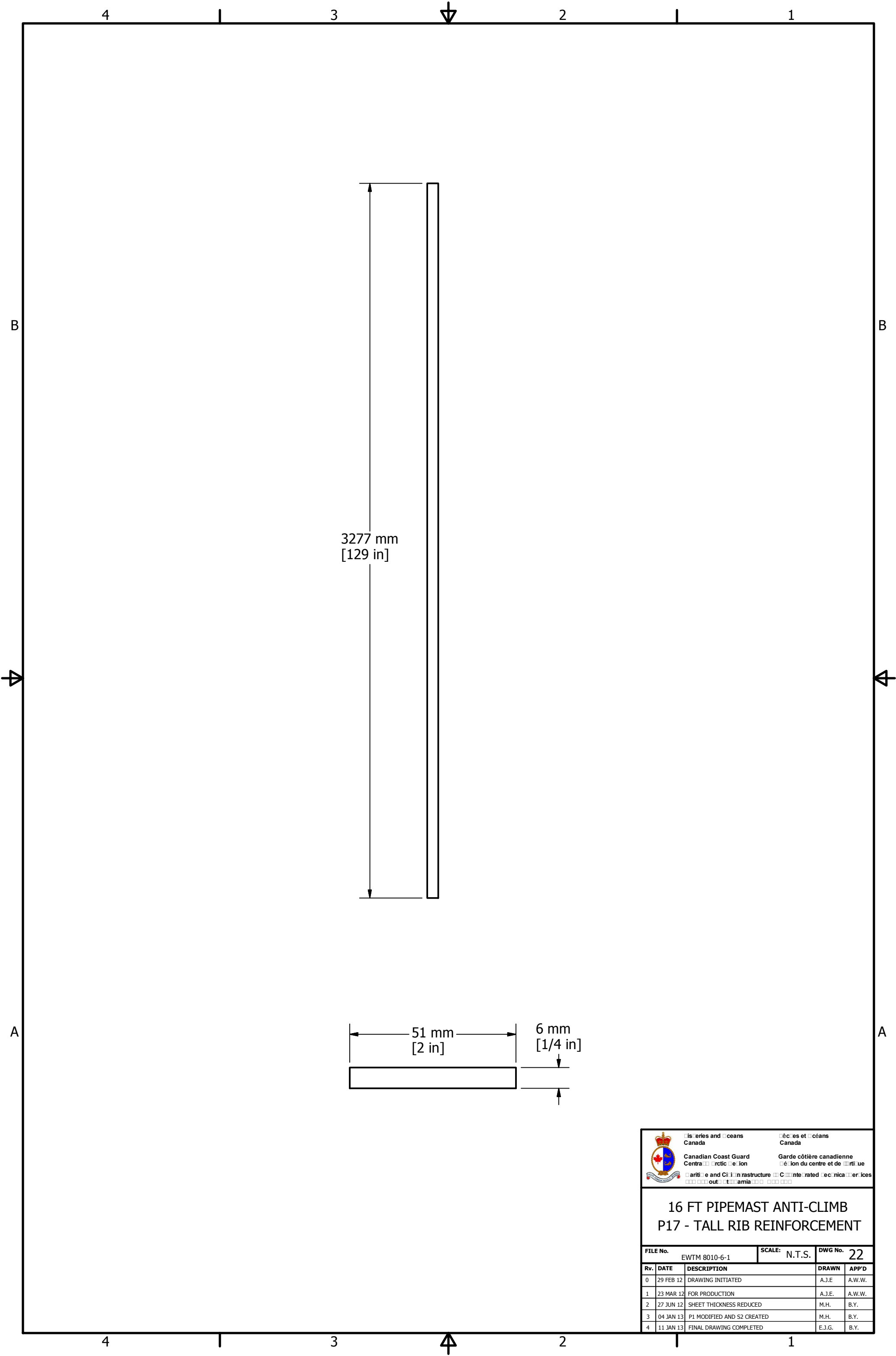
4

3

2

1


A



3277 mm
[129 in]

51 mm
[2 in]

6 mm
[1/4 in]

 Fisheries and Oceans Canada Canadian Coast Guard Garde côtière canadienne Centre for Arctic Cooperation Centre de coopération arctique Maritime and Civil Infrastructure Infrastructure maritime et civile		Fisheries and Oceans Canada Garde côtière canadienne Centre de coopération arctique Infrastructure maritime et civile			
16 FT PIPEMAST ANTI-CLIMB P17 - TALL RIB REINFORCEMENT					
FILE No.	EWTM 8010-6-1	SCALE:	N.T.S.	DWG No.	22
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.	



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



APPENDIX D: MARINE ACCESS REQUIREMENTS

.1 Marine Access

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

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