Fisheries and Oceans Canada | Pêches et Océans Canada

Canadian Coast Guard | Garde côtière canadienne

TOWER CONSTRUCTION

VARIOUS LOCATIONS

Prescott, ON

MARITIME AND CIVIL INFRASTRUCTURE
Prepared by: NC
Approved by: LL
Revision: 0
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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 (NBCC) 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 Definitions

.1	CCG:	Canadian Coast Guard
.2	DFO:	Department of Fisheries and Oceans
.3	PA:	Project/Technical Authority
.4	CA:	Contract Authority
.5	ATON:	Aid to Navigation
.6	SRAN:	Short Range Aid to Navigation Appurtenances (inclusive of lantern, solar panel, batteries, and daymark)
.7	CWB	Canadian Welding Bureau

1.3 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 Fabricate five (5), new galvanized steel ATON towers as detailed below in accordance with the drawings provided in Appendix B3, specifics as detailed in Table 1 below:

.2 All towers to be completed with bolting flange between each component section

.1 Component section bolt flanges to be interchangeable to allow modular configurations

Table 1			
Site ID (LL #)	**Name**	**Height**	**Notes**
LL: 1306.7	Pembroke	20 ft (6.1 m)	Deliver by 30 AUG 19
LL 987	Badgely	28 ft (8.3 m)	Deliver by 30 AUG 19
LL 528	Oakville	24 ft (7.2 m)	
LL XXX	Unnamed Tower	24 ft (7.3 m)	Sections must be interchangeable to allow different configurations.
LL XXX	Unnamed Tower	20 ft (6.1 m)	Sections must be interchangeable to allow different configurations.

.3 Each individual tower to be provided complete with:

.1 Fall Arrest System (Trylon Couger Rail);

.2 All necessary structural fasteners (excluding anchor bolts); and,

.3 Steel anchorage template (1/4" thickness minimum).

.4 Transport the completed towers to designated CCG staging location.

.2 Photographs of similar work previously completed and erected by others are provided in Appendix B1.

.3 The following work will be undertaken by others and is hereby excluded:

.1 Application of marine coating system (painting) inclusive of all preparatory work to facilitate bonding with galvanized surface;

.2 Supply of all SRAN Equipment; and,

.3 Site Installation.

1.4 Submittals

.1 Mandatory submittals and schedule for submission are detailed in Appendix B. The following identifies general requirements only. The relevant sections must be consulted for a complete listing of mandatory content.

.2 Detailed Schedule:

.1 Deadline:

.1 No later than ten (10) working days following award.

.2 Deliverables:

.1 The contractor shall furnish a high level schedule outlining the major construction milestones. Schedule shall clearly define the anticipated start and finish of the project.

.3 Project Participant Listing

.1 Deadline: With Detailed Schedule

.2 Deliverables:

.1 Contractor must make the following known and provide satisfactory documentation to demonstrated the staff/ subcontractor possess the appropriate certifications to complete the works.

.1 Project Manager:

.1 Prime point of contact for CCG PA.

.2 Fabricator:

.1 Firm executing the construction of the towers; and,

.2 Provide proof of CWB certification (CAN/CSA W47.1 (latest edition), Division 2).

.3 Galvanizing Facility:

.1 Firm completing galvanization of the constructed steel assemblies.

.4 Quality Control Plan:

.1 Deadline:

.1 No more than ten [10] working days following contractors acceptance and receipt of raw materials and prior to commencing assembly.

.2 Deliverables:

.1 Project specific safety program (Section 013530);

.2 Written summary of fabrication procedures (Section 133613); and,

.3 Material Mill Test Certificates (Section 133613)

.1 The contractor must furnish proof that all metal received for the project is in compliance with CSA and ASTM International standards.

1.5 Mandatory Requirements

.1 Tower fabricator must be CWB certified to the requirements of CAN/CSA W47.1 (latest edition), Division 2.

1.6 Completion, Scheduling and Planning of the Works

.1 Work may commence as early as practical following CCG PA's acceptance and approval of mandatory submissions.

.2 Work must be completed by 30 OCT 19, except wherein noted below or otherwise negotiated and approved in writing.

.1 Work must be completed no later than 30 AUG 19, for LL1306.7 Pembroke (20 ft (6.1 m)) and LL987 Badgely (28 ft (8.3 m)) towers.

.2 Work may be completed in batches to accommodate deadlines.

1.7 CCG Staging Location

.1 Items itemized as supplied by, or salvaged to CCG must be collected or delivered by the Contractor to the following staging location. The Contractor shall be responsible for all transportation costs to the identified staging location. Material drop off outside of regular operating hours must be at the discretion of CCG PA and may be subject to cost recovery:

.1 Staging location: CCG Base – Prescott

401 King St. W

Prescott, ON, K0E IT0

.2 Shipping and receiving:

.1 Monday – Friday; 0900 – 1500 EST.

.3 Advise CCG PA at least three [3] working days prior to shipping to coordinate receipt of materials.

1.8 Fees, Permits, Certificates and Information

.1 Contractor must provide authorities having jurisdiction with all information requested.

.1 Contractor must provide copies to CCG PA of any documentation submitted to other authorities related to the work described in this document.

.2 Contractor must pay fees and obtain certificates and permits required.

.3 Contractor must furnish certificates and permits when requested.

1.9 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.

1.10 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.

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 CCG PA for review.

.2 Do not proceed with the work until submitted documents or samples have been reviewed by CCG PA.

.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 CCG PA's review of the submitted documents.

.5 Notify CCG PA, 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 CCG PA's review of submission, unless CCG PA gives written acceptance of specific deviations.

.7 Make any changes to submissions that CCG PA may require consistent with Contract Documents and resubmit as directed by CCG PA.

.8 Provide CCG PA with a written notice, when resubmitting, of any revisions other than those requested CCG PA.

1.2 Submission Requirements

.1 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.

.2 Allow three (3) working days, or as stipulated in the specifications, for CCG PA to review the submission.

SECTION: 013530 HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 Scope

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

1.2 References

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

.1 Canada Labour Code Part II - January 2008

.2 NRC-CNRC National Building Code of Canada

.3 Ontario Occupational Health and Safety Act and Regulations, 2009.

.4 Any and all other Provincial/Territorial Regulations and Policies; Worker's Compensation Board Policies; Local municipal regulations; pertaining to safety of the contractors workers

1.3 Submittals

.1 Project Specific Safety Program

.1 Deadline: With Quality Control Plan

.2 Deliverables: 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: 014500 QUALITY CONTROL

PART 1 - GENERAL

1.1 General

.1 The Contractor is responsible for ensuring effective controls are implemented to ensure that the works are executed in accordance with these specifications and all referenced CSA / ASTM codes.

1.2 Inspection

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

.2 In the event the work must be submitted to special testing, inspection or approvals prescribed by CCG in these specifications or provided for in work-site regulations, the request for inspection must be made without unreasonable delay.

1.3 Procedures

.1 Provide CCG PA 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.

1.4 Rejected Work

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

1.5 Tests and Mixture Formulas

.1 Supply test reports and required mixture formulas.

1.6 Factory Tests

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

1.7 Quality Assurance and Acceptance of Work

.1 CCG PA will make acceptance visits of work executed by the Contractor at critical milestones identified in the following sections.

.2 The Contractor shall inform CCG PA 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 CCG PA approval of all products to be incorporated into the works. Work shall not commence until product data and/or samples have received CCG PA approval.

.2 Supply and/or fabricate material and equipment of prescribed quality, with performance conforming to established standards.

.3 Use new material and equipment unless otherwise specified.

.4 Ensure replacements parts may be readily procured.

.5 Use products from one manufacturer for material and equipment of same type or classification, unless otherwise specified.

1.2 Manufacturer's Instructions

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify CCG PA in writing of any conflict between these specifications and manufacturer's instructions; CCG PA will designate which document is to be followed.

1.3 Compliance

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

1.4 Substitution

.1 Where specific products have been specified, proposals for substitution may only be submitted after award of contract. Such requests must include statements of respective costs of items originally specified and the proposed substitution.

.2 No substitutions will be permitted without prior written approval of CCG PA. Substitutions will be considered by CCG PA only when:

.1 Materials specified in Contract Documents, are not available; or,

.2 Delivery date of materials selected from those materials specified would unduly delay completion of contract; or,

.3 Alternative materials to those specified which are brought to the attention of and considered by CCG PA 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 CCG PA.

SECTION: 133613 METAL TOWERS

PART 1 - GENERAL

1.1 Scope of Work

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

.1 Fabricate five (5), new galvanized steel ATON towers as detailed below in accordance with the drawings provided in Appendix B3, specifics as detailed in Table 1 below:

Table 1

Site ID (LL #)	Name	Height	Notes
LL: 1306.7	Pembroke	20 ft (6.1 m)	Deliver by 30 AUG 19
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LL XXX	Unnamed Tower	24 ft (7.3 m)	Sections must be interchangeable to allow different configurations.
LL XXX	Unnamed Tower	20 ft (6.1 m)	Sections must be interchangeable to allow different configurations.

.2 All towers to be completed with bolting flange between each component section.

.1 Component section bolt flanges to be interchangeable to allow modular configurations

.3 Each individual tower to be provided by Contractor complete with:

.1 Fall Arrest System (Trylon Couger Rail);

.2 All necessary structural fasteners (excluding anchor bolts); and,

.3 Steel anchorage template (1/4” thickness minimum).

.4 Transport the completed towers to designated CCG staging location.

.2 The following work will be undertaken by others and is hereby excluded:

.1 Application of marine coating system (painting) inclusive of all preparatory work to facilitate bonding with galvanized surface;

.2 Supply of all SRAN Equipment; and,

.3 Site installation.

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 CSA S37-01 - Antenna Towers and Antenna Supporting Structures

.4 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel

.5 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 CAN/CSA S16-14 - Design of Steel Structures

.7 CAN/CSA W59-13 – Welded Steel Construction (Metal Arc Welding) [Metric]

.8 CAN/CSA W47.1-09 – Certification of Companies for Fusion Welding of Steel

1.3 Submittals

.1 Fabrication Procedures

.1 Deadline: With Quality Control Plan

.2 Provide a description of proposed fabrication methods to be employed in the construction of the works.

.2 Material Mill Test Certificates

.1 Deadline: With Quality Control Plan

.2 Provide documentation that all metals received and to be incorporated into the works have been produced in compliance with CSA and ASTM standards.

1.4 Quality Assurance

.1 CCGs minimum inspection requirements are detailed below. The Contractor shall be responsible to notify CCG PA 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 CCG PA 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 At fabrication facility upon completion of the first assembly prior to galvanization.

.2 At designated staging facility upon receipt.

PART 2 - PRODUCTS

2.1 Materials

.1 Steel:

.1 As identified in Contract Drawings, Appendix B3.

.2 In the event that materials are not identified the Contractor must utilize the following:

.1 Structural shapes – CSA G40.21M, Grade 300W

.2 HSS – CSA G40.21M, Grade 350W, CLC

.3 Plates and bar – CSA G40.21M, Grade 300W

.3 Spiral wound steel pipe is prohibited.

.2 Fasteners (Plates, Nuts, Washers)

.1 ASTM A325 UNO

.2 Quantity supplied shall be sufficient to join the component sections of each tower plus 10%.

.3 Materials for each tower are to be packaged separately in a rugged weatherproof container labelled to match corresponding tower kit.

.3 Fall arrest system

.1 Trylon Cougar Rail

.1 Harness attachment is not required.

PART 3 - EXECUTION

3.1 Fabrication

.1 All members must be fabricated in accordance with the Contract Drawing and as per the specified references.

.2 Mating bolt flange must be precision manufactured and maintained free of any distortion during the fabrication processes.

.3 Bolt flanges of top and bottom tower assemblies must be interchangeable to allow for various future configurations (4ft / 8ft Middle assemblies).

.4 In any bending or reworking of any material, methods employed must ensure that the physical properties of the material are not impaired.

.5 The Contractor must ensure that electrical continuity exists between all components and assemblies.

.6 The Contractor is to round or bevel any sharp corners and machine smooth all rough sides resulting from cut material.

.7 The Fabricator must stamp/weld the calendar month and year (e.g. Dec 2016) in 25mm high letters into the lower tower section as close as possible to the door latch.

.8 The Fabricator must stamp/weld unique tower identifying number clearly visible in each mated section.

3.2 Galvanizing:

.1 The tower and all hardware are to be hot dip galvanized.

3.3 Handling of Material and Transportation

.1 The Contractor is to deliver the completed works to Designated Staging Facility.

.2 Each piece shall be tagged documenting fabricated weight in lbs / kg.

.3 The Contractor shall take all necessary precautions to avoid damage to the tower members or to tower coating during transport and unloading. All components or damaged members shall be replaced to the satisfaction of CCG PA at the expense of the Contractor.

.4 It is the responsibility of the Contractor to ensure that the tower sections, particularly the joints are protected from bending and alignment damage.