Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

**RETURN BIDS TO:**
**RETOURNER LES SOUMISSIONS À:**

**Bid Receiving Public Works and Government Services Canada/Réception des soumissions Travaux publics et Services gouvernementaux Canada**
**1713 Bedford Row**
**Halifax, N.S./Halifax, (N.É.)**
**Halifax**
**Nova Scotia**
**B3J 1T3**
**Bid Fax: (902) 496-5016**

# REQUEST FOR PROPOSAL
# DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

**Title - Sujet**
Omnidirectional Beacons

| **Solicitation No. - N° de l'invitation** | **Date** |
|---|---|
| F6839-185183/A | 2018-12-14 |

**Client Reference No. - N° de référence du client**
F6839-18-5183

**GETS Reference No. - N° de référence de SEAG**
PW-$HAL-409-10597

| **File No. - N° de dossier** | **CCC No./N° CCC - FMS No./N° VME** |
|---|---|
| HAL-8-81206 (409) | |

**Solicitation Closes - L'invitation prend fin**
**at - à 02:00 PM**
**on - le 2019-01-28**

**Time Zone**
**Fuseau horaire**
Atlantic Standard Time
AST

**F.O.B. - F.A.B.**
**Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐

| **Address Enquiries to: - Adresser toutes questions à:** | **Buyer Id - Id de l'acheteur** |
|---|---|
| Taylor, Kathie | hal409 |

| **Telephone No. - N° de téléphone** | **FAX No. - N° de FAX** |
|---|---|
| (902) 403-4837 ( ) | (902) 496-5016 |

**Destination - of Goods, Services, and Construction:**
**Destination - des biens, services et construction:**
DEPARTMENT OF FISHERIES AND OCEANS
50 DISCOVERY DR., LEVEL 4
DARTMOUTH
NOVA SCOTIA
B2Y3Z8
Canada

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**
**Raison sociale et adresse du fournisseur/de l'entrepreneur**

| **Delivery Required - Livraison exigée** | **Delivery Offered - Livraison proposée** |
|---|---|
| See Herein | |

**Vendor/Firm Name and Address**
**Raison sociale et adresse du fournisseur/de l'entrepreneur**

**Telephone No. - N° de téléphone**
**Facsimile No. - N° de télécopieur**

**Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)**
**Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)**

**Signature** **Date**

**Issuing Office - Bureau de distribution**
Atlantic Region Acquisitions/Région de l'Atlantique Acquisitions
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
Halifax
Nova Scot
B3J 1T3

Canada

## TABLE OF CONTENTS

**ANNEXES**

## PART 1 - GENERAL INFORMATION

### 1.1 Requirement

Fisheries & Oceans Canada, Dartmouth, N. S., has a requirement for the supply and delivery of eleven (11) Omnidirectional Beacons, as fully detailed in Annex A. **Delivery is mandatory on or before March 29, 2019.**

### 1.2 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

### 1.3 Trade Agreements

The requirement is subject to the provisions of the North American Free Trade Agreement (NAFTA), the Canada-European Union Comprehensive Economic and Trade Agreement (CETA), and the Canadian Free Trade Agreement (CFTA).

### 1.4 epost Connect service

This bid solicitation allows bidders to use the epost Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.

## PART 2 - BIDDER INSTRUCTIONS

### 2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2018-05-22) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

### 2.2 Submission of Bids

Bids must be submitted only to the Public Works and Government Services Canada (PWGSC) Bid Receiving Unit specified below by the date and time indicated on page 1 of the bid solicitation:

*Bid Receiving*
*Public Works and Government Services Canada*
*1713 Bedford Row*
*Halifax, N. S. B3J 1T3*

*ePost: TPSGC.RAReceptionSoumissionsNE-ARBidReceivingNS.PWGSC@tpsgc-pwgsc.gc.ca*
Bids/Offers will be not be accepted if emailed directly to this email address. This email is to initiate an ePost Connect conversation, as detailed in the Standard Instructions 2003.

Facsimile: 1-902-496-5016

### 2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than seven (7) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

### 2.4 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Nova Scotia.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

## PART 3 - BID PREPARATION INSTRUCTIONS

### 3.1 Bid Preparation Instructions

If the Bidder chooses to submit its bid electronically, Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. Bidders must provide their bid in a single transmission. The epost Connect service has the capacity to receive multiple documents, up to 1GB per individual attachment.

Section I: Technical Bid
Section II: Financial Bid
Section III: Certifications
Section IV: Additional Information

If the Bidder chooses to submit its bid in hard copies, Canada requests that the Bidder submits its bid in separately bound sections as follows:

Section I: Technical Bid (**two hard copies**)
Section II: Financial Bid (one hard copy
Section III: Certifications (one hard copy)

If there is a discrepancy between the wording of the soft copy on electronic media and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

If the Bidder is simultaneously providing copies of its bid using multiple acceptable delivery methods, and if there is a discrepancy between the wording of any of these copies and the electronic copy provided through epost Connect service, the wording of the electronic copy provided through epost Connect service will have priority over the wording of the other copies.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that Bidders follow the format instructions described below in the preparation of their bid:

(a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
(b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html). To assist Canada in reaching its objectives, Bidders should:

1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and

2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

**Section I: Technical Bid**

In their technical bid, Bidders should explain and demonstrate how they propose to meet the requirements or how they will carry out the Work, as fully detailed in Annex A.

**Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Applicable Taxes must be shown separately.

**3.1.1 Electronic Payment of Invoices – Offer**

**If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex "D" Electronic Payment Instruments, to identify which ones are accepted**.

If Annex "D" Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

**Section III: Certifications**
Bidders must submit the certifications and additional information required under Part 5.

**3.2 SACC Manual Clauses**

B100T Condition of Material (2014-06-26**)**

## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 4.1 Evaluation Procedures

(a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
(b) An evaluation team composed of representatives of Canada will evaluate the bids.

#### 4.1.1 Technical Evaluation

##### 4.1.1.1 Mandatory Technical Criteria

Fully detailed in Annex A.

#### 4.1.2 Financial Evaluation

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, DDP Incoterms 2000, Canadian customs duties and excise taxes included, where applicable.

### 4.2 Basis of Selection

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

### 5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

#### 5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the declaration form available on the Forms for the Integrity Regime website (http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html), to be given further consideration in the procurement process.

### 5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid, but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame provided will render the bid non-responsive.

### 5.2.1 Integrity Provisions – Required Documentation

In accordance with the *Ineligibility and Suspension Policy (*http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

### 5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the Employment and Social Development Canada (ESDC) - Labour's website (http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

## PART 6 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

### 6.1 Requirement

The Contractor must provide the items detailed under the "Requirement" at Annex A.

### 6.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

### 6.2.1 General Conditions

2010A (2018-06-21), General Conditions - Goods (Medium Complexity) apply to and form part of the Contract.

### 6.3 Term of Contract

### 6.3.1 Delivery Date

**Delivery is mandatory on or before March 29, 2019.**

Please provide best delivery: _____

### 6.4 Authorities

#### 6.4.1 Contracting Authority

The Contracting Authority for the Contract is:

Kathie Taylor
Supply Officer
Public Works and Government Services Canada
Acquisitions Branch
1713 Bedford Row
Halifax, NS B3J 3C9
Telephone: 902-403-4837
Facsimile: 902-496-5016
E-mail address: kathie.taylor@pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

#### 6.4.2 Project Authority

The Project Authority for the Contract is: (to be inserted at contract award)

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ___ ___ _____
E-mail address: _____

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority, however the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

#### 6.4.3 Contractor's Representative

Name: _____

Title: _____

Organization: _____

Address: _____

_____

_____

Telephone: _____

E-mail address: _____

**6.5 Payment**

**6.5.1 Basis of Payment**

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a *firm price for a cost of $ _____ (to be inserted at contract award*). Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

**6.5.2 Method of Payment**

H1000C (2008-05-12) Single Payment

**6.5.3 Electronic Payment of Invoices - Contract**

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

a. Visa Acquisition Card;
b. MasterCard Acquisition Card;
c. Direct Deposit (Domestic and International);
d. Electronic Data Interchange (EDI);
e. Wire Transfer (International Only);
f. Large Value Transfer System (LVTS) (Over $25M)

**6.6 Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

2. Invoices must be distributed as follows:

    a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.

**6.7 Certifications and Additional Information**

**6.7.1 Compliance**

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information

are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

### 6.8 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Nova Scotia.

### 6.9 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

(a) the Articles of the Agreement;
(b) the general conditions 2010A (2018-06-21);
(c) Annex A, Statement of Requirement;
(d) the Contractor's bid dated _____

### 6.10 SACC Manual Clauses

G1005C Insurance Requirements (2008-05-12)

## ANNEX A
## Requirement

## See attached pdf
## Sections 1-5

## ANNEX B
## Basis of Payment

The price of the bid will be evaluated in Canadian dollars, the Goods and Services Tax or the Harmonized Sales Tax excluded, DDP Incoterms 2000, Dartmouth, N. S. Canadian Customs Duties and Excise Taxes included.

| Art. | Description | Qty. | Unit | Firm Unit Price | Total Firm Price |
|---|---|---|---|---|---|
| 1 | **Site A**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| 2 | **Site B**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| 3 | **Site C**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| 4 | **Site D**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| 5 | **Site E**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| 6 | **Site F**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS** | **1** | **Each** | **$** | **$** |

| | | | | | |
|---|---|---|---|---|---|
| | **Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | | | | |
| **7** | **Site G**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| **8** | **Site H**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| **9** | **Site I**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| **10** | **Site J**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| **11** | **Site K**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | **$** | **$** |
| **12** | **Shipping** | **1** | **Lot** | **$** | **$** |
| | | | | **TOTAL EVALUATED PRICE** | **$** |

# ANNEX C
## REQUIREMENTS MATRIX

**Complete** Attached pdf
Section 6

## ANNEX D

## to PART 3 OF THE BID SOLICITATION
## ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts any of the following Electronic Payment Instrument(s):

( ) VISA Acquisition Card;

( ) MasterCard Acquisition Card;

( ) Direct Deposit (Domestic and International);

( ) Electronic Data Interchange (EDI);

( ) Wire Transfer (International Only);

( ) Large Value Transfer System (LVTS) (Over $25M)

# DEPARTMENT OF FISHERIES AND OCEANS: CANADIAN COAST GUARD – MARITIME AND CIVIL INFRASTRUCTURE

## Request For Proposal

### Eleven (11) Aid to Navigation Lights

**"For Quotation Purposes Only"**

**Date: October 2018**

# Section 1 BACKGROUND INFORMATION: INTRODUCTION

This document outlines the Canadian Coast Guard's (CCG) specifications for the required omnidirectional beacons. This section is informative and makes no obligations on the part of manufacturers or bidders.

The Canadian Coast Guard (CCG) has a requirement for eleven (11) omnidirectional beacons of various intensities for use with fixed aids to navigation.

The CCG makes use of green, red, yellow, and white omnidirectional beacons using common light flash characteristics as listed in the CCG Lights, Buoys and Fog Signals (latest).

The omnidirectional beacons are deployed in a harsh marine environment and are exposed to a wide range of ambient temperatures and humidity. The omnidirectional beacon will be exposed to significant wind speeds, salt air, seawater spray, and ice loads. The unit will have continuous exposure to ultraviolet (UV) levels that are typical of the lower-to-mid Canadian latitudes. Omnidirectional beacons may be subject to heavy driving rains, freezing rain, and snow. The omnidirectional beacons may also be subjected to accidental submersion. The omnidirectional beacon may be exposed to electromagnetic interference from radiating devices such as marine radar, static discharges, and induced transient voltages that may occur because of nearby lightning strikes.

Once deployed, the omnidirectional beacon will be left unattended for considerable periods of time. The CCG is looking for omnidirectional beacons that will operate under the specified condition and have a minimum specified service life of 8 years. The CCG is also looking for omnidirectional beacons which require minimal maintenance throughout the lifecycle of the device.

# Section 2 REFERENCED DOCUMENTS

The documents listed in this section form an integral part of the CCG requirements to the extent they are referenced in this Performance Specification.

## 2.1 REFERENCED PUBLICATIONS, SPECIFICATIONS AND STANDARDS

i. IEC 60529:1989+AMD1:1999+AMD2:2013 and CSV/COR2:2015 Degrees of protection provided by enclosures (IP Code).

ii. MIL-STD-202H, Department of Defense Test Method Standard: Electronic and Electrical Component Parts.

iii. MIL-STD-810G, Environmental Engineering Considerations and Laboratory Tests.

## 2.2 OTHER REFERENCED DOCUMENTS

**2.2.1** IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities) Recommendation E-200 – Marine Signal Lights Edition 1 December 2008

**2.2.2** Canadian Coast Guard, Notice to Mariners (NOTMAR) List of Lights, Buoys and Fog Signals (4 Volumes) – latest editions

## 2.3 ORDER OF PRECEDENCE

**2.3.1** In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been made.

# Section 3 PERFORMANCE SPECIFICATIONS

This section sets out the Canadian Coast Guard's performance specifications that are common to all omnidirectional beacons.

## 3.1 GENERAL

### 3.1.1 Fundamental Design

3.1.1.1 The omnidirectional beacon must use LED(s) as a light source.

### 3.1.2 Material

3.1.2.1 The omnidirectional beacon must be made of materials which will not be subject to damage due to corrosion or rust during the life expectancy of the omnidirectional beacon.

3.1.2.2 The omnidirectional beacon must not contain any toxic, or radioactive materials.

### 3.1.3 Finish

3.1.3.1 External components must have a smooth finish and be uniform in colour and appearance.

3.1.3.2 Paint or coatings must be lead free.

3.1.3.3 The lens must maintain IALA colour requirements for no less than 8 years.

3.1.3.4 Ultraviolet exposure must cause minimal material breakdown of the housing so the unit maintains structural integrity for no less than 8 years.

3.1.3.5 All components of the omnidirectional beacons must be free of cracks, burrs, sharp cutting edges, and other defects and blemishes affecting their life, appearance, and serviceability.

### 3.1.4 Protection From Birds

3.1.4.1 The omnidirectional beacons and their components must be shielded and protected from birds.

3.1.4.2 The omnidirectional beacon must have a means of restricting the ability of birds to roost on it.

### 3.1.5 Mounting Provisions

3.1.5.1 The bottom of the omnidirectional beacon base must be parallel to the light's focal plane.

3.1.5.2 The base of the unit shall be capable of being bolted to a plate measuring 300 mm by 400 mm.

3.1.5.3 Any part of the omnidirectional beacon that overhangs the mounting holes shall be no less than 72.5mm above the mounting foot. Refer to Figure 1.

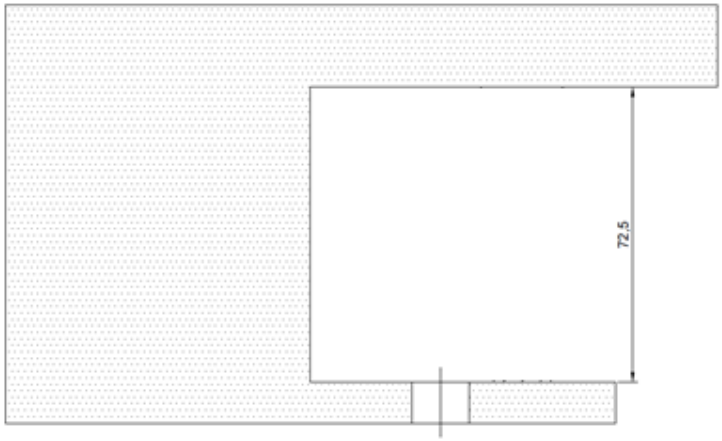


Figure 1 - Mounting Hole Clearance Requirement

### 3.1.6 Identification Nameplate

3.1.6.1 The omnidirectional beacon must have an identification nameplate with the following information:

- Name of Manufacturer
- Model Number
- Serial Number
- Date of Manufacture
- Rated Voltage/Amperage

3.1.6.2 The identification nameplate must be indelible.

3.1.6.3 The identification nameplate must be located on the exterior of the unit.

## 3.2 ELECTRICAL REQUIREMENTS

### 3.2.1 Power and Energy Requirements

3.2.1.1 The omnidirectional beacon must operate using a nominal voltage of 12 volts, or 24 volts, or 36 volts or 48 volts direct current (DC).

3.2.1.2 The omnidirectional beacon must operate within standard input ranges for the stated voltage.

### 3.2.2 Protection Requirements

3.2.2.1 The omnidirectional beacon must be provided with reverse polarity protection and not experience damage if the power leads are connected in reverse polarity.

3.2.2.2 The omnidirectional beacon must be provided with short-circuit protection with automatic reset.

### 3.2.3 Control

3.2.3.1 The omnidirectional beacon must provide a means of programming the flash characteristics by the CCG.

3.2.3.2 The omnidirectional beacon must maintain its programmed setting, and will not switch to another setting until programmed to do so for no less than 12 months unpowered (storage conditions).

## 3.3 ENVIRONMENT

### 3.3.1 Temperature

3.3.1.1 The omnidirectional beacon must be capable of operating when exposed to temperatures ranging from -30 °C to +40 °C.

### 3.3.2 Humidity

3.3.2.1 The omnidirectional beacon must be capable of operating when exposed to relative humidity from 0% to 100% condensing.

### 3.3.3 Icing

3.3.3.1 The omnidirectional beacon must be capable of operating when exposed to ice loading up to 22 kg/$m^2$.

### 3.3.4 Wind Speed

3.3.4.1 The omnidirectional beacon must be capable of operating when exposed to wind speeds up to 160 km/h.

### 3.3.5 Salt Air and Seawater Spray

3.3.5.1 The omnidirectional beacon must be capable of operating when under continuous exposure to salt air and seawater spray.

### 3.3.6 Electromagnetic Interference

3.3.6.1 The omnidirectional beacon must not be susceptible to interference from radiating devices normally found in the marine environment when tested in accordance with IEC 60945.

### 3.3.7 Static Discharge

3.3.7.1 The omnidirectional beacon must incorporate protection from static discharges and induced transient voltages on power leads that may occur due to nearby lightning strikes.

### 3.3.8 Shock

3.3.8.1 The rotating beacon must remain operational after a shock event as outlined in MIL-STD-810G Method 516.6 Procedure I – Functional Shock.

### 3.3.9 Immersion Protection

3.3.9.1 The omnidirectional beacon must meet ingress protection of at least IP65 in accordance with IEC 60529:1989+AMD1:1999+AMD2:2013 and CSV/COR2:2015.

## 3.4 SERVICE LIFE

3.4.1.1 Omnidirectional beacons must have a minimum $L_{70}$ rating of 50 000 hours.

3.4.1.2 The expected deterioration over the service life of the omnidirectional beacons must be presented in tabulated or graphed form.

## 3.5 PREVENTIVE MAINTENANCE REQUIREMENTS

**3.5.1** The omnidirectional beacon must be supplied with a priced list of recommended spare parts sufficient for 10,000 hours of operation. Prices quoted must be based on published pricing with any discounts provided with a most favoured customer.

**3.5.2** The omnidirectional beacon must be supplied with a recommended preventative maintenance manual in English .

# Section 4 VERIFICATION

## 4.1 .

4.1.1.1 Technical proposals must include the Section 6 Requirement Matrix completed and signed along with product brochures and other technical data validating that the product meets the requirements.

## 4.2 METHODS OF VERIFICATION

4.2.1.1 The CCG uses the definitions for methods of verification as outlined in Table 1.

**Table 1: Methods of Verification**

| Method | Description |
|---|---|
| Data Submission | The Bidder shall submit data in the form of reports, drawings, schematics, and other documents sufficient to demonstrate that the requirements are met. |
| Test | The Bidder shall submit the results of tests of the bid product, previously performed in its own facility or by other accredited independent labs or agencies to demonstrate that the requirements are met. |
| Analysis | The Bidder shall perform a detailed technical or engineering analysis in sufficient detail to demonstrate the requirements are met. |
| Inspection | A visual inspection of the equipment demonstrates the requirement is met (e.g. photo of a serial port, or nameplate). |

## 4.3 COMPLIANCE

**4.3.1.1 The compliance with the Methods of Verification can be found in Table 2.**

**Table 2: Compliance Method**

| Compliance Method | Description |
|---|---|
| Statement of Conformance (SOC) | Written acknowledgement that this requirement has been met. A certificate of compliance shall be provided when possible/applicable. |
| Submit Data (SD) | Provide Drawings/Documentation to validate that this requirement has been met. |
| Submit Test Data (STD) | Provide test data as dictated in the performance specification, test data from an independent laboratory via an Industry Standard Test to validate that this requirement has been met. |

## Section 5 LIGHT SPECIFIC TECHNICAL REQUIREMENT

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5** | **Light Specific Technical Requirement** | | |
| **5.1** | **Site A –North Rock, NB** | | |
| **5.1.1** | **Optical Performance** | | |
| **5.1.1.1** | The omnidirectional beacon must produce 9900 candela. | SD+SOC | |
| **5.1.1.2** | The omnidirectional beacon must be Red in colour. | SD+SOC | |
| **5.1.1.3** | **Vertical Divergence** | | |
| **5.1.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 1.25° above the horizontal and 1.25° below the horizontal. | SD | |
| **5.1.1.4** | **Horizontal Divergence** | | |
| **5.1.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | |
| **5.1.1.5** | **Flash characteristic** | SD | |
| **5.1.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 1 second and Eclipse for 5 seconds. | SOC | |
| **5.1.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.1.1.6** | **Period of daily operation** | | |
| **5.1.1.6.1** | The omnidirectional beacon is to operate at night time only. | SOC | |
| **5.1.1.7** | **System power consumption (Watts)** | | |
| **5.1.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| **5.2** | **Site B –Lighthouse Point, NB** | | |
| **5.2.1** | **Optical Performance** | | |
| **5.2.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | |
| **5.2.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.2.1.3** | **Vertical Divergence** | | |
| **5.2.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | |
| **5.2.1.4** | **Horizontal Divergence** | | |
| **5.2.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | |
| **5.2.1.5** | **Flash characteristic** | SD | |
| **5.2.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 3 seconds. | SOC | |
| **5.2.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.2.1.6** | **Period of daily operation** | | |

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5.2.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | |
| **5.2.1.7** | **System power consumption (Watts)** | | |
| **5.2.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| **5.3** | **Site C –Long Point, NB** | | |
| **5.3.1** | **Optical Performance** | | |
| **5.3.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | |
| **5.3.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.3.1.3** | **Vertical Divergence** | | |
| **5.3.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | |
| **5.3.1.4** | **Horizontal Divergence** | | |
| **5.3.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | |
| **5.3.1.5** | **Flash characteristic** | SD | |
| **5.3.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 6 seconds and Eclipse for 6 seconds. | SOC | |
| **5.3.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.3.1.6** | **Period of daily operation** | | |
| **5.3.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | |
| **5.3.1.7** | **System power consumption (Watts)** | | |
| **5.3.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| **5.4** | **Site D –Cape Sharp, NS** | | |
| **5.4.1** | **Optical Performance** | | |
| **5.4.1.1** | The omnidirectional beacon must produce 3000 candela. | | |
| **5.4.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.4.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.4.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | | |
| **5.4.1.4** | **Horizontal Divergence** | SD | |
| **5.4.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.4.1.5** | **Flash characteristic** | SD | |
| **5.4.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 7 seconds and Eclipse for 3 seconds. | SD | |
| **5.4.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.4.1.6** | **Period of daily operation** | SOC | |

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5.4.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | | |
| **5.4.1.7** | **System power consumption (Watts)** | SOC | |
| **5.4.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | |
| | | | |
| **5.5** | **Site E –Cape St. Mary's, NS** | | |
| **5.5.1** | **Optical Performance** | | |
| **5.5.1.1** | The omnidirectional beacon must produce 26900 candela. | | |
| **5.5.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.5.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.5.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | | |
| **5.5.1.4** | **Horizontal Divergence** | SD | |
| **5.5.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.5.1.5** | **Flash characteristic** | SD | |
| **5.5.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 0.5 seconds and Eclipse for 4.5 seconds. | SD | |
| **5.5.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.5.1.6** | **Period of daily operation** | SOC | |
| **5.5.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | | |
| **5.5.1.7** | **System power consumption (Watts)** | SOC | |
| **5.5.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.6** | **Site F –Baccaro Point, NS** | | |
| **5.6.1** | **Optical Performance** | | |
| **5.6.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | |
| **5.6.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.6.1.3** | **Vertical Divergence** | | |
| **5.6.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | | |
| **5.6.1.4** | **Horizontal Divergence** | SD | |
| **5.6.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.6.1.5** | **Flash characteristic** | SD | |
| **5.6.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 5 seconds and Eclipse for 1 second. | SD | |
| **5.6.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.6.1.6** | **Period of daily operation** | SOC | |

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5.6.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | | |
| **5.6.1.7** | **System power consumption (Watts)** | SOC | |
| **5.6.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.7** | **Site G –East Iron Bound Island, NS** | | |
| **5.7.1** | **Optical Performance** | | |
| **5.7.1.1** | The omnidirectional beacon must produce 5800 candela. | | |
| **5.7.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.7.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.7.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | | |
| **5.7.1.4** | **Horizontal Divergence** | SD | |
| **5.7.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.7.1.5** | **Flash characteristic** | SD | |
| **5.7.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 3 seconds. | SD | |
| **5.7.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.7.1.6** | **Period of daily operation** | SOC | |
| **5.7.1.6.1** | The omnidirectional beacon is to operate at Night only. | | |
| **5.7.1.7** | **System power consumption (Watts)** | SOC | |
| **5.7.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.8** | **Site H –Cape George (Antigonish), NS** | | |
| **5.8.1** | **Optical Performance** | | |
| **5.8.1.1** | The omnidirectional beacon must produce 16,386 candela. | | |
| **5.8.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.8.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.8.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | | |
| **5.8.1.4** | **Horizontal Divergence** | SD | |
| **5.8.1.4.1** | The omnidirectional beacon must have a horizontal divergence of 360°. | | |
| **5.8.1.5** | **Flash characteristic** | SD | |
| **5.8.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SD | |
| **5.8.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.8.1.6** | **Period of daily operation** | SOC | |
| **5.8.1.6.1** | The omnidirectional beacon is to operate at Night only. | | |

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5.8.1.7** | **System power consumption (Watts)** | SOC | |
| **5.8.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.9** | **Site I – Candlebox Island, NS** | | |
| **5.9.1** | **Optical Performance** | | |
| **5.9.1.1** | The omnidirectional beacon must produce 5700 candela. | | |
| **5.9.1.2** | The omnidirectional beacon must be Red in colour. | SD+SOC | |
| **5.9.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.9.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | | |
| **5.9.1.4** | **Horizontal Divergence** | SD | |
| **5.9.1.4.1** | The omnidirectional beacon must have a horizontal divergence of 360°. | | |
| **5.9.1.5** | **Flash characteristic** | SD | |
| **5.9.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 2 seconds and Eclipse for 4 seconds. | SD | |
| **5.9.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.9.1.6** | **Period of daily operation** | SOC | |
| **5.9.1.6.1** | The omnidirectional beacon is to operate at Night only. | | |
| **5.9.1.7** | **System power consumption (Watts)** | SOC | |
| **5.9.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.10** | **Site J –Spare NB** | | |
| **5.10.1** | **Optical Performance** | | |
| **5.10.1.1** | The omnidirectional beacon must produce 5800 candela. | | |
| **5.10.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.10.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.10.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | | |
| **5.10.1.4** | **Horizontal Divergence** | SD | |
| **5.10.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.10.1.5** | **Flash characteristic** | SD | |
| **5.10.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SD | |
| **5.10.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.10.1.6** | **Period of daily operation** | SOC | |
| **5.10.1.6.1** | The omnidirectional beacon is to operate at Night only. | | |
| **5.10.1.7** | **System power consumption (Watts)** | SOC | |

| | Specification | Compliance Requirement | |
|---|---|---|---|
| **5.10.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |
| | | | |
| **5.11** | **Site K –Spare NS** | | |
| **5.11.1** | **Optical Performance** | | |
| **5.11.1.1** | The omnidirectional beacon must produce 16,386 candela. | | |
| **5.11.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | |
| **5.11.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.11.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | | |
| **5.11.1.4** | **Horizontal Divergence** | SD | |
| **5.11.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | | |
| **5.11.1.5** | **Flash characteristic** | SD | |
| **5.11.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SD | |
| **5.11.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | |
| **5.11.1.6** | **Period of daily operation** | SOC | |
| **5.11.1.6.1** | The omnidirectional beacon is to operate at Night only. | | |
| **5.11.1.7** | **System power consumption (Watts)** | SOC | |
| **5.11.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour |

## Section 6 REQUIREMENTS MATRIX

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| **3.1** | **General** | | |
| **3.1.1** | **Fundamental Design** | | |
| **3.1.1.1** | The Omnidirectional Beacon must use LED(s) as a light source. | SD | X_____ |
| | The Omnidirectional Beacon must follow IALA Recommendation E-200 On Marine Signal Lights. | SOC | X_____ |
| **3.1.2** | **Material** | | |
| **3.1.2.1** | The omnidirectional beacon must be made of materials which will not be subject to damage due to corrosion or rust during the life expectancy of the omnidirectional beacon. | SOC | X_____ |
| **3.1.2.2** | The omnidirectional beacon must not contain any toxic or radioactive materials. | SOC | X_____ |
| **3.1.3** | **Finish** | | |
| **3.1.3.1** | External components must have a smooth finish and be uniform in colour and appearance. | SD | X_____ |
| **3.1.3.2** | Paint or coatings must be lead free. | SD | X_____ |
| **3.1.3.3** | The lens must maintain IALA colour requirements for no less than 8 years. | SOC | X_____ |
| **3.1.3.4** | Ultraviolet exposure must cause minimal material breakdown of the housing so the unit maintain structural integrity for no less than 8 years. | SD | X_____ |
| **3.1.4.5** | All components of the omnidirectional beacons must be free of cracks, burrs, sharp cutting edges, and other defects and blemishes affecting their life, appearance, and serviceability. | SD | X_____ |
| **3.1.4** | **Protection from birds** | | |
| **3.1.4.1** | The omnidirectional beacons and their components must be shielded and protected from birds. | SOC | X_____ |
| **3.1.4.2** | The omnidirectional beacon must have a means of restricting the ability of birds to roost on it. | SD | X_____ |
| **3.1.5** | **Mounting provisions** | | |
| **3.1.5.1** | The bottom of the omnidirectional beacon base must be parallel to the light's focal plane. | SD | X_____ |
| **3.1.5.2** | The base of the unit shall be capable of being bolted to a plate measuring 300 mm by 400 mm. | SD | X_____ |
| **3.1.5.3** | Any part of the rotating beacon that overhangs the mounting holes shall be no less than 72.5mm above the mounting foot. Refer to Figure 1. | SD | X_____ |
| **3.1.6** | **Identification nameplate** | | |
| **3.1.6.1** | The omnidirectional beacon must have an identification nameplate with the following information:<br>• Name of manufacturer<br>• Model number<br>• Serial number<br>• Date of Manufacture<br>• Rated Voltage/Amperage | SOC | X_____ |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| **3.1.6.2** | The identification nameplate must be indelible. | SOC | X_____ |
| **3.1.6.3** | The identification nameplate must be located on the exterior of the unit. | SOC | X_____ |
| **3.1.7** | **Delivery** | | |
| **3.1.7.1** | Lights are to be delivered to Dartmouth, Nova Scotia. | SOC | X_____ |
| **3.1.7.2** | Lights are to be delivered within 3 months of award. | SOC | X_____ |
| **3.2** | **Electrical Requirements** | | |
| **3.2.1** | **Power and Energy Requirements** | | |
| **3.2.1.1** | The omnidirectional beacon must operate using a nominal voltage of 12 volts, or 24 volts, or 36 volts or 48 volts direct current (DC). | SD | X_____ |
| **3.2.1.2** | The omnidirectional beacon must operate within standard input ranges for the stated voltage. | SOC | X_____ |
| **3.2.2** | **Protection Requirements** | | |
| **3.2.2.1** | The omnidirectional beacon must be provided with reverse polarity protection and not experience damage if the power leads are connected in reverse polarity. | SOC | X_____ |
| **3.2.2.2** | The omnidirectional beacon must be provided with short-circuit protection with automatic reset. | SOC | X_____ |
| **3.2.3** | **Control** | | |
| **3.2.3.1** | The omnidirectional beacon must provide a means of programming the flash characteristics by the CCG. | SOC | X_____ |
| **3.2.3.2** | The omnidirectional beacon must maintain its programmed setting, and will not switch to another setting until programmed to do so for no less than 12 months unpowered (storage conditions). | SOC | X_____ |
| **3.3** | **ENVIRONMENT** | | |
| **3.3.1** | **Temperature** | | |
| **3.3.1.1** | The omnidirectional beacon must be capable of operating when exposed to temperatures ranging from -30 °C to +40 °C. | STD | X_____ |
| **3.3.2** | **Humidity** | | |
| **3.3.2.1** | The omnidirectional beacon must be capable of operating when exposed to relative humidity from 0% to 100% condensing. | STD | X_____ |
| **3.3.3** | **Icing** | | |
| **3.3.3.1** | The omnidirectional beacon must be capable of operating when exposed to ice loading up to 22 kg/m2. | SOC | X_____ |
| **3.3.4** | **Wind Speed** | | |
| **3.3.4.1** | The omnidirectional beacon must be capable of operating when exposed to wind speeds up to 160 km/h. | SOC | X_____ |
| **3.3.5** | **Salt Air and Seawater Spray** | | |
| **3.3.5.1** | The omnidirectional beacon must be capable of operating when under continuous exposure to salt air and seawater spray. | SOC | X_____ |
| **3.3.6** | **Electromagnetic Interference** | | |
| **3.3.6.1** | The omnidirectional beacon must not be susceptible to interference from radiating devices normally found in the marine environment when tested in accordance with IEC 60945. | SOC | X_____ |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| **3.3.7** | **Static Discharge** | | |
| **3.3.7.1** | The omnidirectional beacon must incorporate protection from static discharges and induced transient voltages on power leads that may occur due to nearby lightning strikes. | SOC | X_____ |
| **3.3.8** | **Shock** | | |
| **3.3.8.1** | The rotating beacon must remain operational after a shock event as outlined in MIL-STD-810G Method 516.6 Procedure I – Functional Shock. | SOC | X_____ |
| **3.4** | **Service Life** | | |
| **3.4.1** | Omnidirectional beacons must have a minimum L70 rating of 50 000 hours. | | X_____ |
| **3.4.2** | The expected deterioration over the service life of the omnidirectional beacons must be presented in tabulated or graphed form. | SOC | X_____ |
| **3.5** | **Preventative Maintenance Requirements** | | |
| **3.5.1** | The omnidirectional beacon must be supplied with a priced list of recommended spare parts sufficient for 10,000 hours of operation. Prices quoted must be based on published pricing with any discounts provided with a most favored customer. | SOC | X_____ |
| **3.5.2** | The omnidirectional beacon must be supplied with a recommended preventative maintenance manual in English language. | SOC | X_____ |
| **5** | **Light Specific Technical Requirement** | | |
| **5.1** | **Site A –North Rock, NB** | | |
| **5.1.1** | **Optical Performance** | | |
| **5.1.1.1** | The omnidirectional beacon must produce 9900 candela. | SD+SOC | X_____ |
| **5.1.1.2** | The omnidirectional beacon must be Red in colour. | SD+SOC | X_____ |
| **5.1.1.3** | **Vertical Divergence** | | |
| **5.1.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 1.25° above the horizontal and 1.25° below the horizontal. | SD | X_____ |
| **5.1.1.4** | **Horizontal Divergence** | | |
| **5.1.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.1.1.5** | **Flash characteristic** | SD | X_____ |
| **5.1.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 1 second and Eclipse for 5 seconds. | SOC | X_____ |
| **5.1.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.1.1.6** | **Period of daily operation** | | |
| **5.1.1.6.1** | The omnidirectional beacon is to operate at night time only. | SOC | X_____ |
| **5.1.1.7** | **System power consumption (Watts)** | | |
| **5.1.1.7.1** | The power consumption of the omnidirectional beacon is to be | | ____Watts/hour |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| | provided with the technical submission in Watts per hour of operation. | | X_____ |
| **5.2** | **Site B –Lighthouse Point, NB** | | |
| **5.2.1** | **Optical Performance** | | |
| **5.2.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | X_____ |
| **5.2.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.2.1.3** | **Vertical Divergence** | | |
| **5.2.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.2.1.4** | **Horizontal Divergence** | | |
| **5.2.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.2.1.5** | **Flash characteristic** | SD | |
| **5.2.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 3 seconds. | SOC | X_____ |
| **5.2.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.2.1.6** | **Period of daily operation** | | |
| **5.2.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | X_____ |
| **5.2.1.7** | **System power consumption (Watts)** | | |
| **5.2.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br>X_____ |
| **5.3** | **Site C –Long Point, NB** | | |
| **5.3.1** | **Optical Performance** | | |
| **5.3.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | X_____ |
| **5.3.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.3.1.3** | **Vertical Divergence** | | |
| **5.3.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.3.1.4** | **Horizontal Divergence** | | |
| **5.3.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.3.1.5** | **Flash characteristic** | SD | |
| **5.3.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 6 seconds and Eclipse for 6 seconds. | SOC | X_____ |
| **5.3.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.3.1.6** | **Period of daily operation** | | |
| **5.3.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | X_____ |
| **5.3.1.7** | **System power consumption (Watts)** | | |
| **5.3.1.7.1** | The power consumption of the omnidirectional beacon is to be | | ____Watts/hour |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| | provided with the technical submission in Watts per hour of operation. | | X_____ |
| **5.4** | **Site D –Cape Sharp, NS** | | |
| **5.4.1** | **Optical Performance** | | |
| **5.4.1.1** | The omnidirectional beacon must produce 3000 candela. | SD+SOC | X_____ |
| **5.4.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.4.1.3** | **Vertical Divergence** | | |
| **5.4.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | SD | X_____ |
| **5.4.1.4** | **Horizontal Divergence** | | |
| **5.4.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.4.1.5** | **Flash characteristic** | SD | |
| **5.4.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 7 seconds and Eclipse for 3 seconds. | SOC | X_____ |
| **5.4.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.4.1.6** | **Period of daily operation** | | |
| **5.4.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | X_____ |
| **5.4.1.7** | **System power consumption (Watts)** | | |
| **5.4.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br>X_____ |
| **5.5** | **Site E –Cape St. Mary's, NS** | | |
| **5.5.1** | **Optical Performance** | | |
| **5.5.1.1** | The omnidirectional beacon must produce 26,900 candela. | SD+SOC | X_____ |
| **5.5.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.5.1.3** | **Vertical Divergence** | | |
| **5.5.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.5.1.4** | **Horizontal Divergence** | | |
| **5.5.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.5.1.5** | **Flash characteristic** | SD | |
| **5.5.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 0.5 seconds and Eclipse for 4.5 seconds. | SOC | X_____ |
| **5.5.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.5.1.6** | **Period of daily operation** | | |
| **5.5.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | X_____ |
| **5.5.1.7** | **System power consumption (Watts)** | | |
| **5.5.1.7.1** | The power consumption of the omnidirectional beacon is to be | | ____Watts/hour |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| | provided with the technical submission in Watts per hour of operation. | | X_____ |
| **5.6** | **Site F –Baccaro Point, NS** | | |
| **5.6.1** | **Optical Performance** | | |
| **5.6.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | X_____ |
| **5.6.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.6.1.3** | **Vertical Divergence** | | |
| **5.6.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.6.1.4** | **Horizontal Divergence** | | |
| **5.6.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.6.1.5** | **Flash characteristic** | SD | |
| **5.6.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 5 seconds and Eclipse for 1 second. | SOC | X_____ |
| **5.6.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.6.1.6** | **Period of daily operation** | | |
| **5.6.1.6.1** | The omnidirectional beacon is to operate 24 hours a day. | SOC | X_____ |
| **5.6.1.7** | **System power consumption (Watts)** | | |
| **5.6.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br>X_____ |
| **5.7** | **Site G –East Iron Bound Island, NS** | | |
| **5.7.1** | **Optical Performance** | | |
| **5.7.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | X_____ |
| **5.7.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.7.1.3** | **Vertical Divergence** | | |
| **5.7.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | SD | X_____ |
| **5.7.1.4** | **Horizontal Divergence** | | |
| **5.7.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.7.1.5** | **Flash characteristic** | SD | |
| **5.7.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 3 seconds. | SOC | X_____ |
| **5.7.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.7.1.6** | **Period of daily operation** | | |
| **5.7.1.6.1** | The omnidirectional beacon is to operate at Night only. | SOC | X_____ |
| **5.7.1.7** | **System power consumption (Watts)** | | |
| **5.7.1.7.1** | The power consumption of the omnidirectional beacon is to be | | ____Watts/hour |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| | provided with the technical submission in Watts per hour of operation. | | X_____ |
| **5.8** | **Site H–Cape George (Antigonish), NS** | | |
| **5.8.1** | **Optical Performance** | | |
| **5.8.1.1** | The omnidirectional beacon must produce 16,386 candela. | SD+SOC | X_____ |
| **5.8.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.8.1.3** | **Vertical Divergence** | | |
| **5.8.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | SD | X_____ |
| **5.8.1.4** | **Horizontal Divergence** | | |
| **5.8.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.8.1.5** | **Flash characteristic** | SD | |
| **5.8.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SOC | X_____ |
| **5.8.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.8.1.6** | **Period of daily operation** | | |
| **5.8.1.6.1** | The omnidirectional beacon is to operate at Night only. | SOC | X_____ |
| **5.8.1.7** | **System power consumption (Watts)** | | |
| **5.8.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br>X_____ |
| **5.9** | **Site I – Candlebox Island, NS** | | |
| **5.9.1** | **Optical Performance** | | |
| **5.9.1.1** | The omnidirectional beacon must produce 5700 candela. | | X_____ |
| **5.9.1.2** | The omnidirectional beacon must be Red in colour. | SD+SOC | X_____ |
| **5.9.1.3** | **Vertical Divergence** | SD+SOC | |
| **5.9.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 5° above the horizontal and 5° below the horizontal. | | X_____ |
| **5.9.1.4** | **Horizontal Divergence** | SD | |
| **5.9.1.4.1** | The omnidirectional beacon must have a horizontal divergence of 360°. | | X_____ |
| **5.9.1.5** | **Flash characteristic** | SD | |
| **5.9.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 2 seconds and Eclipse for 4 seconds. | SD | X_____ |
| **5.9.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.9.1.6** | **Period of daily operation** | SOC | |
| **5.9.1.6.1** | The omnidirectional beacon is to operate at Night only. | | X_____ |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| **5.9.1.7** | **System power consumption (Watts)** | SOC | |
| **5.9.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br><br>X_____ |
| | | | |
| **5.10** | **Site J –Spare NB** | | |
| **5.10.1** | **Optical Performance** | | |
| **5.10.1.1** | The omnidirectional beacon must produce 5800 candela. | SD+SOC | X_____ |
| **5.10.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.10.1.3** | **Vertical Divergence** | | |
| **5.10.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.10.1.4** | **Horizontal Divergence** | | |
| **5.10.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.10.1.5** | **Flash characteristic** | SD | |
| **5.10.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SOC | X_____ |
| **5.10.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.9.1.6** | **Period of daily operation** | | |
| **5.9.1.6.1** | The omnidirectional beacon is to operate at Night only. | SOC | X_____ |
| **5.9.1.7** | **System power consumption (Watts)** | | |
| **5.9.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br><br>X_____ |
| | | | |
| **5.11** | **Site K –Spare NS** | | |
| **5.11.1** | **Optical Performance** | | |
| **5.11.1.1** | The omnidirectional beacon must produce 16,386 candela. | SD+SOC | X_____ |
| **5.11.1.2** | The omnidirectional beacon must be White in colour. | SD+SOC | X_____ |
| **5.11.1.3** | **Vertical Divergence** | | |
| **5.11.1.3.1** | The omnidirectional beacon must have a vertical divergence of no less than 2.5° above the horizontal and 2.5° below the horizontal. | SD | X_____ |
| **5.11.1.4** | **Horizontal Divergence** | | |
| **5.11.1.4.1** | The omnidirectional beacon must have a Horizontal divergence of 360°. | SD | X_____ |
| **5.11.1.5** | **Flash characteristic** | SD | |
| **5.11.1.5.1** | The omnidirectional beacon must be programed with a Rhythmic Character of a Flash for 3 seconds and Eclipse for 12 seconds. | SOC | X_____ |
| **5.11.1.5.2** | The omnidirectional beacon must be programmable to any Rhythmic Character as defined by IALA Recommendation E-110 Rhythmic Characters of Lights on Aids to Navigation | SOC | X_____ |
| **5.11.1.6** | **Period of daily operation** | | |
| **5.11.1.6.1** | The omnidirectional beacon is to operate at Night only. | SOC | X_____ |

| Reference | Requirement | Compliance Requirement | Initial to Acknowledge Compliance |
|---|---|---|---|
| **5.11.1.7** | **System power consumption (Watts)** | | |
| **5.11.1.7.1** | The power consumption of the omnidirectional beacon is to be provided with the technical submission in Watts per hour of operation. | | ____Watts/hour<br><br>X_____ |

Canada reserves the right to verify that any and all of the mandatory specifications identified in Appendix A – are met prior to award of contract. Mandatory specifications found to not be met will result in a non-compliant bid, and if found after contract award may result in the termination of the contract. Bidder certifies that all of the above mandatory requirements are met:

Signature of bidder:_____

## BASIS OF PAYMENT

| Art. | Description | Qty. | Unit | | Firm Unit Price | Total Fi |
|---|---|---|---|---|---|---|
| 1 | **Site A**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 2 | **Site B**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 3 | **Site C**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 4 | **Site D**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 5 | **Site E**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 6 | **Site F**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | 1 | Each | | $ | $ |
| 7 | **Site G** | 1 | Each | | $ | $ |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | | | | | |
| **8** | **Site H**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | | **$** | **$** |
| **9** | **Site I**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | | **$** | **$** |
| **10** | **Site J**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | | **$** | **$** |
| **11** | **Site K**<br>**In accordance with TECHNICAL REQUIREMENT – OMNIDIRECTIONAL BEACONS**<br><br>**Indicate the equipment Brand and Model :**<br><br>**Brand :**_____<br>**Model :**_____ | **1** | **Each** | | **$** | **$** |
| **12** | **Shipping** | | | | | **$** |
| | **TOTAL BID PRICE (TBP) =** | | | | | **$** |
| | **Note : Prices excluding applicable sales taxes.** | | | | | |