



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Travaux publics et Services gouvernementaux
Canada

Voir dans le document/
See herein

NA

Québec

NA

**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 Ice lantern design Purchase the services to design an ice lantern	
Solicitation No. - N° de l'invitation F7047-200102/A	Date 2021-03-26
Client Reference No. - N° de référence du client F7047-200102	
GETS Reference No. - N° de référence de SEAG PW-\$MTB-309-16120	
File No. - N° de dossier MTB-0-43240 (309)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Daylight Saving Time EDT on - le 2021-04-26 Heure Avancée de l'Est HAE	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Paradis, Mary	Buyer Id - Id de l'acheteur mtb309
Telephone No. - N° de téléphone (514) 702-8173 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Canadian Coast Guard Att. Pierre-Luc Delage 101 Boulevard Champlain Quebec Quebec G1K7Y7 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Travaux publics et Services gouvernementaux Canada
Place Bonaventure, portail Sud-Oue
800, rue de La Gauchetière Ouest
7e étage, suite 7300
Montréal
Québec
H5A 1L6

Delivery Required - Livraison exigée Voir Doc.	Delivery Offered - Livraison proposée
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

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include:

- Annex A - Statement of Work
- Annex B - Basis of Payment
- Annex C- Attachment to Part 3 of THE BID SOLICITATION - Electronic Payment Instruments
- Annex D -Task Authorization Form
- Annex E - Mandatory technical evaluation
- Annex F - Point rated Mandatory technical evaluation
- Annex G- Certifications

1.2 Summary

Title of the project:

Ice Lantern Design

Description:

The purchase of the lanterns will be used on a system of several aids to navigation systems. The lanterns must offer different levels of service, including minimum visual range, specific colors, specific flashing characteristics. The specific objectives of this mandate are; to create a new lantern design for the client based on the tasks and technical requirements provided by the client and also to ensure that the lanterns meet the requirement or more specifically the level of service required namely: a light range of at least 4nm (effective luminous intensity of 37 candelas), meet the colorimetry standards established by the *International Association of Marine Aids to Navigation and Lighthouse Authorities (Reference 1.6.5)* and produce common signals (flashes) as listed in the client's List of Lights. All details are specified at Annex A – Statement of work.

This requirement is for the Canadian Coast Guard in Québec, P. Quebec.

Period of Contract

The proposed period of the contract will be for three (3) firm years and will grant Canada the right to extend its use for 2 supplementary periods of one year each, under the same conditions.

Intellectual property

The intellectual property rights arising from the performance of the work under the resulting contract will vest with the contractor.

Maximum funding

The maximum funding available for the Contract resulting from the bid solicitation is **\$750,000.00 (Applicable Taxes extra)**. Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

Security requirements

There is no security requirements associated with this requirement.

Trade agreements

This requirement is subject to the Canadian Free Trade Agreement (CFTA)

Canadian Content Policy

The requirement is limited to Canadian services.

IMPORTANT NOTICE TO SUPPLIERS RE. BID SUBMISSION REQUIREMENTS

Due to the impacts from the COVID-19 pandemic, temporary measures are being taken on-site at the Québec Region Bid Receiving Unit to encourage social distancing. The health and safety of staff and suppliers remains our top priority.

Suppliers are required to submit bids electronically using the Canada Post epost Connect application for the subject bid solicitation. This service allows suppliers to submit bids, offers and arrangements electronically to PWGSC Bid Receiving Units. This online service enables the electronic transfer of large files up to Protected B level.

Faxed and hard copy (submitted in person or via mail/courier) bids will not be accepted for the subject bid solicitation.

Given current circumstances and network limitations, some active procurements may be delayed. To stay up to date on the status of specific procurements, please consult [Buyandsell.gc.ca](https://buyandsell.gc.ca).

1.3 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.

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) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

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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](#) (2019-03-04) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days
Insert: 120 days

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:

PWGSC Québec Region Bid Receiving Unit

Only bids submitted using epost Connect service will be accepted. The Bidder must send an email requesting to open an epost Connect conversation to the following address: TPSGC.RQReceptionSoumissions-QRSupplyTendersReception.PWGSC@tpsgc-pwgsc.gc.ca

Note: **Bids will not be accepted if emailed directly to this email address.** This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions [2003](#), or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect. It is the Bidder's responsibility to ensure the request for opening an epost Connect conversation is sent to the email address above at least six days before the solicitation closing date. Bids transmitted by facsimile or hardcopy to PWGSC will not be accepted.

2.3 Former Public Servant

Former Public Servant - Competitive Bid

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPSs, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the [Financial Administration Act](#), R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c. C-17, the [Defence Services Pension Continuation Act](#), 1970, c. D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c. R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c. R-11, the [Members of Parliament Retiring Allowances Act](#), R.S. 1985, c. M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c. C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension?

Yes () No ()

If so, the Bidder must provide the following information, for all FPSs in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2019-01](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? Yes () No ()

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

2.4 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than **ten (10) 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.

2.5 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ (*insert the name of the province or territory, if applicable*).

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.

2.6 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favor a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least **ten (10) days** before the bid closing date. Canada will have the right to accept or reject any or all suggestions

2.7 Maximum funding

The maximum funding available for the Contract resulting from the bid solicitation is **\$750,000.00** (Applicable Taxes extra). Bids valued in excess of this amount **will be considered non-responsive**. This disclosure does not commit Canada to pay the maximum funding available.

2.8 Intellectual Property

The intellectual property rights arising from the performance of the work under the resulting contract will vest with the Contractor.

2.9 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:

-
- Office of the Procurement Ombudsman (OPO)
 - Canadian International Trade Tribunal (CITT)

(c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

The Bidder must submit its bid electronically, in accordance with section 08 of the 2003 standard instructions. The epost Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid
Section II: Financial Bid
Section III: Certifications

Bids transmitted by facsimile will not be accepted.

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

Section I: Technical and Managerial Bid

In their technical and managerial bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical and managerial bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

To maintain the integrity of the evaluation, evaluators will consider only information presented in the bid. No information will be inferred and personal knowledge or beliefs will not be utilized in the assessment.

Please note: Website references, relevant technical papers, product samples, videotapes, slides, or other ancillary items will not be considered during the evaluation process.

The Part 4: Evaluation Procedures and Basis of Selection, contains additional instructions that Bidders should consider when preparing their technical and managerial bid.

The Annex E: Mandatory technical criteria contains additional instructions that Bidders have to follow while preparing their technical and managerial bid.

Section II: Financial Bid

3.1.1 Bidders must submit their financial bid as follows:

- (a) A firm, hourly rate price for the Work, in the Basis of payment – Annex B, **not exceeding the maximum funding available for the contract** resulting from the bid solicitation, as specified at the Part 2- section 2.7 Maximum funding. The total amount of applicable taxes should be shown separately, if applicable;
- (b) The prices should be in Canadian funds, Applicable Taxes excluded and Canadian customs duties and excise taxes included.

3.1.2 Electronic Payment of Invoices – Bid

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex “C” Electronic Payment Instruments, to identify which ones are accepted.

If Annex “C” 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.

3.1.3 Exchange Rate Fluctuation

SACC Manual Clauses **C3011T** 2013-11-06, Exchange Rate Fluctuation

3.1.4 Price breakdown

Bidders are requested to detail the following elements for expenses in the performance of each task, milestone or phase of the Work, as applicable:

- (a) Labour: For each individual and (or) labour category to be assigned to the Work, indicate: i) the hourly rate and ii) the estimated number of hours.
- (b) Equipment: Specify each item required to complete the Work and provide the pricing basis of each one, Canadian customs duty and excise taxes included, as applicable.
- (c) Materials and supplies: Identify each category of materials and supplies required to complete the work and provide the pricing basis
- (d) Travel and Living expenses: Canada will not accept any charges for travel and living expenses for the execution of the work for this file.
- (e) Subcontracts: Identify any proposed subcontractor and provide for each one the same price breakdown information as contained in this article.
- (f) Other Direct Charges: Identify any other direct charges anticipated, such as long distance communications and rentals, and provide the pricing basis.
- (g) Applicable Taxes: Identify any Applicable Taxes separately.

Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

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, management and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical and Management Evaluation

4.1.1.1 Mandatory Technical Criteria

The mandatory evaluation criteria are described at Annex E: Mandatory technical criteria.

Bids which fail to meet the mandatory evaluation criteria will be declared non-responsive.

4.1.1.2 Point Rated Technical and Management Criteria

Point Rated Technical Evaluation Criteria are described at Annex F: *Point rated mandatory technical criteria* if not addressed will be given a score of zero.

4.1.2 Financial Evaluation

4.1.2.1 Mandatory Financial Criteria

The Bidder must submit a firm hourly rate /price for the Work, which must not exceed the maximum funding available for the contract resulting from the bid solicitation (Applicable Taxes extra, as appropriate). This disclosure does not commit Canada to pay the maximum funding available.

SACC Manual Clause [A0220T](#) 2014-06-26, Evaluation of Price-Bid

4.2 Basis of Selection

4.2.1 Basis of Selection - Highest Combined Rating of Technical Merit and Price

For this clause, the mention 'Technical merit' refers to the points obtained for the technical evaluation.

1. To be declared responsive, a bid must:
 - a. comply with all the requirements of the bid solicitation; and
 - b. meet all mandatory criteria; and
 - c. obtain the required minimum points specified for each rated criteria for the technical evaluation, and

d. obtain the required minimum of 20 points overall for the technical evaluation criteria which are subject to point rating.

The rating is performed on a scale of 80 criteria points.

2. Bids not meeting (choose "(a) or (b) or (c)" OR "(a) or (b) or (c) and (d) will be declared non-responsive.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 60 % for the technical merit and 40% for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available multiplied by the ratio of 60 %.
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 40 %.
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating, and rounded off at 2 decimals.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

The table below illustrates an example where all three bids are responsive and the selection of the contractor is determined by a 60/40 ratio of technical merit and price, respectively. The total available points equals 135 and the lowest evaluated price is \$45,000 (45).

Basis of Selection - Highest Combined Rating Technical Merit (60%) and Price (40%)			
	Bidder 1	Bidder 2	Bidder 3
Overall Technical Score	115/135	89/135	92/135
Bid Evaluated Price	\$55,000.00	\$50,000.00	\$45,000.00
Calculations			
Technical Merit Score	115/135 x 60 = 51.11	89/135 x 60 = 39.56	92/135 x 60 = 40.89
Pricing Score	45/55 x 40 = 32.73	45/50 x 40 = 36.00	45/45 x 40 = 40.00
Combined Rating	83.84	75.56	80.89
Overall Rating	1st	3rd	2nd

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 Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) 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 specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<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 \(ESDC\)](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) - [Labour's](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

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.

5.2.3 Additional Certifications Precedent to Contract Award

5.2.3.1 Canadian Content Certification

This procurement is limited to Canadian services.

The Bidder certifies that:

() the service offered is a Canadian service as defined in paragraph 2 of clause A3050T.

5.2.3.1.1 *SACC Manual* clause [A3050T](#) 2018-12-06, Canadian Content Definition

5.2.3.2 Status and Availability of Resources

SACC Manual clause [A3005T](#) 2010-08-16 Status and Availability of Resources

5.2.3.3 Language Capability

The Bidder certifies that:

() All proposed consultants must be able to communicate (spoken and written) in English.

5.2.3.4 Annex G - Certifications

The information that figures at Annex G – Certifications, must be duly completed at the date and hour of the closing of the tender or before the award of the contract.

Note 1:

In order to be considered, if these documents were not provided at bid closing , Public services and procurement Canada (PSPC) will notify the bidder , that they must provide the documents within a delay of **two (2) business days** following the written notification from PSPC's contracting officer. .

(Note: This time requirement reflects PSPC's expectation that these documents ought to be readily available to a bidder)

The offers that fail to meet all these conditions will be rejected and will be given no further consideration.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirements

There is no security requirements associated with this requirement.

6.2 Financial Capability

SACC Manual clause [A9033T](#) 2012-07-16 Financial Capability

6.3 Insurance Requirements

SACC Manual clause [G1005C](#) 2016-01-28 Insurance - No Specific Requirement

PART 7 - RESULTING CONTRACT CLAUSES

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

7.1 Statement of Work – Contract

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A" and the technical and management portions of the Contractor's bid entitled _____, dated _____. (*Will be inserted at the contract award*).

The obligation of all the work will take effect only when a Task Authorization (TA) has been approved and delivered in accordance with the clause entitled 'Task Authorization Process'.

7.1.1 Task Authorization

The Work or a portion of the Work to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

7.1.1.1 Task Authorization Process

The Work or a portion of the Work to be performed under the Contract (Refer to Annex A – Statement of Work) will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract

1. The Technical Authority will provide the Contractor with a description of the task using the "Task Authorization" form specified in Annex D.
2. The Task Authorization (TA) will contain the details of the activities to be performed, a description of the deliverables, and a schedule indicating completion dates for the major activities or submission dates for the deliverables. The TA will also include the applicable basis (bases) and methods of payment as specified in the Contract.
3. The Contractor must provide the Technical Authority, within five (5) calendar days of its receipt, the proposed total estimated cost for performing the task and a breakdown of that cost, established in accordance with the Basis of Payment specified in the Contract.
4. The Contractor must not commence work until a TA authorized by the Technical Authority has been received by the Contractor. The Contractor acknowledges that any work performed before a TA has been received will be done at the Contractor's own risk.

7.1.1.2 Task Authorization Limit

The Technical Authority may authorize individual task authorizations up to a limit of **\$ 30 000.00**, Applicable Taxes included, inclusive of any revisions.

Any task authorization to be issued in excess of that limit must be authorized by the Technical Authority before issuance.

7.1.1.3 Minimum Work Guarantee - All the Work - Task Authorizations

1. In this clause,

"Maximum Contract Value" means the amount specified in the "Limitation of Expenditure" clause set out in the Contract; and

"Minimum Contract Value" means 10%

2. Canada's obligation under the Contract is to request Work in the amount of the Minimum Contract Value or, at Canada's option, to pay the Contractor at the end of the Contract in accordance with paragraph 3. In consideration of such obligation, the Contractor agrees to stand in readiness throughout the Contract period to perform the Work described in the Contract. Canada's maximum liability for work performed under the Contract must not exceed the Maximum Contract Value, unless an increase is authorized in writing by the Contracting Authority.
3. In the event that Canada does not request work in the amount of the Minimum Contract Value during the period of the Contract, Canada must pay the Contractor the difference between the Minimum Contract Value and the total cost of the Work requested.
4. Canada will have no obligation to the Contractor under this clause if Canada terminates the Contract in whole or in part for default.

7.1.1.4 Periodic Usage Reports - Contracts with Task Authorizations

The Contractor must compile and maintain records on its provision of services to the federal government under authorized Task Authorizations issued under the Contract.

The Contractor must provide this data in accordance with the reporting requirements detailed below. If some data is not available, the reason must be indicated. If services are not provided during a given period, the Contractor must still provide a "nil" report.

The data must be submitted on a quarterly basis to the Contracting Authority.

The quarterly periods are defined as follows:

- 1st quarter: April 1 to June 30;
- 2nd quarter: July 1 to September 30;
- 3rd quarter: October 1 to December 31; and
- 4th quarter: January 1 to March 31.

The data must be submitted to the Contracting Authority no later than 15 calendar days after the end of the reporting period.

Reporting Requirement- Details

A detailed and current record of all authorized tasks must be kept for each contract with a task authorization process. This record must contain:

For each authorized task:

- i. the authorized task number or task revision number(s);
- ii. a title or a brief description of each authorized task;
- iii. the total estimated cost specified in the authorized Task Authorization (TA) of each task, exclusive of Applicable Taxes;
- iv. the total amount, exclusive of Applicable Taxes, expended to date against each authorized task;

- v. the start and completion date for each authorized task; and
- vi. the active status of each authorized task, as applicable.

For all authorized tasks:

- i. the amount (exclusive of Applicable Taxes) specified in the contract (as last amended, as applicable) as Canada's total liability to the contractor for all authorized TAs; and
- ii. the total amount, exclusive of Applicable Taxes, expended to date against all authorized TAs.

7.2 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) (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

7.2.1 General Conditions

[2040](#) 2020-05-28, General Conditions - Research & Development, apply to and form part of the Contract.

7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Period of the Contract

The period of the Contract is from the date of award until 3 years firm. (*The exact dates will be disclosed at the award of the contract*).

7.4.2 Option to Extend the Contract

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to **two (2) additional one (1) year periods** under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor at least **60 calendar days** before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

7.4.3 Delivery Points

Delivery of the requirement will be made to delivery point specified at Annex "A" of the Contract.

7.5 Authorities

7.5.1 Contracting Authority

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F7047-200102/A
Client Ref. No. - N° de réf. du client
F7047-200102

Amd. No. - N° de la modif.
File No. - N° du dossier
MTB-0-43240

Buyer ID - Id de l'acheteur
MTB309
CCC No./N° CCC - FMS No./N° VME

The Contracting Authority for the Contract is:

Name: MARY PARADIS
Title: SUPPLY SPECIALIST
Public Works and Government Services Canada
Acquisitions Branch
Directorate: Quebec Region
Telephone: 514-702-8173
E-mail address: mary.paradis@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.

7.5.2 Project Authority

The Project Authority for the Contract is: *(Will be inserted at the award of contract)*

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

Telephone: ____-____-_____
Facsimile: ____-____-_____
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 administrative, programmatic and technical content of the Work under the Contract. These 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.

7.5.3 Technical Authority *(Will be inserted at the award of the contract)*

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

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

7.5.3 Contractor's Representative

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

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MTB309
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Telephone: _____
Facsimile: _____
E-mail address: _____

7.6 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2019-01](#) of the Treasury Board Secretariat of Canada

7.7 Payment

7.7.1 Basis of Payment

One of the following Basis of payment will be part of the approved task authorization (TA). The price of the task will be established according to the Basis of Payment in Annex B.

(i) **For the Work provided under a Task Authorization subject to a Firm Price:**

In consideration of the Contractor satisfactorily completing all of its obligations under the authorized Task Authorization (TA), the Contractor will be paid a firm price in accordance with the basis of payment, in Annex B, as specified in the authorized TA. 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 authorized, in writing, by the Contracting Authority before their incorporation into the Work.

(ii) **For the Work provided under a Task Authorization subject to a Ceiling Price:**

The Contractor will be reimbursed its costs reasonably and properly incurred in the performance of the Work, plus a profit, as determined in accordance with the Basis of Payment in Annex B, to the ceiling price specified in the approved TA. Customs duties are included and Applicable Taxes are extra.

The ceiling price is subject to downward adjustment so as not to exceed the actual costs reasonably incurred in the performance of the Work and computed in accordance with the Basis of Payment.

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.

Ceiling price: *A ceiling price is the maximum amount of money that may be paid to a contractor. By establishing a ceiling price, the contractor must fulfill all of its contractual obligations relative to the work to which this basis of payment applies without additional payment whether or not the actual costs incurred exceed the ceiling price.*

(iii) **For the Work provided under a Task Authorization subject to a Limitation of Expenditure:**

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work specified in the authorized Task Authorization (TA), as determined in accordance with the Basis of Payment in Annex B, to the limitation of expenditure specified in the authorized TA.

Canada's liability to the Contractor under the authorized TA must not exceed the limitation of expenditure specified in the authorized TA. Customs duties are included and Applicable Taxes are extra.

No increase in the liability of Canada or in the price of the Work specified in the authorized TA resulting from any design changes, modifications or interpretations of the Work will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been authorized, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's liability to the Contractor under the authorized TA being exceeded before obtaining the written approval of the Contracting Authority.

(iv) Travel and Living Expenses:

There will be no travel time or travel and living expenses payable for services rendered for this file.

7.7.2 Limitation of Expenditure -Cumulative Total of all Task Authorizations

1. Canada's total liability to the Contractor under the Contract must not exceed \$ _____. *(This amount will be inserted at the award of the contract).* Customs duties are excluded and Applicable Taxes are extra.
2. No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
 - a. when it is 75% committed, or
 - b. four months before the contract expiry date, or
 - c. as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,

whichever comes first.

3. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

7.7.3 Methods of payment

Payments will be done no more than once a month.

Depending on the method of payment specified in the Task Authorizations (TA), one of the following method of payment clauses will apply.

7.7.3.1 Single Payment (For a Firm Price TA, for a TA subject to a Limitation of Expenditure or a Ceiling Price)

Canada will pay the Contractor upon completion and delivery of the Work associated with the Task Authorization in accordance with the payment provisions of the Contract if:

- (a) an accurate and complete claim for payment using PWGSC-TPSGC 1111, Claim for Progress Payment, and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- (b) all such documents have been verified by Canada;
- (c) the Work delivered has been accepted by Canada.

7.7.3.2 Milestone Payments (For a Firm Price TA)

For any task authorization issued under the Contract that includes a schedule of milestone payments to be made once specific portions of the work have been completed and accepted, Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Task Authorization and the payment provisions of the Contract if:

- (a) an accurate and complete claim for milestone payment using PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- (b) all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
- (c) all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

7.7.3.3 Progress Payments (For a TA subject to a Limitation of Expenditure or a Ceiling Price)

- (a) Canada will make progress payments in accordance with the payment provisions of the Task Authorization and the Contract, no more than once a month, for costs incurred in the performance of the Work up to 90 percent of the amount claimed and approved by Canada if:
 - (i) an accurate and complete claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - (ii) the amount claimed is in accordance with the Basis of Payment and the Task Authorization;
 - (iii) the total amount for all progress payments paid by Canada does not exceed 90 percent of the total amount to be paid under the Task Authorization.
 - (iv) all certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives.
- (b) The balance of the amount payable will be paid in accordance with the payment provisions of the Task Authorization and the Contract upon completion and delivery of all

work required under the Task Authorization if the Work has been accepted by Canada and a final claim for the payment is submitted.

- (c) Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the right to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

7.7.4 SACC Manual Clauses

A9117C 2007-11-30 T1204 - Direct Request by Customer Department

7.7.5 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)

7.7.6 Discretionary Audit

SACC Manual clause **C0101C** 2010-01-11 Discretionary Audit - Non-commercial Goods and/or Services

7.7.7 Time Verification

SACC Manual clause **C0711C** 2008-05-12 Time Verification

7.8 Invoicing Instructions

- 1) The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111. Form PWGSC-TPSGC 1111 is available at the following Website <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
 - (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
 - (c) the Task Authorization (TA) number;
 - (d) the description of the milestone invoiced, as applicable.
- 2) For TAs subject to a Limitation of Expenditure or a Ceiling Price, each invoice must be supported by:

-
- (a) a list of all expenses, in accordance with the TA;
 - (b) a copy of time sheets to support the time claimed;
 - (c) a copy of the invoices, receipts, vouchers for all direct expenses, travel and living expenses;
 - (d) a copy of the monthly progress report.
- 3) Applicable Taxes must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
- 4) The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Contracting Authority for certification.

Que Reclamation - Que Claim <QueReclamation.QueClaim@tpsgc-pwgsc.gc.ca>

The Contracting Authority will then forward the original and two (2) copies of the claim to the Technical Authority for appropriate certification after inspection and acceptance of the Work takes place, and onward submission to the Payment Office for the remaining certification and payment.

- 5) The Contractor must not submit claims until all work identified in the claim is completed.

7.9 Certifications and Additional Information

7.9.1 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.

7.9.2 SACC Manual Clauses

SACC Manual clause [A3060C](#) 2008-05-12 Canadian Content Certification

7.10 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ (*the name of the province or territory as specified by the Bidder in its bid, if applicable will be inserted at the contract award*).

7.11 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 Agreement;
- (b) the general conditions -2040 (2020-05-28) General Conditions - Research and Development;
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;
- (e) Annex C, attachment to Part 3 of THE BID SOLICITATION -Electronic Payment Instruments

-
- (f) Annex D, Task Authorization Form;
(g) the signed Task Authorizations (including all of its annexes, if any);
(h) the Contractor's bid dated _____, as clarified on _____ **or** as amended on _____

7.12 Foreign Nationals (Canadian Contractor **OR** Foreign Contractor)

SACC Manual clause [A2000C](#) 2006-06-16 Foreign Nationals (Canadian Contractor)

7.13 Insurance

SACC Manual clause [G1005C](#) 2016-01-28 Insurance - No Specific Requirement

7.14 Progress Reports

1. The Contractor must submit monthly reports, in electronic format, on the progress of the Work, to both the Technical Authority and the Contracting Authority.
2. The progress report must contain three parts:
 - (a) PART 1: The Contractor must answer the following three questions:
 - (i) Is the project on schedule?
 - (ii) Is the project within budget?
 - (iii) Is the project free of any areas of concern in which the assistance or guidance of Canada may be required?Each negative response must be supported with an explanation.
 - (b) PART 2: A narrative report, brief, yet sufficiently detailed to enable the Technical Authority to evaluate the progress of the Work, containing as a minimum:
 - (i) A description of the progress of each task and of the Work as a whole during the period of the report. Sufficient sketches, diagrams, photographs, etc., must be included, if necessary, to describe the progress accomplished.
 - (ii) An explanation of any variation from the work plan.
 - (iii) A description of trips or conferences connected with the Contract during the period of the report.
 - (iv) A description of any major equipment purchased or constructed during the period of the report.
 - (c) PART 3: The "Contract Plan and Report Form", PWGSC-TPSGC 9143 (<http://publiservice-app.tpsgc-pwgsc.gc.ca/forms/pdf/9143.pdf>), (or an equivalent form acceptable to the Contracting Authority) showing the following:
 - (i) Actual and forecast expenditure on a monthly basis for the period being covered. (Expenditures are to be outlined by month and by task.)

- (ii) Progress of the Work against the Contract or Task Authorizations issued (ref.: Contractor's original Contract Plan). The form will provide the basis for planning and estimating the cost of work, and reporting actual progress and cost against the Contract or Task Authorizations during contract performance.

7.15 Dispute Resolution

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.
- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".

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ANNEX "A "

STATEMENT OF WORK

The Statement of work will be at the end of this document.

Section 5 - Concept 1 - Smart Ice Lantern (Drawing)

Drawing will be at the end of this document.

ANNEX "B"

BASIS OF PAYMENT

Bidders must submit their financial bid as follows:

- 1) The annual level of effort estimate specified is only an approximation of the requirements given in good faith and is provided for the financial evaluation of bids only. This is not a commitment from Canada.
- 2) The tenderer must indicate a firm hourly rate per category of labor for each year of the contract. For comparison purposes, a fictitious total of one hundred (100) hours per year should be considered for the breakdown of the number of hours worked by each category of labor. The total number to be estimated is therefore three hundred (300) hours for the firm period and two hundred (200) hours for the optional periods. The total of five hundred (500) hours does not include the time allocated for the translation of documents.

The amount of Applicable Taxes must be shown separately.

If the resource works as a subcontractor, the bidder should indicate the name of the subcontractor.

- 3) The distribution of hours worked by each type of workforce must comply with the following rules.

At the level of **the main project team** the rules are as follows:

- The Project Manager must work at least 5% of the total number of hours (100) considered each year, i.e. 5 hours
- The Project Engineer must work at least 10% of the total number of hours (100) considered each year, i.e. 10 hours
- The Principal Investigator must work at least 10% of the total number of hours (100) considered each year, i.e. 10 hours
- The Principal Technologist must work at least 15% of the total number of hours (100) considered each year, i.e. 15 hours
- The main project team **must therefore at least** participate in 40% of the total hours that will be allocated to the project

At the level of **the six (6) optional employees**, the rules are as follows:

- **Each** optional employee must work at least 5% of the total number of hours (100) considered each year, or 5 hours.
- A supporting document and proof of competence must be provided when selecting an optional person
- The optional members must therefore **participate to a maximum** of 60% of the total hours that will be allocated to the project.

The cumulative total for the main project team for each resource category will be calculated as follows:

Cumulative total for the Project Manager category
+
Cumulative total for the Project Engineer category
+
Cumulative total for the Principal Investigator category
+

Cumulative total for the Principal Technologist category
 +
 Cumulative total for the optional employee category (1 to 6)
 =
 Total bid price for evaluation

4) Total bid price for evaluation purposes = Cumulative total of all categories of work. The total for each category of work will be calculated as follows:

- Work during the 3 firm years: $e1 = a1 \times (b1 + c1 + d1)$
- Translation during the 3 firm years: $e2 = a2 \times (b2 + c2 + d2)$
- Work during the 2 optional years: $d3 = a3 \times (b3 + c3)$
- Translation during the 2 optional years: $d4 = a4 \times (b4 + c4)$

5) **Important note to bidders:** The rates presented above for a given resource category must not increase by more than 5% from one period to the next. If the increase is greater than 5%, the bid will be considered non-responsive.

LABOUR: at the following firm hourly rates/prices, overhead and profit excluded.

FIRM PERIOD: Three (3) year from the signing date of the contract.

Resource category	Estimated annual level of effort (hours) (a1)	Firm hourly rate From signing the contract to December 31, 2021 (b1)	Firm hourly rate January 1, 2022 to December 31, 2022 (c1)	Firm hourly rate January 1, 2023 to December 31, 2023 (d1)	Cumulative total by resource category (e1) = a1 x (b1 + c1 + d1)
Project Manager	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Project Engineer	_____ h ²	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Principal Investigator	_____ h ²	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Principal Technologist	_____ h ³	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #1: Senior engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #2: Intermediate Engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$

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Optional employee #3: Junior Engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #4: Technician	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #5: Technologist	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #6: Production engineering specialist	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$ / h	_____ \$
Total	100 hours				

Estimated price (e1): _____ \$

- ¹ The Project Manager or Optional Employee must work at least 5% of the total number of hours per year, or **5 hours**.
- ² The Project Engineer and the Principal Investigator must work at least 10% of the total number of hours per year, or **10 hours**.
- ³ The Principal Technologist must work at least 15% of the total number of hours per year, ie **15 hours**.

Documents Traduction	Estimated annual level of effort (a2)	Firm price From signing the contract to December 31, 2021 (b2)	Firm price January 1, 2022 to December 31, 2022 (c2)	Firm price January 1, 2023 to December 31, 2023 (d2)	Cumulative total for traduction (e2) = a2 x (b2 + c2 + d2)
	3000 words	_____ \$ / word	_____ \$ / word	_____ \$ / word	_____ \$

Estimated price (e2): _____ \$

OPTIONAL PERIODS - Two (2) years

Resource category	Estimated annual level of effort (hours) (a3)	Firm hourly rate January 1, 2024 to December 31, 2024 (b3)	Firm hourly rate January 1, 2024 to December 31, 2024 (b3)	Cumulative total for traduction (d3) = a3 x (b3 + c3)
Project Manager	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Project Engineer	_____ h ²	_____ \$ / h	_____ \$ / h	_____ \$
Principal Investigator	_____ h ²	_____ \$ / h	_____ \$ / h	_____ \$
Principal Technologist	_____ h ³	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #1: Senior engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #2: Intermediate Engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #3: Junior Engineer / Investigator	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #4: Technician	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #5: Technologist	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Optional employee #6: Production engineering specialist	_____ h ¹	_____ \$ / h	_____ \$ / h	_____ \$
Total	100 hours			

Estimated price (d3): _____ \$

- ¹ The Project Manager or Optional Employee must work at least 5% of the total number of hours per year, or **5 hours**.
- ² The Project Engineer and the Principal Investigator must work at least 10% of the total number of hours per year, or **10 hours**.
- ³ The Principal Technologist must work at least 15% of the total number of hours per year, ie **15 hours**.

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Documents Traduction	Estimated annual level of effort (a4)	Firm price January 1, 2024 to December 31, 2024 (b4)	Firm price January 1, 2024 to December 31, 2024 (b4)	Total cumulatif pour travaux de traduction (d4) = a4 x (b4 + c4)
	3000 words	_____ \$ / word	_____ \$ / word	_____ \$

Estimated price (d4): _____ \$

Estimated price (e1 + e2 + d3 +d4): _____ \$

2. **EQUIPMENT:** at cost price * effective without mark-up Est.: _____ \$

3. **RENTALS:** at actual cost without mark-up Est.: _____ \$

4. **MATERIALS AND SUPPLIES:** at cost price * effective without mark-up
 Est.: _____ \$

* **Cost price means:** Expenses incurred by a supplier to obtain a given product or service for resale to the government. This includes the price charged by the supplier (less any discounts), applicable freight charges, currency exchange difference, customs duties and brokerage but excludes Goods and Services Tax and Harmonized Sales Tax.

5. **TRAVEL AND LIVING COSTS:** Not applicable for this contract:
 Est.: _____ N/A _____ \$

6. **SUBCONTRACTING CONTRACTS:** at actual cost without mark-up Est.: _____ \$
 (Identify sub-contractors, if applicable.)

7. **OTHER DIRECT COSTS:** at actual cost without mark-up Est.: _____ \$
 (Specify categories of direct costs.)

Estimated total expenditure limitation: _____ \$

(Applicable taxes extra)

With the exception of firm rates and prices, amounts displayed in the items listed above are estimates only. Minor changes to these estimates will be accepted for billing purposes while the work continues, provided such changes have had the prior approval of the Project Authority, and provided the estimated cost does not exceed the aforementioned Limitation of Expenditure.

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ANNEX "C"

Attachment to PART 3 OF THE BID SOLICITATION - Electronic Payment Instruments

ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts to be paid by 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)

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ANNEX "D"

TASK AUTHORIZATION FORM PWGSC

Contract No: 9F045-190490/001/MTB	Task Authorization No:
Period covered:	Task Authorisation Revision No:
Title:	

PART 1: Request: To be completed by the Project authority:

You are requested to consider the following task or revised task and to submit, without delay, your proposal for the performance of this Work, in accordance with the provisions of the Task Authorisation clause of the above referenced Contract.

Description of the Work as follows: see attached:

Labour as follows: see attached:

Delivery and required delivery dates: as follows: see attached:

For the Project authority:

Name Signature Date

PART 2: Cost Breakdown- Proposal to be completed by Contractor:

(a) LABOUR:

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Name	Category	Estimated Hours	Firm Hourly rate	Estimated Amount
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Total Estimated Labour Cost:				\$ _____

(b) SUBCONTRACTING

Approval date:

Specify:

Total Estimated Cost: \$ _____

(c) OTHER DIRECT EXPENSES

Approval date:

Specify:

Total Estimated Cost: \$ _____

(d) OVERHEAD

Approval date:

Specify:

Total Estimated Cost: \$ _____

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(e) PROFIT		
Approval date: _____		
Specify: _____ _____ _____		
Total Estimated Cost: \$ _____		
TOTAL ESTIMATED COST: Applicable taxes excluded: \$ _____		
For the Contractor:		
_____ Name of person authorized to sign On behalf of Contractor	_____ Signature	_____ Date
PART 3: Authorization to start the work:		
For the Project authority:		
_____ Name	_____ Signature	_____ Date
For the Contracting Authority		
_____ Name	_____ Signature	_____ Date

ANNEX "E"

MANDATORY TECHNICAL CRITERIA

The information that figures in the tables below must be duly completed and submitted at the closing date and hour of the solicitation document.

All the criteria identified below are MANDATORY. Each criteria must be met and documentation provided in order to demonstrate the degree to which it is met.

Please identify where the substantial document is located in your proposition.

Canada will not evaluate information such as references to a website address where supplementary information can be found.

Only those proposals that meet all the mandatory technical criteria in the table below will be subject to further evaluation.

The offers that fail to meet all these conditions will be rejected.

MANDATORY EVALUATION CRITERIA	DESCRIPTION	CONFORMANCE METHOD
1	<p>The Contractor must provide a Main Project Team that has the knowledge and required experience to perform the work described in Table 1 of the Statement of Work (section 2 – Task List). This team must include at least the following four (4) people. Note that these four people must be employees of the Contractor:</p> <ul style="list-style-type: none"> • Project manager • Project engineer • Principal investigator • Principal Technologist <p>In order to support the Main Project Team, whether at the research, technical or management level, the Contractor also has the option of employing the following job categories:</p> <ul style="list-style-type: none"> • Senior Engineer/Investigator (more than 15 years of experience) • Intermediate Engineer/Investigator (between 3 and 15 years of experience) • Junior Engineer/Investigator (less than 3 years of experience) • Technician (high school degree) • Technologist (post-secondary degree) • Production Engineering Specialist * 	Team Description and Curriculum vitæ

	<p>The Contractor must explain the relevance of the participation of each optional person and present proof of competence (CV, diploma) related to the project. Note: contractor has the possibility to hire more than one (1) person in the same employee category.</p> <p><i>* The Production Engineering Specialist is responsible for work related to manufacturing programs, scheduling, logistics, maintenance, procurement and planning. He is responsible for production on an industrial scale in terms of quantity, quality and lead time.</i></p>	
2	<p>The Project Manager of the team must have successfully managed at least four projects with a minimum value of \$ 250,000 in the past 5 years. In addition, the project manager must have a minimum of years in project management related to similar projects in field of optics.</p>	Curriculum vitae
3	<p>The Project Engineer of the team must be an active member of the Ordre des Ingénieurs du Québec and have a bachelor's degree in Engineering in a relevant field of study. The project engineer must have work experience on similar projects in the field of optics within the past years.</p>	Curriculum vitae AND Engineer's Permit
4	<p>The Principal Investigator of the team must have a university degree in the field of optics. The Principal Investigator must have work experiences of similar projects in the last 5 years.</p>	Curriculum vitae AND University Degree
5	<p>The Principal Technologist must have a post-secondary degree in a relevant field of study and have a minimum of years of work experience in optical analysis and laboratory testing.</p>	Curriculum vitae AND post-secondary degree
6.	<p>The Contractor's Quality Management System must be ISO 9001: 2008 (or ISO 9001: 2015) - Quality Management Systems certified.</p>	Certification

ANNEX "F"

POINT RATED MANDATORY TECHNICAL CRITERIA

POINT RATED EVALUATION CRITERIA

1. Technical proposals will be assessed for a total of **80 points** based on the grid below. The minimum rating required for each point-rated criteria is 5 Points. All proposals which obtain a rating of less than 5 points for one of the four point rated criteria will be declared non responsive.

1. At bid closing time, the bidder must comply with the following point-rated criteria at the table 1 below and provide the necessary documentation to support compliance. Any proposal that fails to obtain the minimum passing mark (that is to say a rating of less than 5 points per criteria) will be declared non-responsive and will be given no further consideration.

Each criteria must be addressed separately.

2. For the evaluation of point-rated criteria, Canada will evaluate the résumés and the projects presented in the mandatory criteria evaluation framework.

Resource categories	Number of resources to evaluate
Project Manager	1
Project Engineer	1
Principal Investigator	1
Principal technologist	1

TABLE 1

POINT RATED CRITERIA		EVALUATION SCALE	MINIMUM Overall Score Required (for all the point rated criteria)	MAXIMUM Overall Score
			20 points	80 points
1	Project Manager The Project Manager must have ____ years of experience in project management related to similar projects in the field of optics.	10 years = 5 points 15 years = 15 points 20 years = 20 points		

POINT RATED CRITERIA		EVALUATION SCALE	MINIMUM Overall Score Required (for all the point rated criteria)	MAXIMUM Overall Score
2	Project Engineer The Project Engineer must have work experiences on similar projects in the field of optics within the past ____ years.	5 years = 5 points 10 years = 15 points 15 years = 20 points		
3	Principal Investigator The Principal Investigator of the team must have a ____ degree in the field of optics.	Bachelor's degree = 5 points Master's degree = 15 points Ph. Degree = 20 points		
4	Principal technologist The Principal technologist must have work experiences on similar projects in optical analysis and laboratory testing within the past ____ years.	10 years = 5 points 15 years = 15 points 20 years = 20 points		
		Total points :		

ANNEX "G"

CERTIFICATIONS

AT THE CLOSING DATE AND HOUR OF THE INVITATION OR BEFORE THE ISSUANCE OF THE CONTRACT, THE OFFERORS MUST PROVIDE THE FOLLOWING CERTIFICATIONS.

All the criteria identified below are MANDATORY. Each criteria must be met and documentation provided in order to demonstrate the degree to which it is met.

Please identify where the substantial document is located in your offer.

If these documents have not been provided at bid closing, Public services and procurement Canada (PSPC) will notify the bidder that they are required to provide them within **two (2) business days** following a written notification by the PSPC's contracting officer.

(Note: this time requirement reflects PWGSC's expectation that these documents ought to be readily available to a bidder, offeror or supplier.)

The offers that fail to meet all these conditions will be rejected and will be given no further consideration.

MANDATORY EVALUATION CRITERIA	DESCRIPTION	CONFORMANCE METHOD	SUPPORTING DOCUMENTS REQUIRED Please identify where the substantial document is located in your proposal.
1	<p>The Contractor must provide a Main Project Team that has the knowledge and required experience to perform the work described in Table 1 (section 2 – Task List). This team must include at least the following four (4) people. Note that these four people must be employees of the Contractor:</p> <ul style="list-style-type: none"> • Project manager • Project engineer • Principal investigator • Principal Technologist <p>In order to support the Main Project Team, whether at the research, technical or management level, the Contractor also has</p>	Team Description and Curriculum vitæ	

	<p>the option of employing the following job categories:</p> <ul style="list-style-type: none"> • Senior Engineer/Investigator (more than 15 years of experience) • Intermediate Engineer/Investigator (between 3 and 15 years of experience) • Junior Engineer/Investigator (less than 3 years of experience) • Technician (high school degree) • Technologist (post-secondary degree) • Production Engineering Specialist * <p>The Contractor must explain the relevance of the participation of each optional person and present proof of competence (CV, diploma) related to the project. Note: contractor has the possibility to hire more than one (1) person in the same employee category.</p> <p><i>* The Production Engineering Specialist is responsible for work related to manufacturing programs, scheduling, logistics, maintenance, procurement and planning. He is responsible for production on an industrial scale in terms of quantity, quality and lead time.</i></p>		
2	<p>The Project Manager of the team must have successfully managed at least four projects with a minimum value of \$ 250,000 in the past 5 years. In addition, the project manager must have a minimum of years in project management related to similar projects in field of optics</p>	Curriculum vitæ	
3	<p>The Project Engineer of the team must be an active member of the Ordre des Ingénieurs du Québec and have a bachelor's degree in Engineering in a relevant field of study. The project engineer must have work experience on similar projects in the field of optics within the past years.</p>	Curriculum vitæ AND Engineer's Permit.	
4	<p>The Principal Investigator of the team must have a university degree in the field of optics. The Principal Investigator must have work experiences of similar projects in the last 5 years.</p>	Curriculum vitæ AND University Degree.	

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5	The Principal Technologist must have a post-secondary degree in a relevant field of study and have a minimum of years of work experience in optical analysis and laboratory testing.	Curriculum vitæ AND post-secondary degree	
6.	The Contractor's Quality Management System must be ISO 9001: 2008 (or ISO 9001: 2015) - Quality Management Systems certified.	Certification	



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne

Integrated Technical Services



Safety First, Service Always



Ice Lantern Design

ANNEX A

Statement of Work

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Section 1 MANDATE DESCRIPTION

1.1 PURPOSE

The Canadian Coast Guard (CCG) is responsible for ensuring the safety of mariners on Canada's waterways. To achieve this, the CCG has put in place several aids to navigation systems, including buoys equipped with lanterns. These lanterns must offer different levels of service, including minimum visual range, specific colors, specific flashing characteristics.

1.2 SPECIFIC OBJECTIVES

The specific objectives of this mandate are:

- Create a new lantern design for CCG based on the tasks and technical requirements of Section 2 and 3 respectively;
- Ensure that the lanterns meet the requirements or more specifically the level of service required by the CCG, namely:
 - A light range of at least 4 nm (**effective luminous intensity of 37 candelas**);
 - Meet the colorimetry standards established by the International Association of Marine Aids to Navigation and Lighthouse Authorities (Reference 1.6.5);
 - Produce common signals (flashes) as listed in the CCG List of Lights.

1.3 CONTRACTOR'S RESPONSIBILITY

The contractor must provide all services necessary to complete the tasks detailed in **Section 2** and undertakes to deliver the work as described in this document on time. In addition, the contractor must design the lantern while respecting the technical statements of requirements detailed in **Section 3**.

The Contractor's Quality Management System must be ISO 9001: 2008 (or ISO 9001: 2015) - Quality Management Systems certified.

1.4 CCG'S RESPONSIBILITY

The CCG will provide the following:

1. Technical support;
2. Reference works (Section 1.6);
3. Any other documentation necessary for the performance of the mandate deemed relevant by the CCG or by the Contractor.

The contractor is responsible for identifying any other additional documentation that would be necessary to carry out his mandate. In this case, the contractor must inform the CCG as soon as possible, so that arrangements can be made to help meet the needs of the contractor.

In addition, the CCG is responsible for the lantern housing design (**Section 5**), i.e. the following components:

- Design and dimensions
- Materials
- Bolts and their respective torques
- Sealing of the lantern, including the seal design
- Protection against birds

Note that the CCG is not responsible for the development of the lens, it is shown in Section 5 for guidance only.

1.5 OTHER RESOURCES

All work is to be performed at the Contractor's normal workplace. The contractor must provide the necessary manpower, administration software, supervision, tools, measuring devices and equipment, supplies and other accessories, services and facilities necessary to meet the defined requirements in this statement of work.

The Contractor must provide a Main Project Team that has the knowledge and required experience to perform the work described in Table 1 (section 2 – Task List). This team must include at least the following four (4) people. Note that these four people must be employees of the Contractor:

Project Manager: The Project Manager of the team must have successfully managed at least four projects with a minimum value of \$ 250,000 in the past 5 years. In addition, the project manager must have a minimum of years in project management related to similar projects in field of optics.

Project Engineer: The Project Engineer of the team must be an active member of the *Ordre des Ingénieurs du Québec* and have a bachelor's degree in Engineering in a relevant field of study. The project engineer must have work experience on similar projects within the past years.

Principal Investigator: The Principal Investigator of the team must have a University degree in the field of optics. The Principal Investigator must have work experience on similar projects within the past 5 years.

Principal Technologist: The Principal Technologist should have a post-secondary degree in a relevant field of study and have a minimum of years of work experience in optical analysis and laboratory testing.

In order to support the Main Project Team, whether at the research, technical or management level, the Contractor also has the option of employing the following job categories:

- Senior Engineer/Investigator (more than 15 years of experience)
- Intermediate Engineer/Investigator (between 3 and 15 years of experience)
- Junior Engineer/Investigator (less than 3 years of experience)
- Technician (high school degree)
- Technologist (post-secondary degree)
- Production Engineering Specialist *

The Contractor must explain the relevance of the participation of each optional person and present proof of competence (CV, diploma) related to the project. Note: contractor has the possibility to hire more than one (1) person in the same employee category.

* *The Production Engineering Specialist is responsible for work related to manufacturing programs, scheduling, logistics, maintenance, procurement and planning. He is responsible for production on an industrial scale in terms of quantity, quality and lead time.*

1.6 REFERENCE MANUALS

The Contractor must declare in its bid that he will perform all the work requested (Table 1) according to the following reference manuals:

- 1.6.1 IEC 60529:1989+AMD1:1999+AMD2:2013 and CSV/COR2:2015 *Degrees of protection provided by enclosures (IP Code).*
- 1.6.2 MIL-STD-202H, *Department of Defense Test Method Standard: Electronic and Electrical Component Parts.*
- 1.6.3 MIL-STD-810G, *Environmental Engineering Considerations and Laboratory Tests.*
- 1.6.4 Canadian Coast Guard, Notice to Mariners (NOTMAR) List of Lights, Buoys and Fog Signals (4 Volumes) – <https://www.notmar.gc.ca/list-livre-en.php>
- 1.6.5 IALA. 2008a. IALA Recommendation E-200-1 On Marine Signal Lights. Part 1 – Colours. Edition 1. December 2008. 17 p.
- 1.6.6 IALA. 2008b. IALA Recommendation E-200-2 On Marine Signal Lights. Part 2 - Calculation, Definition and Notation of Luminous Range. Edition 1. December 2008. 21 p.
- 1.6.7 IALA. 2008c. IALA Recommendation E-200-3 On Marine Signal Lights. Part 3 - Measurement. Edition 1. December 2008. 21 p.
- 1.6.8 IALA. 2008d. IALA Recommendation E-200-4 On Marine Signal Lights. Part 4 - Determination and Calculation of Effective Intensity. Edition 1. December 2008. 21 p.
- 1.6.9 IALA. 2008e. IALA Recommendation E-200-5 On Marine Signal Lights. Part 5 - Estimation of the Performance of Optical Apparatus. Edition 1. December 2008. 21 p.
- 1.6.10 IALA. 2005. IALA Recommendation E-200-110 for the Rhythmic Characters of Lights on Aids to Navigation. Edition 2. December 2005. 14 p.

Section 2 TASK LIST

At the request of the CCG, the contractor must provide all services necessary to complete the tasks detailed in Table 1.

Table 1 Task Descriptions.

Task #	Description
0	Project planning
0.1	Perform a detailed task analysis to identify the needs of each.
0.2	Define the potential difficulties and problems of each task.
0.3	Plan the order of priority in which the tasks should be completed in order to be as efficient as possible throughout the project.
0.4	Prepare an initial report detailing the procedure for developing the project.
1	LED Design
1.1	Select red LED light to meet color requirements (Section 3.2.3.1) and power consumption (Section 3.3.1).
1.2	Select green LED light to meet color requirements (Section 3.2.3.1) and power consumption (Section 3.3.1).
1.3	Select yellow LED light to meet color requirements (Section 3.2.3.1) and power consumption (Section 3.3.1).
1.4	Select white LED light to meet color requirements (Section 3.2.3.1) and power consumption (Section 3.3.1).
1.5	Prepare a progress report as described in task 9.1.
1.6	Block of 20 hours of work to make adjustments, at the request of the CCG.
2	Lens Design
2.1	Design the lens to meet dimension requirements (Section 3.1.4.1), vertical divergence (Section 3.2.1.2) and environment (Section 3.4) requirements.
2.2	Prepare a progress report as described in task 9.1.
2.3	Block of 20 hours of work to make adjustments, at the request of the CCG.
3	Electrical System Design
3.1	Design the mounting of the LED lights on a PCB, while respecting the dimensions requirements (Section 3.1.4.1) and the lantern requirements (Section 3).
3.2	Design the electrical system of the lantern (including Bluetooth, inclinometer, photocell, GPS, etc.).
3.3	Prepare a progress report as described in task 9.1.

Task #	Description
3.4	Block of 20 hours of work to make adjustments, at the request of the CCG.
4	Lantern Programming
4.1	Using Bluetooth technology, design an application, which can be used on Windows developed by Microsoft, allowing the control and programming of the functions (Section 3.3.3) of the lantern.
4.2	Using Bluetooth technology, design an application, which can be used on Android system developed by Google, allowing the control and programming of the functions (Section 3.3.3) of the lantern.
4.3	Using Bluetooth technology, design an application, which can be used on iOS developed by Apple, allowing the control and programming of the functions (Section 3.3.3) of the lantern.
4.4	Prepare a progress report as described in task 9.1.
4.5	Block of 20 hours of work to make adjustments, at the request of the CCG.
5	Prototyping
5.1	Produce 1 prototype of the lantern with red colored LEDs.
5.2	Produce 1 prototype of the lantern with green colored LEDs.
5.3	Produce 1 prototype of the lantern with yellow colored LEDs.
5.4	Produce 1 prototype of the lantern with white colored LEDs.
5.5	Prepare a progress report as described in task 9.1.
5.6	Block of 20 hours of work to make adjustments, at the request of the CCG.
6	Electrical Performance Analysis
6.1	<p>Measure the lantern consumption (in Watt) using the following programming:</p> <ol style="list-style-type: none"> 1. Type <i>Quick</i> of 1 second (0.3 s ON et 0.7 s OFF) 2. Type <i>Flash</i> of 4 seconds (0.5 s ON et 3.5 s OFF) <p>Mesure la consommation de la lanterne (en Watt) de toute les autres composantes/fonction de la lanterne</p> <p>Mesurer la consommation journalière à l'aide des mesures de tension (Volt) et de courant (Ampère).</p>
6.2	Prepare a progress report as described in task 9.1.
7	Optical Performance Analysis
7.1	<p>Measure the effective luminous intensity (in candela) of the lantern at an angle of 0 degree (vertical and horizontal axes) according to the following light cycles:</p> <ol style="list-style-type: none"> 1. Type <i>Quick</i> of 1 second (0.3 s ON et 0.7 s OFF) 2. Type <i>Flash</i> of 4 seconds (0.5 s ON et 3.5 s OFF) <p>The power of the lantern must be programmed for 4 nm.</p>

Task #	Description
	<p>The calculation of the effective intensity must be performed using the Schmidt-Clausen and Modified Allard methods, as described by Reference 1.6.8.</p> <p>Measure the duration of the lantern flash periods for Flash and Quick modes.</p> <p>Measure the frequency of the light signal (pulse width modulation – PWM).</p>
7.2	<p>Establish the horizontal scanning intensity photometric output (azimuth). Measure the intensity (in candela) every 15° (at least 24 measurements).</p>
7.3	<p>Establish the photometric intensity curve in vertical scanning (elevation). Measure the intensity (in candela) at each degree between -15 ° and 15 ° (at least 31 measurements).</p>
7.4	<p>Perform a colorimetry test (emission spectrum). Measure the x, y and Z coordinates established according to the CIE (International Commission on Illumination) 1931 standard. Check if the results obtained are located within the optimal color regions (Table 4) recommended at Reference 1.6.5.</p>
7.5	<p>Prepare a progress report as described in task 9.1.</p>
8	Shock Test
8.1	<p>Perform a shock test as described in MIL-STD-202H (Method 213 - Test condition H). Check the functioning of the lantern after the shock test and describe its condition.</p>
8.2	<p>Prepare a progress report as described in task 9.1.</p>
9	Progress Report
9.1	<p>Without limitation, prepare a report (written in French) containing the following aspects:</p> <ul style="list-style-type: none"> • Methodology (measuring instruments, assembly, photos, etc.); • Results from the task (according to the request), including figures and tables; • Discussion of results and compliance with CCG requirements; • Conclusion and recommendations.
9.2	<p>At the request of the CCG, translate the report into English.</p>
10	User's Manual
10.1	<p>Prepare a user's manual on the operation of the lantern, taking care to cover the following aspects:</p> <ul style="list-style-type: none"> • Introduction • General (connectivity, technical specifications, etc.) • Installation / maintenance of electronics and optics • Information on the mobile application • Programming the lantern

LAB ANALYSIS ON BUOY LANTERNS

Task #	Description
10.2	Block of 20 hours of work to make adjustments, at the request of the CCG.
11	Drawings and Specifications
11.1	Prepare the drawings and specification for the lantern in order to produce the lantern in large quantities.
11.1	Block of 20 hours of work to make adjustments, at the request of the CCG.

Section 3 PERFORMANCE SPECIFICATIONS

3.1 GENERAL

3.1.1 Fundamental Design

- 3.1.1.1 The Lantern must use Light Emitting Diodes (LED) as a light source. LEDs must be affordable and energy efficient.
- 3.1.1.2 The complete electronic circuit (except the power source) must be integrated inside the lantern housing and must be located to provide a good wireless communication without any interference.

3.1.2 Material

- 3.1.2.1 The Lantern must be made of materials which will not be subject to damage due to corrosion or rust during the life expectancy of the Lanterne.
- 3.1.2.2 The Lantern must not contain any toxic or radioactive materials.
- 3.1.2.3 The material used for the manufacture of the lens must be transparent, hard (Rockwell hardness scale of R118-R121 or M50-M72), and must withstand a minimum pressure of 62 MPa (9,000 PSI).

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 The lens must not affect the transmission of IALA colours for no less than the service life of the Lantern outlined in 3.5.1.
- 3.1.3.3 Ultraviolet exposure must not cause material breakdown of the lens or its decoloration; the lens must maintain structural integrity for no less than the service life of the Lantern outlined in 3.5.1.
- 3.1.3.4 All components of the Lantern must be free of cracks, burrs, sharp edges, and other defects and blemishes that could affect their life, appearance, and serviceability.

3.1.4 Physical Characteristics

- 3.1.4.1 The lens and optical hardware must not exceed the dimensions and weight in Table 2.

Table 2 Lens and Optical Hardware Physical Characteristics.

Maximum Diameter of the lens (mm)	Maximum Height of the lens (mm)	Maximum Weight
110	50	1.5

3.1.5 Identification Nameplate

- 3.1.5.1 The Lantern must have an identification nameplate with the following information:
 - a) Name of manufacturer;

- b) Model number;
 - c) Serial Number;
 - d) Date of Manufacture (YYYY-MM-DD); and
 - e) Lantern colour.
- 3.1.5.2 The identification nameplate must be indelible.
- 3.1.5.3 The identification nameplate must be located on the exterior of the unit.

3.2 OPTICAL PERFORMANCE

3.2.1 General Considerations

- 3.2.1.1 The Lantern must use pulse-width modulation and must operate at frequencies no less than 100 Hz.
- 3.2.1.2 The Lantern must meet the optical characteristics outlined in Table 3. Luminous intensity must be calculated using the Modified Allard Method, with an atmospheric transmissivity coefficient of 0.741 (in accordance with IALA E-200-3, Marine Signal Lights).

Table 3 Optical Performance Requirements.

Min. Nominal Range (nm)	Min. Effective Intensity (cd)	Min. Vertical Divergence	Acceptable Horizontal Divergence Variability
4	37	7.5 (above) 7.5 (below)	±10

Note, the vertical divergence is measured from the point where the peak intensity falls below 50%.

3.2.2 Flash Characteristics

- 3.2.2.1 The Lantern must be capable of producing the common signals (flashes) as listed in the Canadian Coast Guard List of Lights, Buoys and Fog Signals (references 1.6.4 and 1.6.10).

3.2.3 Signal Colours

- 3.2.3.1 The light signal provided by green, red, white, and yellow Lanterns must fall within the boundaries of the **optimum regions** (Figure 1 and Table 4) and satisfy the chromaticity requirements of IALA E-200 (reference 1.6.5).

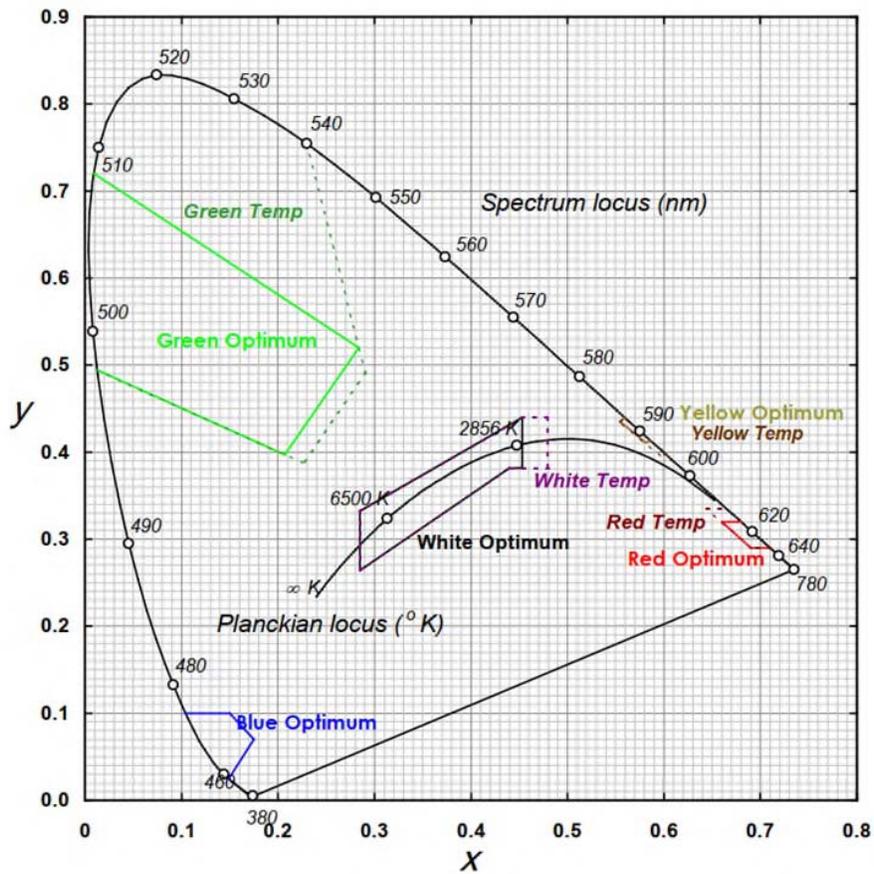


Figure 1 Optimum Chromaticity Regions

Table 4 x and y coordinates of the optimum chromaticity regions.

Colour	1		2		3		4		5	
	x	y	x	y	x	y	x	y	x	y
Red	0.71	0.29	0.69	0.29	0.66	0.32	0.68	0.32		
Yellow	0.5865	0.413	0.581	0.411	0.555	0.435	0.56	0.44		
Green	0.009	0.720	0.284	0.520	0.207	0.397	0.013	0.494		
White	0.44	0.382	0.285	0.264	0.285	0.332	0.453	0.44	0.453	0.382
Blue	0.104	0.1	0.15	0.1	0.175	0.07	0.149	0.025		

3.3 ELECTRICAL REQUIREMENTS

3.3.1 Energy Consumption

3.3.1.1 Calculated autonomy values must meet the following requirements and parameters:

- Nominal range, as described in Section 3.2.1.2
- Duty cycle: Quick 1 s (0.3s ON; 0.7s OFF) - 30%
- 1.5 W max (average power during 0.3s ON)
- Lantern hours of operation per day: 14 h/day
- Signal colours: red, green, yellow and white
- Max daily consumption, including any other electronic component: 6.5 Wh / day

3.3.2 Power Supply

3.3.2.1 The Lantern must be able to be powered by two separate energy sources.

3.3.2.2 The Lantern must be powered by a DC energy source varying between 8 and 30 Volts.

3.3.2.3 The lantern electronic system must be equipped with a button type battery which will **only** power the internal clock if a failure of the main power supply occurs **only**. This battery must be able to power the internal clock for the **entire** life of the lantern.

3.3.3 Control

3.3.3.1 The Lantern must be able to be programmed by a computer or a smart phone (using Bluetooth technology).

3.3.3.2 The Lantern must be equipped with a GPS so it can be geolocated.

3.3.3.3 Regardless of the lantern color, the lantern signals must be synchronized with identical signals from nearby lanterns, all done using, per example, GPS technology.

3.3.3.4 The Lantern must be able to be equipped with a GSM (Global System for Mobile Communications) in order to establish remote communication.

3.3.3.5 The Lantern must be capable of being manually or automatically turned off without disassembling the housing or removing the battery. Turned off is defined as a very-low-power sleep state intended for long-term storage.

3.3.3.6 The Lantern must be capable of switching on whenever ambient illumination, measured on the horizontal plane, falls below **50 lux** for a period of at least 5 minutes. This value must be adjustable within the range of 25 to 150 lux, using an increment of 25 lux.

3.3.3.7 The Lantern must be capable of switching off whenever ambient illumination, measured on the horizontal plane, rises above **150 lux** for a period of at least 5 minutes. This value must be adjustable within the range of 25 to 150 lux, using an increment of 25 lux.

3.3.3.8 The Lantern must have the functionality to automatically switch into “OFF” mode at a user-configurable, preprogrammed date, and automatically turn on again at a later,

user-configurable, preprogrammed date. This functionality must be enabled or disabled by the user.

- 3.3.3.9 The Lantern must be able to turn off automatically when its heeling angle exceeds 50 degrees (from vertical) for 30 seconds, and turn on when the angle returns below that value. This value must be adjustable within the range of 45 to 70 degrees, using an increment of 5 degrees.
- 3.3.3.10 The lantern must switch off after 24 hours of continuous operating and switching back on when the photocell sees the sun. The date clock according to section 3.3.3.8 must not be affected.
- 3.3.3.11 The lantern must have the possibility of being turned on or off according to the hours of average sunshine according to each month of the year, see the data in Table 4. When the lantern is managed by the calendar, the luminosity sensor must be **turned off** to prevent any interference during the lantern ON/OFF management.

Table 4*

Month	Sunrise (hour)	Sunset (hour)
January	07:23	16:24
February	06:48	17:08
March	05:54	17:52
April	04:55	18:34
May	04:09	19:14
June	03:51	19:39
July	04:08	19:32
August	04:44	18:52
September	05:23	17:54
October	06:05	16:55
November	06:48	16:11
December	07:22	15:59

3.3.4 App Display

- 3.3.4.1 The lantern App must display the following parameters:
 - Lantern Status;
 - Battery status;
 - Temperature;
 - GPS Position;
 - Counters: Lantern Operating Time;
 - Detailed Lantern Configuration;
 - Detailed Lantern information (model number, color, serial number);
 - Detailed App information (version);

- Warning code in the event of a malfunction / error of the the electrical system and sensors.

3.3.4.2 The application must be available in both French and English.

3.3.5 Protection

3.3.5.1 The Lantern must be provided with a low voltage disconnect to protect the battery from damage. This voltage value must be user programmable.

3.3.5.2 The Lantern must have reverse polarity protection to preclude inadvertent electrical system damage. The lantern must resume correct operation as soon as the correct polarity is provided.

3.3.5.3 The Lantern must have short-circuit protection and remain fully functional after a short-circuit situation.

3.3.5.4 The Lantern must have over-pressure protection to prevent the build-up of gas within the Lantern. This device must also prevent moisture intake.

3.3.6 Electrical Cable

3.3.6.1 The Lantern must be equipped with a submersible cable (1 m ± 0.05 m long) that has an **RMG-2-MP connector**.

3.3.6.2 The cable must be CSA certified, UL listed, or CE certified and RoHS or ISO 14001 compliant and meet the following specifications:

- RMG connectors moulded with cable;
- SOOW cable type;
- Number of conductors: 2;
- Wire gauge: AWG 18; and
- Nominal outer diameter of cable: 9 mm [0.345"].

3.4 ENVIRONMENT

3.4.1 Temperature

3.4.1.1 The Lantern must be capable of operating in temperatures ranging from -30 °C to +40 °C.

3.4.2 Environmental Resistance

3.4.2.1 The lens material must be outdoor use approved (UV resistance and abrasion resistance).

3.4.3 Electromagnetic Interference

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

3.4.4 Static Discharge

- 3.4.4.1 The Lantern must incorporate protection from static discharges and induced transient voltages on power leads that may occur. Testing must be in accordance with the standard IEC 61000-4-2:2008.

3.4.5 Shock

- 3.4.5.1 The Lantern must remain operational after a shock event as outlined in MIL-STD-810G Method 516.6 Procedure I – Functional Shock or MIL-STD-202H (Method 213 - Test condition H).

3.4.6 Immersion Protection

- 3.4.6.1 The Lantern must meet ingress protection IP68, in accordance with IEC 60529:1989+AMD1:1999+AMD2:2013 and CSV/COR2:2015.

3.5 SERVICE LIFE

3.5.1 General Considerations

- 3.5.1.1 The Lantern must have an expected service life of no less than 10 years.

Section 4 DELIVERABLES AND SCHEDULE

4.1 CONDUCT OF WORK AND COMMUNICATION

During the completion of the mandate, communications between CCG and the Contractor may be oral or by email.

Any communication that requires a decision must be directed to the Technical Authority. All deliverables listed in Section 2 must be sent to the Technical Authority. Acceptance of this work will be ensured by the Technical Authority.

4.2 SCHEDULE

The contractor must provide the CCG with a typical schedule for completing each task listed in Section 2. The completion of a task must not be more than 4 weeks.

4.3 WORK PROGRESSION

The contractor must inform the CCG by email of the progress of the work.

4.4 CCG BASE ACCESS

No work will take place at the CCG Quebec Base.

4.5 TRAVEL

No travel is anticipated under this mandate.

4.6 LANGUAGE

All communication, both orally and in writing, must be held in French. Technical documents prepared within this mandate, such as reports, must be written in French.

Section 5 CONCEPT – SMART ICE LANTERN
