



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada

See herein for bid submission
instructions/

Voir la présente pour les
instructions sur la présentation
d'une soumission

NA

Alberta

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

Vendor/Firm Name and Address

Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Public Works and Government Services Canada/Travaux
publics et Services gouvernementaux Canada
Harry Hays Building (HHB)
Room 759, 220-4th Avenue SE
Calgary
Alberta
T2G 4X3

Title - Sujet Tunable LED light system	
Solicitation No. - N° de l'invitation 31029-218740/A	Date 2020-09-21
Client Reference No. - N° de référence du client 31029-218740	
GETS Reference No. - N° de référence de SEAG PW-\$CAL-142-7104	
File No. - N° de dossier CAL-0-43039 (142)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2020-10-20	Time Zone Fuseau horaire Mountain Daylight Saving Time MDT
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: Blake, Luke J.	Buyer Id - Id de l'acheteur cal142
Telephone No. - N° de téléphone (403) 613-0725 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: NATIONAL RESEARCH COUNCIL CANADA 110 GYMNASIUM PLACE SASKATOON Saskatchewan S7N0W9 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée See Herein	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 Requirement

The requirement is detailed under Article 6.2 of the resulting contract clauses.

1.2 Debriefings

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

1.3 epost Connect service

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

1.4 Canadian Content

The requirement is subject to a preference for Canadian goods and services.

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

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

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

The 2003 (2020-05-28) 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 Western 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:
roreceptionSoumissions.wrbidreceiving@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 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 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.

2.4 Applicable Laws

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

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.

2.5 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
Section IV: Additional Information

Bids transmitted by facsimile or hardcopy will not be accepted.

Section I: Technical Bid

In their technical bid, Bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment.

3.1.1 Electronic Payment of Invoices – Bid

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

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

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

3.1.2 Exchange Rate Fluctuation

C3011T (2013-11-06), Exchange Rate Fluctuation

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 and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) The evaluation team will determine first if there are two or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than two responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

4.1.1 Technical Evaluation

1.1 To be compliant, a proposal must meet every mandatory requirements stated in Annex "A" Statement of Requirement and Annex "C" Compliance Matrix.

1.2 Proposals that do not meet the mandatory requirements will be rejected without any further consideration.

4.1.2 Financial Evaluation

The Firm Lot Price's in Annex "B" will be aggregated to come up with the Total Evaluated Bid Price

The lowest compliant proposal will be recommended for the contract award.

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

4.2 Basis of Selection – Mandatory Technical Criteria

SACC Manual Clause A0031T (2010-08-16), Basis of Selection – Mandatory Technical Criteria

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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

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

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

5.1 Certifications Required with the Bid

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

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the declaration form available on the [Forms for the Integrity Regime](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 provided 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 \(ESDC\) - 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.

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5.2.3 Additional Certifications Precedent to Contract Award

5.2.3.1 Canadian Content Certification

This procurement is limited to Canadian goods and Canadian services.

The Bidder certifies that:

() a minimum of 80 percent of the total bid price consist of Canadian goods and Canadian services as defined in paragraph 5 of clause [A3050T](#).

For more information on how to determine the Canadian content for a mix of goods, a mix of services or a mix of goods and services, consult [Annex 3.6](#), Example 2, of the Supply Manual.

5.2.3.1.1 SACC Manual clause [A3050T](#) (2020-07-01) Canadian Content Definition

PART 6 - RESULTING CONTRACT CLAUSES

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

6.1 Security Requirements

6.1.1 There is no security requirement applicable to the Contract.

6.2 Requirement

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

6.3 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.

6.3.1 General Conditions

[2010A](#) (2020-05-28), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.4 Term of Contract

6.4.1 Delivery Date

All the deliverables must be received on or before 2021-03-31.

6.4.2 Delivery Points

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

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Luke Blake
Title: Procurement Specialist
Public Services and Procurement Canada
Procurement Branch

Address: Harry Hays Building Room 759
220 4th Ave SE
Calgary AB T2G 4X3

Telephone: 403-613-0725
E-mail address: luke.blake@pwgsc-tpsgc.gc.ca

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

6.5.2 Project Authority

The Project Authority for the Contract is: *To be provided at contract award*

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 technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority, however the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

6.5.3 Contractor's Representative

To be filled out by bidder:

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

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

6.6 Payment

6.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in Annex "B" for a cost of \$ _____ (to be determined) _____. Customs duties are included and Applicable Taxes are extra.

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

6.6.2 Limitation of Price

SACC Manual clause C6000C (2017-08-17) Limitation of Price

6.6.3 Single Payment

SACC Manual Clause H1000C (2008-05-12) Single Payment

6.6.4 SACC Manual Clauses

C2000C (2007-11-30), Taxes – Foreign-based Contractor

6.6.5 Electronic Payment of Invoices – Contract

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

(To be determined at contract award)

6.7 Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:
 - a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
 - b. One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

6.8 Certifications and Additional Information

6.8.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

6.9 Applicable Laws

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

6.10 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 2010A (2020-05-28) Goods (medium complexity);
- (c) Annex "A", Requirement;
- (d) Annex "B", Basis of Payment;
- (e) Annex "C", Compliance Matrix;
- (f) the Contractor's bid dated _____ (to be inserted by bidder).

6.11 SACC Manual Clauses

B7500C (2006-06-16) Excess Goods
G1005C (2016-01-28) Insurance – No Specific Requirement

6.12 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](#)".

ANNEX "A"

REQUIREMENT

1.0 Object

The National Research Council of Canada (NRC) wants to expand the field of Agri-Food and add capacity controlled environment vertical farming.

Within this mandate, the NRC intends on purchasing a light-emitting diode (LED) light system which provides tunable lighting suitable for plant growth in a vertical farming system within a walk-in growth chamber.

The work consists of supply, delivery, installation of the system at the NRC address and training on equipment use; all of the work must be completed by March 31, 2021.

2.0 Constraints

The lighting fixtures require a small form factor to fit within multiple layers of a shelf unit. Light fixtures must fit within a space of 122 cm (length) x 61 cm (wide) with a vertical height of no more than 5 cm. The light fixture must be a series of light bars that can be attached to the underside of a shelf.

3.0 Mandatory technical specifications – Compliance Matrix

Refer to the Compliance Matrix for the complete performance specifications and instructions that must be satisfied in order for a bid to be deemed responsive.

4.0 Deliverables:

4.1 The successful vendor must supply proposed system drawings for review and approval by the NRC prior to production.

4.2 Warranty: The lighting and control system must include a written minimum **three year parts warranty**.

4.3 Technical documentation: The lighting and control system must include at least one operating manual in English upon delivery.

5.0 Delivery and Installation

The system must be delivered and installed at 110 Gymnasium Place, Saskatoon, Saskatchewan, S7N 0W9.

5.1 Testing & Acceptance

5.1.1 There must be on site performance testing by vendor and acceptance by the National Research Council prior to release of any payments.

5.1.2 Testing must include calibration of the control and tunable light channels to ensure correct intensity and wavelength output.

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5.2 Electrical:

5.2.1 Site electrical and supply will be prepared by the NRC

5.2.2 All external LED wiring and controller connections must be supplied by Vendor.

APPENDIX “A” to ANNEX “A”
Technical drawings, Diagrams

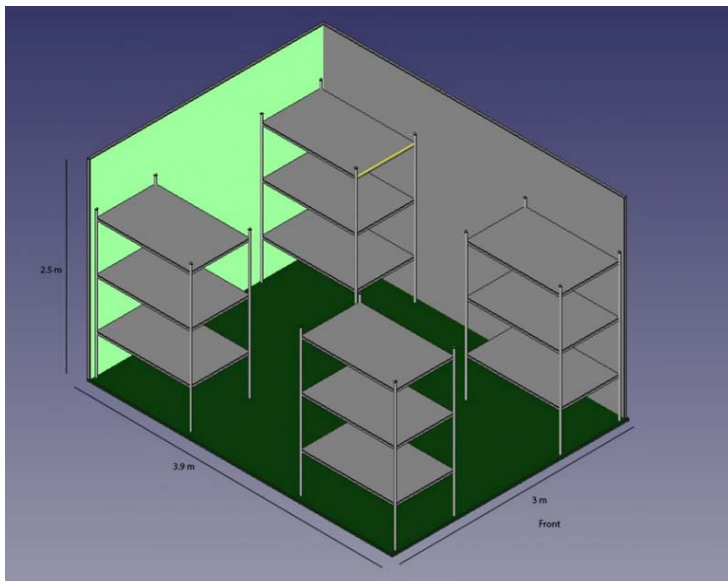


Figure 1: Depiction of shelving position with the growth chamber. Final shelving will vary from shown model. Control unit for lighting is expected to be placed outside at the front of the chamber.

ANNEX "B"

BASIS OF PAYMENT

- Prices quoted to be **Firm Lot Prices**, FOB Destination including all delivery and offloading charges, in accordance with the requirements identified in Annex "A" – Statement of Requirement and Annex "C" – Compliance Matrix.
- Prices quoted are to remain firm for the duration of the Contract.
- Prices quoted do not include GST/HST, however, GST/HST will be added as a separate item on any invoices issued against this Contract.

Item	Description	Firm Lot Price
1.0	Tunable LED light system - in accordance with Annex "A" – Statement of Requirement.	\$ _____
2.0	Delivery, Installation and Calibration of the System - in accordance with Annex "A" Statement of Requirement. FOB Destination to: 110 Gymnasium Place, Saskatoon, Saskatchewan, S7N 0W9.	\$ _____
Total Evaluated Bid Price:		\$ _____

ANNEX "C"

COMPLIANCE MATRIX

DELIVERY

All deliverables identified must be received on or before 2021-03-31.

COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS

Instructions to Bidders

1. A complete list of the mandatory evaluation criteria are detailed in the Compliance Matrix below.
2. Bids which fail to meet all of the mandatory evaluation criteria will be declared non-responsive.
3. Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they meet each mandatory evaluation criteria. Bidder should demonstrate their capability in a thorough, concise and clear manner.
4. The technical 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 or stating, without any substantiating information, that a bidder is compliant will not be sufficient.
5. Substantiating information may include, but is not limited to, specification sheets, technical brochures, photographs or illustrations. If published supporting technical documentation is not available, the Bidder should prepare a written narrative complete with a detailed explanation of how its bid demonstrates technical compliance. All substantiating information should be provided with the bid at solicitation closing date. It is the Bidders responsibility to ensure that the submitted supporting technical documentation provides detail to demonstrate that the proposed product(s) meet the requirements of the evaluation criteria.
6. If the supporting documentation referenced above has not been provided at bid closing, the Contracting Authority will notify the Bidder that they must provide supporting documentation within two (2) business days following notification. Failure to comply with the request of the Contracting Authority within that time period, will deem the bid non-responsive and the bid will be given no further consideration.
7. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present the topics in the order of the evaluation criteria, and include a grid in their proposal, containing the information which demonstrates how the bidder meets each evaluation criteria. Alternatively, and to avoid any duplication, bidders may also refer to the different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.
8. Bidders must address any concerns with the performance specifications in written detail to the Contracting Authority before bid closing as outlined in the Request for Proposal (RFP) document.

COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS:

Item #	Performance Specification	Status (M) Mandatory	Performance Specification Offered: Bidder <u>should</u> indicate how they meet the performance specification by recording this information in this column	Cross Reference: In this column, Bidders <u>should</u> cross-reference where this performance specification is indicated in their supporting documents
1.1	Lighting must provide an adjustable light intensity with a maximum of approximately 500 $\mu\text{Mol m}^{-2} \text{s}^{-1}$, as measured at 25 °C, to a surface of 122 cm (length) x 61 cm (wide) located approximately 18 cm below the light fixture. System must be a light bar based design. Some lighting drop off and lack of uniformity is expected; however, distribution must be within $\pm 20\%$ over most of this area with additional drop-off expected in corners.	M		
1.2	The light fixtures must have a rated average lifetime of at least 36,000 hours at 90% flux maintenance.	M		
1.3	Lighting must be sufficient to cover 12 separate shelf levels with the dimensions of 122 cm (length) x 61 cm (wide) and will be arranged on four separate shelf units each containing three levels of lighting. There will be a space of 61 cm between each shelf on the shelf unit.	M		
1.4	Lighting must use an input voltage of 120 - 277 V AC, 50-60 Hz.	M		
1.5	Lighting must be LED with four independent channels for blue, red, far-red and white light.	M		
1.6	Lighting must have a rating of IP66 or equivalent for operation in wet environments and CSA rating for dry, damp and wet locations.	M		
1.7	Lighting must be operational in a temperature range of 10-40 C and relative humidity range of 5-95%.	M		
1.8	The light fixtures must include all necessary accessories to properly install the light fixtures to shelving units	M		

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	(see Annex "A" 2.0 Constraints for size constraints). Shelving units are provided by NRC.			
1.9	Lighting must include the necessary cable and connectors to connect the lights to the control unit while maintaining an IP66 rating.	M		
1.10	Lighting must be installed within a single large growth chamber with approximate dimensions of 3.9m (length) x 3m (width) x 2.5m (height) while connecting to a controller located outside of this chamber.	M		
1.11	Lighting must include a control unit to allow the tuning of the lighting to emit specific wavelengths of light. This includes independent control of each light channel.	M		
1.12	Lighting must include a controller that provides control of light intensity and photoperiod with a dimmable range of 1-100%. A 24 hours control cycle is considered the minimal requirement with weekly control cycles preferred	M		
1.13	Lighting must include a control unit which provides 4 independent zones of control.	M		
1.14	The lighting system must include a 3 year parts replacement warranty on failed components.	M		

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ANNEX “D”

ELECTRONIC PAYMENT INSTRUMENTS

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

- ☐ () VISA Acquisition Card;
- ☐ () MasterCard Acquisition Card;
- ☐ () Direct Deposit (Domestic and International);
- ☐ () Electronic Data Interchange (EDI);