



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

**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**  
11 Laurier St./ 11 rue, Laurier  
Place du Portage, Phase III  
Core 0B2 / Noyau 0B2  
Gatineau, Québec K1A 0S5  
Bid Fax: (819) 997-9776

**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**

<b>Title - Sujet</b> RTM Demonstrator tool	
<b>Solicitation No. - N° de l'invitation</b> 31026-166779/A	<b>Date</b> 2016-11-30
<b>Client Reference No. - N° de référence du client</b> 31026-166779	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$PV-939-71983	
<b>File No. - N° de dossier</b> pv939.31026-166779	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2017-01-11</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input checked="" type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Gauthier, Martin	<b>Buyer Id - Id de l'acheteur</b> pv939
<b>Telephone No. - N° de téléphone</b> (613) 404-8642 ( )	<b>FAX No. - N° de FAX</b> (819) 956-3814
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> NATIONAL RESEARCH COUNCIL CANADA 75 BOUL.DE MORTAGNE EDIFICE BOUCHERVILLE BOUCHERVILLE Quebec J4B6Y4 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**

Scientific, Medical and Photographic Division / Division de  
l'équipement scientifique, des produits photographiques et  
pharmaceutiques  
11 Laurier St./ 11 rue, Laurier  
6B1, Place du Portage  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

## TABLE OF CONTENTS

<b>PART 1 - GENERAL INFORMATION</b> .....	<b>3</b>
1.1 REQUIREMENT .....	3
1.2 DEBRIEFINGS.....	3
1.3 TRADE AGREEMENTS.....	3
<b>PART 2 - BIDDER INSTRUCTIONS</b> .....	<b>3</b>
2.1 STANDARD INSTRUCTIONS, CLAUSES AND CONDITIONS.....	3
2.2 SUBMISSION OF BIDS .....	3
2.3 ENQUIRIES - BID SOLICITATION.....	4
2.4 APPLICABLE LAWS.....	4
<b>PART 3 - BID PREPARATION INSTRUCTIONS</b> .....	<b>4</b>
3.1 BID PREPARATION INSTRUCTIONS .....	4
<b>PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION</b> .....	<b>6</b>
4.1 EVALUATION PROCEDURES .....	6
4.2 BASIS OF SELECTION .....	6
<b>PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION</b> .....	<b>7</b>
5.1 CERTIFICATIONS REQUIRED WITH THE BID.....	7
5.2 CERTIFICATIONS PRECEDENT TO CONTRACT AWARD AND ADDITIONAL INFORMATION .....	7
<b>PART 6 - RESULTING CONTRACT CLAUSES</b> .....	<b>8</b>
6.1 SECURITY REQUIREMENTS .....	8
6.2 REQUIREMENT .....	8
6.2.1 REQUIREMENT .....	8
6.3 STANDARD CLAUSES AND CONDITIONS .....	8
6.4 TERM OF CONTRACT.....	8
6.5 AUTHORITIES.....	8
6.5.3 ACCOUNTS PAYABLE CONTACT .....	9
6.6 PAYMENT.....	10
6.7 INVOICING INSTRUCTIONS .....	11
6.8 CERTIFICATIONS AND ADDITIONAL INFORMATION .....	11
6.9 APPLICABLE LAWS.....	11
6.10 PRIORITY OF DOCUMENTS .....	11
6.11 <i>SACC MANUAL</i> CLAUSES.....	11
6.12 SHIPPING INSTRUCTIONS .....	12
6.12.1 SHIPPING INSTRUCTIONS - DELIVERY AT PLACE.....	12
<b>ANNEX "A"</b> .....	<b>13</b>
PART 1 - REQUIREMENT.....	13
PART 2.1 - MANDATORY TECHNICAL EVALUATION CRITERIA.....	22
<b>ANNEX "B"</b> .....	<b>23</b>
PRICING TABLE.....	23
<b>ANNEX "C"</b> .....	<b>24</b>
COMPLETE LIST OF DIRECTORS .....	24

Solicitation No. - N° de l'invitation

31026-166779/A

Client Ref. No. - N° de réf. du client

31026-166779

Amd. No. - N° de la modif.

File No. - N° du dossier  
pv939.31026-166779

Buyer ID - Id de l'acheteur

pv939

CCC No./N° CCC - FMS No./N° VME

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<b>ANNEX "D" TO PART 3 OF THE BID SOLICITATION .....</b>	<b>25</b>
<b>ELECTRONIC PAYMENT INSTRUMENTS .....</b>	<b>25</b>

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## **PART 1 - GENERAL INFORMATION**

### **1.1 Requirement**

The requirement is detailed under Annex "A".

### **1.2 Debriefings**

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

### **1.3 Trade Agreements**

The requirement is subject to the provisions of the North American Free Trade Agreement (NAFTA), and the Agreement on Internal Trade (AIT).

## **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 (2016-04-04) 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: 90 days

#### **2.1.1 SACC Manual Clauses**

SACC Manual clause B1000T (*insert date*) Condition of Material

### **2.2 Submission of Bids**

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

#### **Bid Receiving - PWGSC**

Place du Portage, Phase III, Tower B  
11 Laurier Street  
Gatineau, Quebec  
For couriers: J8X 4A6  
For regular mail: K1A 0S5

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Telephone: (819) 956-3370  
Fax No.: (819) 997-9776

The above address is for the sole purpose of bid submission. No other communications are to be forwarded to this address.

No proposal shall be sent directly to the PWGSC Contracting Authority. Proposals sent directly to the PWGSC Contracting Authority will not be considered.

### **2.3 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.

### **2.4 Applicable Laws**

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

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

## **PART 3 - BID PREPARATION INSTRUCTIONS**

### **3.1 Bid Preparation Instructions**

Canada requests that Bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (3 hard copies)  
Section II: Financial Bid (1 hard copy)  
Section III: Certifications (1 hard copy)

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

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

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

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

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

## Section I: Technical Bid

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

The technical bid consists of the following:

- (a) **Supporting Technical documentation:** Technical brochures or technical data to demonstrate compliancy to the requirement as described in Annex "A".
- (b) **ISO 9001:** Bidders must include copy of their ISO 9001 Certification.
- (c) **References:** Bidders must provide customer references who must each confirm, when requested by PWGSC, the information required by Annex "A", Part 2.1 Mandatory Technical Evaluation Criteria.  
For each customer reference, the Bidder must, at a minimum, provide the name and either the telephone number or e-mail address for a contact person. If only the telephone number is provided, it will be used to call to request the e-mail address and the reference check will be done by e-mail.  
Bidders are also requested to include the title of the contact person. It is the sole responsibility of the Bidder to ensure that it provides a contact who is knowledgeable about the services the Bidder has provided to its customer and who is willing to act as a customer reference. Crown references will be accepted.

## Section II: Financial Bid

- (a) **Pricing:** Bidders must submit their financial bid in accordance with the Basis of Payment including Annex "B" – Pricing Table.
- (b) **All Costs to be Included:** The financial bid must include all costs for the requirement described in the bid solicitation for the entire Contract Period. The identification of all necessary equipment, software, peripherals, cabling and components required to meet the requirements of the bid solicitation and the associated costs of these items is the sole responsibility of the Bidder.
- (c) **Blank Prices:** Bidders are requested to insert "\$0.00" for any item for which it does not intend to charge or for items that are already included in other prices set out in the tables. If the Bidder leaves any price blank, Canada will treat the price as "\$0.00" for evaluation purposes and may request that the Bidder confirm that the price is, in fact, \$0.00. No bidder will be permitted to add or change a price as part of this confirmation. Any bidder who does not confirm that the price for a blank item is \$0.00 will be declared non-responsive.

### 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

*SACC Manual* clause 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.

#### 4.1.1 Technical Evaluation

##### 4.1.1.1 Mandatory Technical Evaluation Criteria

The mandatory technical evaluation criteria are detailed in Annex "A", Part 2.1.

#### 4.1.2 Financial Evaluation

The financial evaluation will be conducted by calculating the Total Aggregated Bid Price in accordance with the pricing table provided in Annex "B" - Pricing Table.

##### Evaluation of Price - Bid

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, DAP (Boucherville, Quebec) Incoterms® 2000, Canadian customs duties and excise taxes excluded.

Unless the bid solicitation specifically requires bids to be submitted in Canadian currency, bids submitted in foreign currency will be converted to Canadian currency for evaluation purposes. The rate given by the Bank of Canada in effect on the bid solicitation closing date, or on another date specified in the bid solicitation, will be applied as a conversion factor to the bids submitted in foreign currency.

### 4.2 Basis of Selection

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

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

#### 5.1.2 Additional Certifications Required with the Bid

##### 5.1.2.1 Product Conformance

The Bidder certifies that all goods proposed conform, and will continue to conform throughout the period of the contract, to the requirement detailed under Annex "A".

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**Bidder's authorized representative signature**

**Date**

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

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

#### 5.2.1 Integrity Provisions – Required Documentation

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

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

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's website](#)

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([http://www.esdc.gc.ca/en/jobs/workplace/human\\_rights/employment\\_equity/federal\\_contractor\\_program.page?&\\_ga=1.229006812.1158694905.1413548969](http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969)).

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

## **PART 6 - RESULTING CONTRACT CLAUSES**

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

### **6.1 Security Requirements**

**6.1.1** There is no security requirement applicable to the Contract.

### **6.2 Requirement**

#### **6.2.1 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>) issued by Public Works and Government Services Canada.

#### **6.3.1 General Conditions**

2010A (2016-04-04), 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 are requested on or before \_\_\_\_\_ (to be filled in at contract award).

#### **6.4.2 Delivery Point**

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: Martin Gauthier  
Title: Supply Officer  
Public Works and Government Services Canada  
Commercial Consumer Products Directorate

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11 Laurier Street, 6A2, Phase III  
Place du Portage, Gatineau, Quebec, K1A 0S5  
Telephone: 613-404-8642  
E-mail address: martin.gauthier@tpsgc-pwgsc.gc.ca

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

**6.5.2 Technical Authority** *(to be filled in only at contract award)*

The Technical Authority for the Contract is: *(to be filled in only at contract award)*

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Address: \_\_\_\_\_

Telephone: \_\_\_\_\_  
E-mail address: \_\_\_\_\_

The Technical Authority named above 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 Technical Authority, however the Technical 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 Accounts Payable Contact** *(to be filled in only at contract award)*

Name:  
Telephone:  
E-mail address:

**6.5.4 Contractor's Representative** *(to be completed by the bidder)*

The telephone number (with extension if applicable) of the person responsible for:

<b>General enquiries</b>	<b>Delivery Follow-up</b>
Name: _____	Name: _____
Tel. No. _____ ext: _____	Tel. No. _____ ext: _____
E-mail address: _____	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 firm lot prices, as specified in Annex "B" – Pricing Table for a cost of \$\_\_\_\_\_ (to be filled in only at contract award). Customs duties are excluded 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 Milestone Payments

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract if:

- a. an accurate and complete claim for payment using an invoice, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

#### 6.6.2.1 Schedule of Milestones

Milestone	Payment
NRC acceptance of mould design	25%
NRC acceptance of manufactured mould	45%
NRC acceptance of Factory Acceptance Tests (FAT)	20%
Delivery and NRC final acceptance	10%

### 6.6.3 SACC Manual Clauses

SACC Manual clause C2000C (2007-11-30) Taxes - Foreign-Based Contractor  
SACC Manual clause C2605C (2008-05-12) Canadian Customs Duty and Sales Tax

### 6.6.4 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);

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## 6.7 Invoicing Instructions

1. The Contractor must submit a claim for payment using an invoice. Each claim must show:
  - a. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
  - b. reference to the Milestone identified in table 6.6.2.1
2. Applicable Taxes, must be calculated on the total amount of the claim.
3. Invoices must be distributed as follows:
  - a. The original and one (1) copy must be forwarded to the following address for certification and payment. (*to be filled in only at contract award*)
  - b. One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.
4. The Contractor must not submit claims until all work identified in the claim is completed.

## 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 Ontario.

## 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 (2016-04-04) General Conditions - Goods (Medium Complexity);
- (c) Annex "A", Requirement;
- (d) Annex "B", Pricing Table;
- (e) Annex "E", CAD plan;
- (f) the Contractor's bid dated \_\_\_\_\_ (*insert date of bid*)

## 6.11 SACC Manual Clauses

SACC Manual clause B1501C (2006-06-16) Electrical Equipment  
SACC Manual clause G1005C (2016-01-28) Insurance

## **6.12 Shipping Instructions**

### **6.12.1 Shipping Instructions - Delivery at Place**

1. Goods must be consigned to the destination specified in the Contract and delivered:

Delivered at Place (DAP) Boucherville, Quebec Incoterms 2000 for shipments from a commercial contractor.

NRC Customs is responsible for paying all applicable customs duties and excise taxes.

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## ANNEX "A"

### Part 1 - REQUIREMENT

#### 1.0 Scope

The Automotive and Surface Transportation (AST) of the National Research Council of Canada (NRC) has a requirement for a generic mould to manufacture carbon fibre and glass fibre reinforced polymer composite demonstrators using the Resin Transfer Moulding (RTM) process. This mould must be specifically designed for the RTM process and Compression-RTM process. It will be installed by NRC on a vertical compression moulding press and attached to tee slotted "cold platens" (i.e. not heated) using standard methods. The installation of the mould will be carried out by NRC. The RTM mould will be procured as a turn-key solution. The mould must work at all times and must meet all of the mandatory specifications as specified below at Section 6.0.

The work consists of the design, manufacturing, testing and delivering of the RTM mould, including all parts, accessories and technical documentations. All of the work is requested by March 31, 2017.

Electrical component of the mould must be CSA approved and bare the certification label.

#### 2.0 Background and Technical Details

The mould must be compatible with both RTM and Compression-RTM processes:

- The RTM process consists in injecting a liquid thermoset resin into a closed mould cavity where dry fibre reinforcements (glass, carbon, etc.) are laid out. The reinforcement is usually preformed to the part geometry and dimensions, or slightly bigger. Once injected into the mould, the catalyzed resin fills the mould cavity, impregnates the reinforcement and may exit the mould via a vent port. The mould is heated to allow the curing of the thermoset resin.

-The Compression-RTM process consists in injecting a liquid thermoset resin into a partially opened mould cavity (approximately 1 mm opening) where dry fibre reinforcements (glass, carbon, etc.) are laid out. The reinforcement is usually preformed to the part geometry and dimensions, or slightly bigger. Once injected into the mould, the catalyzed resin fills the mould cavity and impregnates the reinforcement. The mould is then closed, forcing the resin through the reinforcement, thus ensuring full impregnation, and then the resin is allowed to cure.

-In both cases, vacuum can be applied to the mould during the injection to prevent the formation of air pockets (entrapped air).

-In both cases, the mould is attached to the press platens in order to control the opening and closing of the mould. Once the resin is cured, the composite part is demoulded.

The mould consists of two matched dies (male and female).

The part to mould is the main component of an automotive seat back. (See Figure 1 of Appendix A - Additional Technical Details). The 3D design files at Annex "E" take precedence over the dimensions below:

- Approximate length: 0.745 m
- Approximate width: 0.475 m

- Approximate height: 0.135 m
- Approximate thickness: 3 to 21 mm

The composite part will be moulded with the following materials:

- Resins: epoxy and polyurethane, viscosity between 0.05 – 0.2 Pa.s (50 – 200 cP)
- Reinforcements: carbon fibre

For all the technical details, please refer to section 6.0 Mandatory Technical Specifications and the attached Appendix A – Additional Technical Details.

### 3.0 Project Management

3.1 The Contractor must assign a Project Manager as a single point of contact for all matters related to the project. Within five (5) working days of contract award, the Contractor must provide the contact information of the Project Manager to the NRC Project Authority.

3.2 The Contractor must provide NRC with a detailed project schedule that must include all of the deliverables and project milestones identified in article 4.0, within seven (7) working days of contract award.

### 4.0 Deliverables and Project Milestones

All deliverables will be evaluated by the Project Authority to ensure that they meet the project goals and are in accordance with the work requirements. The Project Authority will certify acceptance or will provide comments and change requirements to the Contractor. The Contractor must incorporate updates and resubmit the deliverable for the Project Authority's review within five (5) working days of receipt or request a time extension (via email to the Project Authority accompanied with a rationale for the request) to submit the updated deliverable. Time extension requests will be discussed between the Contractor and the Project Authority and accepted or rejected at the sole discretion of the Project Authority.

The Contractor must submit the following deliverables in accordance with the Deliverable Schedule outlined in Table 1 below:

Table 1: Preliminary Deliverable Schedule

Milestones	Schedule
Mould design	2 weeks after contract award
Mould manufacturing	5 weeks after previous milestone
Factory Acceptance Tests (FAT)	2 weeks after previous milestone
Delivery and NRC final acceptance	Requested by March 31 <sup>st</sup> , 2017

The Deliverable Schedule above will be validated by the Contractor once the Contract is granted.

## **Milestone 1 –Mould design**

4.1 Design review meetings must be organized by the Contractor to provide NRC design progress. Design review meetings should include all information required by NRC to assess the mould design such as, but not limited to, mould drawings, location of injection port(s) and vents, location of heating cartridges and cooling channels, pictures of sub-assemblies/assemblies, updated schedule, etc. A minimum of one design review meeting is requested by NRC.

4.2 The Contractor must provide NRC with the final drawings for NRC's approval before manufacturing. Final drawings must include final 3D design files of the mould (details) and its assembly with separated halves, mould electrical schematic and mould assembly diagram.

4.3 Acceptance by NRC of any items submitted for review will not exempt the Contractor from its obligations to meet all of the technical specifications and the Contractor will remain, at all times, solely responsible for meeting the technical specifications as detailed in section 6.0.

### **Deliverables:**

- 3D design files of the mould (details) and its assembly with separated halves
- Mould electrical schematic
- Mould assembly diagram

## **Milestone 2 –Mould manufacturing**

4.4 The Contractor must manufacture the mould in accordance with part geometry and technical specifications as detailed in section 6.0 and Appendix A. Upon completion of the manufacturing process, the Contractor must provide a compliance matrix validating that all of the technical specifications are met. The compliance matrix must include, when possible, pictures proving that the technical specifications are met.

### **Deliverables:**

- Mould compliance matrix after mould manufacturing

## **Milestone 3 – NRC acceptance of Factory Acceptance Tests (FAT)**

4.5 The Contractor must complete the Factory Acceptance Testing (FAT) in accordance with the FAT process specified at section 5.0 before shipping the RTM mould to NRC. The Contractor must provide all information required for NRC to accept the FAT, such as, but not limited to, tridimensional control of the male and female halves of the mould, summary report of the factory acceptance trials. Parts moulded during acceptance trials must be sent to NRC for further evaluation and acceptance.

### **Deliverables:**

- Tridimensional control of the male and female halves of the mould
- Tridimensional control of the parts moulded during the factory acceptance trials
- Summary report (including pictures) on all collected data results
- Parts moulded during the factory acceptance trials

## **Milestone 4 – Delivery and NRC final acceptance**

4.6 Shipping is pending on acceptance of the FAT results by NRC.

4.7 The RTM mould must be delivered at 75 Blvd. de Mortagne, Boucherville, QC, J4B 6Y4, Canada.

4.8 Delivery is requested no later than March 31st 2017.

4.9 In order to be accepted by the NRC, the mould must meet all the technical specifications listed in section 6.0. NRC will also validate that all parts and accessories of the mould are delivered as specified in the mould assembly diagram. The Contractor must provide the list of spare parts, including supplier names and contact information upon delivery.

**Deliverables:**

- Turn-key built to specification RTM mould with all parts and accessories
- List of spare parts, including supplier names and contact information
- One (1) hard copy of mould electrical schematic + one (1) electronic copy
- One (1) hard copy of mould assembly diagram + one (1) electronic copy
- One (1) hard copy of the final compliance matrix
- One (1) hard and soft copy of 3D design of the mould layout

**5.0 Factory Acceptance Tests (FAT)**

The Contractor must perform Factory Acceptance Tests (FAT) on a fully assembled and configured mould, to validate the following requirements:

5.1 The mould is liquid tight to fluids with viscosity ranging from 0.05 to 0.2 Pa.s and airtight for the injection strategies below:

- RTM: Closed mould injection, no vacuum
- RTM: Closed mould injection, with vacuum
- Compression-RTM: Opened mould injection (compression- RTM), no vacuum.
- In that case, the mould is opened with a 1 mm gap during the filling and impregnation of the resin. Once the cavity is filled, the mould is then closed to finish impregnation of the reinforcement and for the curing of the resin.
- Compression-RTM: Opened mould injection (compression- RTM), with vacuum.
- In that case, the mould is opened with a 1 mm gap during the filling and impregnation of the resin. Once the cavity is filled, the mould is then closed to finish impregnation of the reinforcement and for the curing of the resin. Vacuum is used from injection of the resin to demoulding of the part.

5.2 Mould heating and cooling capacities: the mould must be thermo-regulated as required by the specified process with uniform heating with electrical cartridges up to 200°C± 5°C (at the surface) and water cooling system.

5.3 Demoulding system: the demoulding system selected by the Contractor is working.

5.4 Part tridimensional control: the position of the Six (6) datum points engraved in the component corresponds to the position localised on the 3D design file of the component supplied by the NRC.

5.5 Tridimensional control of the male and female halves of the mould: the dimensions of the male and female halves of the mould correspond to the 3D design files of the mould supplied by the Contractor.

5.6 The Contractor must conduct the FAT at a mutually agreed upon date/time; NRC personnel must be able to observe and direct the testing.

5.7 NRC will be responsible for all travel and living expenses for NRC personnel attending the FAT. NRC will be responsible for the costs of the raw materials (resin and reinforcement) needed to mould the composite part for the FAT.

5.8 The Contractor will document all test successes and deficiencies during the FAT and will provide a summary report (including pictures) on all collected data results to NRC. The Contractor will rectify all deficiencies to NRC's satisfaction prior to delivery and acceptance.

## **6.0 Mandatory Technical Specifications**

The contractor must provide the RTM mould that meets all of the following technical specifications.

6.1 The mould must be compatible with RTM and Compression-RTM processes, i.e. it must be liquid tight to fluids with viscosity ranging from 0.05 to 0.2 Pa.s. (50 to 200 cP) and airtight in order to be able to put the mould cavity under vacuum for the injection strategies below:

- RTM: Closed mould injection, no vacuum
- RTM: Closed mould injection, with vacuum
- Compression-RTM: Opened mould injection (compression- RTM), no vacuum. In that case, the mould is opened with a 1 mm gap during the filling and impregnation of the resin. Once the cavity is filled, the mould is then closed to finish impregnation of the reinforcement and for the curing of the resin.
- Compression-RTM: Opened mould injection (compression- RTM), with vacuum. In that case, the mould is opened with a 1 mm gap during the filling and impregnation of the resin. Once the cavity is filled, the mould is then closed to finish impregnation of the reinforcement and for the curing of the resin. Vacuum is used from injection of the resin to demoulding of the part.

6.2 The mould must withstand a clamping force of 1250 tons.

6.3 The mould must fit in NRC press' tee slotted platens of 1100 mm per 1300 mm.

6.4 The mould must use the metric system.

6.5 The mould must be fabricated in mould steel.

6.6 A feature must ensure the perfect alignment of both halves of the mould when the mould closes.

6.7 The mould must be thermo-regulated as required by the specified process: uniform heating with electrical cartridges up to 200°C± 5°C (at the surface) and water cooling system.

6.8 Connections of the heating system and cooling system (electrical connections, water connection) must be compatible with the existing connections in place at NRC's facility. Details on the type of connections required for the heating system and cooling system, the type of thermocouples to be used, and the desirable locations of the connections are provided at Appendix A - Additional Technical Details.

6.9 The two parts of the mould must have insulation plates to minimize heat losses between the mould and the press platens.

6.10 The mould must be designed so that the reinforcement is pinched all around the part in order to prevent the reinforcement displacement during the filling of the cavity or creation of preferential flow channels.

6.11 The inlet gate, the filling channels, the vent gate and the vent channels must be properly positioned in the mould by the Contractor in order to ensure the complete filling of the part (no dry spots). Additional technical details on the types of connections required for the inlet and vent gates are provided below (see Appendix A – Additional Technical Details).

6.12 The mould must have a demoulding system, such as pneumatic ejection pins, to ease the removal of the part from the mould.

6.13 Six (6) datum points must be engraved in the mould (female side) to enable dimensional control of the part by NRC. The six (6) datum points are localised by NRC on the CAD file.

6.14 The mould must have the following tolerances and surface finish:

- Tolerance on moulded surfaces:  $\pm 0.3$  mm.
- Tolerance on the "end of part" line:  $\pm 0.1$  mm.
- Surface finish of all moulding surfaces: polished, Grit 320 or better.

6.15 The mould must have a clamping system to secure the mould to the press.

6.16 Each face of the mould must have tapped holes to help handling each half of the mould using lifting eye bolts. The type and dimensions of the lifting eye bolts are chosen and supplied by the Contractor. The position of the tapped holes is determined by the centre of gravity of each half and allows a safe handling of the mould.

6.17 During handling of the assembled mould (both halves together), the two halves of the mould must be fixed together with tie bars. The tie bars must be strong enough to handle both halves of the mould together, using only the lifting eye bolts of one half.

6.18 The positions of the centerline of the mould must be engraved on each external surface of the half mould (top surface and four sides for the top part of the mould and bottom surface and four sides for the bottom part of the mould). The centroid of the part (x and y) must also be engraved on each external surface of the mould (both parts). The centerline and the centroid are used to control the positioning of the mould on the press platens.

6.19 Handling of the mould must be possible with a forklift. Use of removable U-channels is acceptable. If used, the U-channel must allow clearances of 10 cm in height and 20 cm in width. The distance between the two U-channels must be superior or equal to 36 cm.

6.20 Electrical components of the mould must be CSA approved and the mould must bare the certification label.

## Appendix A - ADDITIONAL TECHNICAL DETAILS

- Geometry of the component to be moulded by RTM



Figure 1: Seat back component to be moulded by RTM process (design is proprietary to NRC)

- Additional technical details on heating and cooling systems
  - Mould is connected to the NRC's temperature controller via a single point of connexion. The connection of the heating of the mould to the press should be localised at the back of the mould, on the left side (see Figure 2). The connection must be done via "Harting HAN-12HSC-M 10A 250V" plug. NRC's press allows 24 heating zones, with a power of 6000 W per zone at 240 V CA – 12 zones for the punch and 12 zones for the cavity. Thus, there are 24 possible connections for the power and 24 possible connections for the thermocouples. Electrical connectors are supplied by the Contractor.
  - Type "J" thermocouples properly located, allow for controlling the temperature of the mould and ensuring its uniformity. A minimum of two thermocouples must be used for the male and female parts of the mould for a total minimum of four sensors. The thermocouples must connect to the mould via "Harting HAN 24E-M-16A 500V" male plugs. The connection should be located at the back of the mould on the left side.
  - The cooling system must use water as cooling fluid. The cooling pipes must be in steel (stainless steel preferably). A male connection, type Tomco, series MC 300 is needed to connect the cooling system of the mould to the press. This fitting for the cooling system is supplied by the Contractor.
  - The cooling system connection for each half of the mould should be located at the back of the mould, preferably on the right side (see Figure 2).
  - Electrical connectors and fittings for the cooling systems meet industry's best practice standards and are provided by the Contractor.

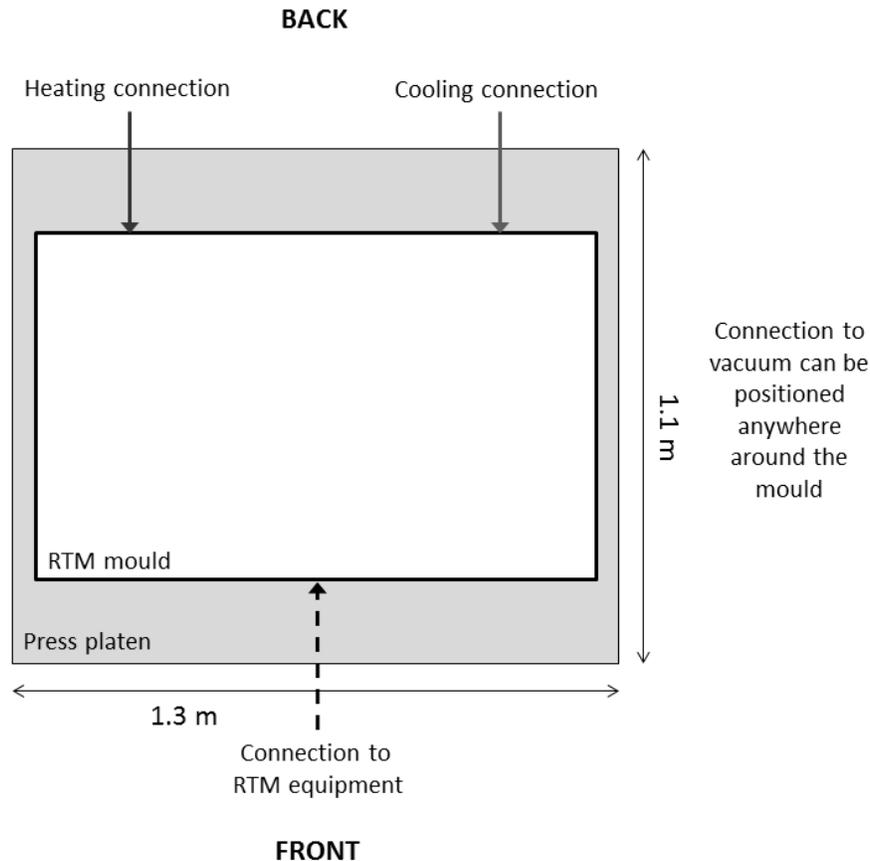


Figure 2: Desired positions of the various connections between the mould and the press

- Additional technical details on the injection
  - A single connection point between the injection equipment (Resin Transfer Moulding equipment) and the mould should be used. Ideally, this connection is localized on the front of the mould (see Figure 2). Note that the press platens don't allow a connection from the top of the mould (top or bottom, for central injection).
  - The RTM equipment and the mould must connect via a threaded NPT 3/8"-18 hole, identified "Injection".
  - The connexion between the mould and the vacuum vent can be localized anywhere around the mould.
  - The mould must connect to the vacuum gate via a threaded NPT 3/8"-18 hole, identified "Vent".
  - As the connection between the RTM equipment and the mould cannot be localized at the top of the mould, it would be more suitable to have a lateral injection of the resin into the part. A central injection could be considered if it allows a better filling of the part and if the inlet gate and the filling channels are easily accessible to properly clean them from the cured resin.

- 
- The filling channels and vent channels are easily accessible to ensure a complete cleaning (removal) of the cured resin with brass tools when the mould is opened. Note that the mould will be treated with standard external release agents.
  - The inlet gate (single connection point between the RTM equipment and the mould) and vent gate (single connection point between the mould and the vacuum point) are also designed to allow a complete cleaning of the cured resin with brass tool when the mould is opened.
- Other additional details
    - An identification plaque must be attached to the mould. Identification must include mould name/drawing number, date of manufacturing, mould weight in kg, maximum service temperature in Celsius, and maximum service tonnage. The information can be engraved or stamped on to the identification plaque.
    - The male half part of the mould is identified as "Bottom" to indicate that it has to be mounted on the bottom press platen. The female half part of the mould is identified "Top" to indicate that it has to be mounted on the top press platen.
    - The "end of part" reference line is engraved in both halves of the mould. An additional reference line, positioned 5 mm outside the "end of part" reference line is also engraved in both halves of the mould. This additional line indicates the position of the first rough trim of the part. Pinching of the reinforcement on a 10 mm width around the part is done from this 2nd reference line. Part's hole must be localised and engraved on the mould (female part).
    - The mould must be protected against corrosion during shipping.
  - Documents provided by NRC
    - Drawing and dimensions of the tee slotted platens of the press used by NRC

### Part 2.1 - MANDATORY TECHNICAL EVALUATION CRITERIA

**The following requirements are the mandatory technical evaluation criteria which will be evaluated during the Bid Evaluation. In addition the Contractor will be required to meet all of the mandatory technical requirements for the duration of the Contract**

ITEM	CRITERIA	REFERENCE TO SUBSTANTIATION IN THE TECHNICAL BID
1.1	The bidder must provide a minimum of two (2) projects within the last ten (10) years where the Contractor has manufactured RTM moulds compatible with RTM and Compression-RTM processes as described in section 6.1 of the Annex A.	
1.2	<p>The projects must demonstrate the following four (4) technical specifications described in section 6.0 of the Annex A :</p> <ol style="list-style-type: none"> <li>1. The mould must be thermo-regulated as required by the specified process: uniform heating with electrical cartridges up to 200°C± 5°C (at the surface) and water cooling system.</li> <li>2. The inlet gate, the filling channels, the vent gate and the vent channels must be properly positioned in the mould by the Contractor in order to ensure the complete filling of the part (no dry spots)</li> <li>3. The mould must have a demoulding system, such as pneumatic ejection pins, to ease the removal of the part from the mould</li> <li>4. Electrical components of the mould must be CSA approved and the mould must bare the certification label</li> </ol> <p>*The same projects may be used for criteria 1.1 and 1.2</p>	
1.3	The bidder must provide reference(s) for each project. The Bidder must, at a minimum, provide the name and either the telephone number or e-mail address for a contact person. If only the telephone number is provided, it will be used to call to request the e-mail address and the reference check will be done by e-mail.	
2.0	The bidder must be ISO 9001 certified.	

Solicitation No. - N° de l'invitation  
31026-166779/A  
Client Ref. No. - N° de réf. du client  
31026-166779

Amd. No. - N° de la modif.  
File No. - N° du dossier  
pv939.31026-166779

Buyer ID - Id de l'acheteur  
pv939  
CCC No./N° CCC - FMS No./N° VME

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## ANNEX "B"

### PRICING TABLE

The Bidder must provide all of the pricing requested in the following Table in accordance with **Article 6.6.1 - Basis of Payment.**

#### Requirement:

Item No.	Requirement	Qty	Extended Price
1	RTM mould as per Annex "A" Requirement.	1	\$
Total USD/CAD:			\$

Solicitation No. - N° de l'invitation  
31026-166779/A  
Client Ref. No. - N° de réf. du client  
31026-166779

Amd. No. - N° de la modif.  
File No. - N° du dossier  
pv939.31026-166779

Buyer ID - Id de l'acheteur  
pv939  
CCC No./N° CCC - FMS No./N° VME

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**ANNEX "C"**

**COMPLETE LIST OF DIRECTORS  
(As per Standard Instructions, Clauses and Conditions Part 2)**

Name	Position
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**ANNEX "D" to PART 3 OF THE BID SOLICITATION**  
**ELECTRONIC PAYMENT INSTRUMENTS**

**As indicated in Part 3, clause 3.1.2, the Bidder must identify which electronic payment instruments they are willing to accept for payment of invoices.**

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

- VISA Acquisition Card;
- MasterCard Acquisition Card;
- Direct Deposit (Domestic and International);
- Electronic Data Interchange (EDI);
- Wire Transfer (International Only);
- Large Value Transfer System (LVTS) (Over \$25M)