

**Return Bids to:**

Natural Resources Canada  
Bid Receiving

See herein for bid submission instructions

**Request for Proposal (RFP)****Proposal To: Natural Resources Canada**

We hereby offer to sell to His Majesty the King 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.

**Comments****Issuing Office**

Natural Resources Canada  
Finance and Procurement Management Branch  
580 Booth Street  
Ottawa, ON  
K1A 0E4

<b>Title</b> Assessment of Fatigue and Toughness of Steel Pipes and Fittings in Gaseous Hydrogen	
<b>Solicitation No.</b> <b>NRCan-5000077976/B</b>	<b>Date</b> February 5, 2024
<b>Requisition Reference No.</b> 180298	
<b>Solicitation Closes</b> <b>at – à 2 p.m. (Eastern Standard Time (EST))</b> <b>on – le February 20, 2024</b>	
<b>Address Enquiries to: - Adresse toutes questions à:</b>  Steve Verner; <a href="mailto:steve.verner@nrca-nrcan.gc.ca">steve.verner@nrca-nrcan.gc.ca</a>	
<b>Telephone No. – No de telephone</b>  343-543-6090	
<b>Destination – of Goods and Services:</b>  Natural Resources Canada 183 Longwood Road South Hamilton, ON L8P 0A5	
<b>Security</b>  THERE ARE NO SECURITY REQUIREMENTS ASSOCIATED WITH THIS REQUIREMENT.	
<b>Vendor/Firm Name and Address</b>          <b>Telephone No.:</b>  <b>Email:</b>	
<b>Name and Title of person authorized to sign on behalf of Vendor/Firm (type or print)</b>          <b>Signature</b> _____ <b>Date</b> _____	

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The Articles contained in this document are mandatory in their entirety, unless otherwise indicated. Acceptance of these Articles, in their entirety, as they appear in this document, is a Mandatory requirement of this RFP.

**Suppliers submitting a proposal containing statements implying that their proposal is conditional on modification of these clauses or containing terms and conditions that purport to supersede these clauses or derogate from them will be considered non-responsive.**

Bidders with concerns regarding the provisions of the Bid Solicitation document (including the Resulting Contract Clauses) should raise such concerns in accordance with the Enquiries provision of this RFP.

By signing its bid, the bidder confirms that they have read the entire bid solicitation including the documents incorporated by reference into the bid solicitation and certifies that:

1. The Bidder considers itself and its proposed resources able to meet all the mandatory requirements described in the bid solicitation;
2. This bid is valid for the period requested in the bid solicitation;
3. All the information provided in the bid is complete, true and accurate; and
4. If the Bidder is awarded a contract, it will accept all the terms and conditions set out in the resulting contract clauses included in the bid solicitation.



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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 the Statement of Work, the Basis of Payment.

The Appendixes include the Evaluation Criteria and the Financial Proposal Form.

### 1.2 Summary

By means of the RFP, Natural Resources Canada (NRCan) is seeking proposals from bidders to generate quantitative data for the performance of candidate steel pipes and fittings in gaseous hydrogen environments which is required to evaluate the suitability of these components for the transportation and distribution of hydrogen gas by the existing and future pipeline systems.

The contract will be carried out with the following objectives:

- (1) Assessment of tensile properties, fatigue performance and fracture toughness of selective steel pipes and fittings in air as the reference condition.
- (2) Assessment of fatigue crack growth rate and fracture toughness (JQ) of the selected steel pipes and fittings in high pressure gaseous hydrogen (up to 3000 psi of pure hydrogen gas).
- (3) Determine quantitatively the properties degradation of the examined steels under specific hydrogen environment.
- (4) Develop knowledge and information to conduct in-situ mechanical testing in high pressure hydrogen gas and blends

The essential data and information collected from this contract will be fed into two (2) NRCAN's OERD projects to assess the suitability and integrity of the selected steel pipes and fittings for hydrogen transportation, as well as to aid the development of proper codes and standards for line pipe steel qualification.

The contract entails two phases spanning two years: **Phase 1**, 36 weeks following the contract award starting in 2023-24 and an **OPTIONAL – Phase 2**, 72 weeks following the contract award ending in 2024-25.

- 1.2.1 This bid solicitation allows bidders to use the CPC 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.



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### 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 fifteen (15) working days from receipt of the results of the bid solicitation process. The debriefing will be done in writing, by email.



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## 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.

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](#) (2023-06-08) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

- **In the complete text content (except Section 1 and 3)**  
**Delete:** "Public Works and Government Services Canada" and "PWGSC"  
**Insert:** "Natural Resources Canada." and "NRCan"
  
- **At 02 Procurement Business Number:**  
**Delete:** "Suppliers are required to"  
**Insert:** "It is suggested that suppliers"
  
- **At 08 Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 1:**  
**Delete:** in its entirety
  
- **At 08 Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 2a:**  
**Delete:** : The only acceptable email address to use with CPC Connect for responses to bid solicitations issued by PWGSC headquarters is: [tpsgc.pareceptiondessaoumissions-apbidReceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.pareceptiondessaoumissions-apbidReceiving.pwgsc@tpsgc-pwgsc.gc.ca). or, if applicable, the email address identified in the bid solicitation.  
**Insert:** The only acceptable email address to use with CPC Connect for responses to bid solicitation issued by NRCan is: [procurement-approvisionnement@NRCan-RNCan.gc.ca](mailto:procurement-approvisionnement@NRCan-RNCan.gc.ca)
  
- **At 08, Transmission by facsimile or by Canada Post Corporation's (CPC) Connect service, article 2b:**  
**Delete:** "six business days"  
**Insert:** "five business days"
  
- **At 20, Further information, article 2b:**  
**Delete:** in its entirety

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

Delete: 60 days  
Insert: 180 days



## 2.2 Submission of Bids

Bidders must submit all proposals using the Canada Post Canada (CPC) Connect service. Given the current constraints on NRCan's networks, the electronic mail system has a limit of 1GB per single message received and a limit of 20GB per conversation.

Bids must be submitted no later than the date and time indicated on page 1 of the bid solicitation.

**Only bids submitted using CPC Connect service will be accepted.**

At least five (5) business days before the bid solicitation closing date, it is necessary for the Bidder to send an email requesting to open CPC Connect conversation to the following address:

[procurement-appvisionnement@NRCan-RNCan.gc.ca](mailto:procurement-appvisionnement@NRCan-RNCan.gc.ca)

**Note 1:** Bids will not be accepted if e-mailed directly to this address. This e-mail address is to be used to open CPC Connect conversation, as detailed in the Standard Instructions [2003 \(article 08, paragraph 2\)](#), or to send bids through CPC Connect message if the bidder is using its own licensing agreement for CPC Connect.

**Note 2:** Send as early as possible in order to ensure a response, Requests to open a CPC Connect conversation received after that time may not be answered.

**IMPORTANT:** It is requested that you write the bid solicitation number in "Subject" of the email:

[NRCan-5000077976/B-Assessment of Fatigue and Toughness of Steel Pipes and Fittings-180298](#)

NRCan will not assume responsibility for proposals directed to any other location.

The onus is on the Bidder to ensure that the bid is submitted correctly using CPC Connect service. Not complying with the instructions may result in NRCan's inability to ascertain reception date and/or to consider the bid prior to contract award. Therefore, NRCan reserves the right to reject any proposal not complying with these instructions.

Due to the nature of the bid solicitation, bids transmitted by email, mail or facsimile to NRCan will not be accepted.

## 2.3 Former Public Servant

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 FPS, 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.





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## 2.4 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 5 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 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.

## 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 favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least 5 calendar days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

## 2.7 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.



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## PART 3 - BID PREPARATION INSTRUCTIONS

### 3.1 Bid Preparation Instructions

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

Canada requests that the Bidder submits its bid in separately saved documents as follows:

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

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

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

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](https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573) (<https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573>). To assist Canada in reaching its objectives, bidders should:

- 1) Include all environmental certification(s) relevant to your organization (e.g., ISO 14001, Leadership in Energy and Environmental Design (LEED), Carbon Disclosure Project, etc.)
- 2) Include all environmental certification(s) or Environmental Product Declaration(s) (EPD) specific to your product/service (e.g., Forest Stewardship Council (FSC), ENERGYSTAR, etc.)

#### 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 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.

#### Section II: Financial Bid

- 3.1.1 Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet in Appendix 2.

#### Section III: Certifications

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



**Section IV: Additional Information**

**In section IV of their bid, the Bidders should include:**

- a) 1<sup>st</sup> page of the RFP signed, with their legal name;
- b) The name of the contact person (provide also this person's mailing address, phone numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to their bid, and any contract that may result from their bid.



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## **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, evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

#### **4.1.1 Technical Evaluation**

Mandatory technical, evaluation criteria are included in Appendix 1 – Evaluation Criteria.

### **4.2 Basis of Selection**

#### **4.2.1 Mandatory Technical Criteria**

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



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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 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 [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 Contractor must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

All applicants, regardless of their status under the policy, must have the following information at the time to participate in a procurement process:

- Suppliers that are corporate entities, including those bidding as joint ventures, must provide a complete list of the names of all current directors or, for a privately owned corporation, the names of the owners of the corporation;
- Suppliers bidding as sole proprietors, including sole proprietors bidding as joint ventures, must provide a complete list of the names of all owners;
- Suppliers that are a partnership do not need to provide a list of names.

Supplier's Legal Name: \_\_\_\_\_

OR

Name of each member of the joint venture:

Member 1: \_\_\_\_\_

Member 2: \_\_\_\_\_



Member 3: \_\_\_\_\_

Member 4: \_\_\_\_\_

**Organizational Structure:**

- corporate entity (shareholders) - provide the names of the current Board of directors
- privately owned corporation - provide a list of the owner's names
- sole proprietor - provide a list of the owner's names

**LIST OF NAMES**

LAST NAME	FIRST NAME	TITLE

**5.2.2 Aboriginal Designation**

Who is eligible?

- a. An Aboriginal business, which can be:
- i. a band as defined by the Indian Act
  - ii. a sole proprietorship
  - iii. a limited company
  - iv. a co-operative
  - v. a partnership
  - vi. a not-for-profit organization

in which Aboriginal persons have at least 51 percent ownership and control,

OR

- b. A joint venture consisting of two or more Aboriginal businesses or an Aboriginal business and a non-Aboriginal business(es), provided that the Aboriginal business(es) has at least 51 percent ownership and control of the joint venture.

When an Aboriginal business has six or more full-time employees at the date of submitting the bid, at least thirty-three percent of them must be Aboriginal persons, and this ratio must be maintained throughout the duration of the contract.

The supplier must certify in its submitted bid that it is an Aboriginal business or a joint venture constituted as described above.

- Our Company is NOT an Aboriginal Firm
- Our Company is an Aboriginal Firm, as identified above.

**5.2.3 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.

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.

**5.2.4 Additional Certifications Precedent to Contract Award****5.2.4.1 Status and Availability of Resources**

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

**5.2.4.2 Education and Experience**

SACC Manual clause [A3010T](#) (2010-08-16) Education and Experience

**5.2.4.3 Former Public servant**

<b>Former Public Servants</b> See the Article in Part 2 of the bid solicitation entitled Former Public Servant for a definition of "Former Public Servant".	Is the Bidder a FPS in receipt of a pension as defined in the bid solicitation? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, provide the information required by the Article in Part 2 entitled "Former Public Servant"
	Is the Bidder a FPS who received a lump sum payment under the terms of the Work Force Adjustment Directive? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, provide the information required by the Article in Part 2 entitled "Former Public Servant"

**SIGNATURE for CERTIFICATION**

The Contractor certifies having read and understood the information included in the present document and acknowledges receipt.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Authorized Representative



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## **PART 6 – SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

### **6.1 Security Requirements**

There are no security requirements associated with this procurement.





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## 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

The Contractor must perform the Work in accordance with the Statement of Work at Annex A and the Contractor's technical bid entitled \_\_\_\_\_, dated \_\_\_\_\_. (*to be completed at contract award*)

#### 7.1.1 Optional Services

The Contractor grants to Canada the irrevocable option to acquire the goods, services or both described at Annex A of the Contract under the same conditions and at the prices and/or rates stated in the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option at any time before the expiry of the Contract by sending a written notice to the Contractor.

### 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

[2010B](#) (2022-12-01), General Conditions - Medium Complexity – Professional Services, apply to and form part of the Contract.

If applicable, replace references to Public Works and Government Services Canada (PWGSC) with Natural Resources Canada (NRCan)

### 7.3 Security Requirements

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 date of Contract to March 31, 2025 inclusive.

#### 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 one (1) additional year period 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 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.



## 7.5 Authorities

### 7.5.1 Contracting Authority

Name: Steve Verner  
 Title: Senior Procurement Officer  
 Organization: Natural Resources Canada  
 Address: 580 Booth Street, Ottawa, ON K1A 0E4  
 Telephone: 343-543-6090  
 E-mail address: [steve.verner@nrcan-rncan.gc.ca](mailto:steve.verner@nrcan-rncan.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 or Technical Authority

Name: \_\_\_\_\_ (to be filled out at contract award)  
 Title: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_\_  
 E-mail address: \_\_\_\_\_

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

### 7.5.3 Contractor's Representative

Name: \_\_\_\_\_ (to be filled out at contract award)  
 Title: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_\_  
 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 - Firm Price, Firm Unit Price(S) or Firm Lot Price(s)

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 \$ \_\_\_\_\_ (insert the amount at contract award). Customs duties are included, and Applicable Taxes are extra.



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

## 7.7.2 Method of Payment

### 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, 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.

## 7.8 Invoicing Instructions

Invoices shall be submitted using **the following method**:

E-mail:

[Invoicing-Facturation@nrcan-rncan.gc.ca](mailto:Invoicing-Facturation@nrcan-rncan.gc.ca)

**Note:** Attach "PDF" file. No other formats will be accepted

Invoices and all documents relating to a contract must be submitted on the Contractor's own form and shall bear the Contract number: \_\_\_\_\_

**Invoicing Instructions to suppliers:** <http://www.nrcan.gc.ca/procurement/3485>

## 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.

## 7.10 Applicable Laws

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

## 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 [2010B](#) (2022-12-01), Medium Complexity – Professional Services;
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;



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(e) the Contractor's bid dated \_\_\_\_\_. (*insert date of bid*).

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

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

**OR**

SACC Manual clause [A2001C](#) (2006-06-16) Foreign Nationals (Foreign Contractor)

### 7.13 Insurance - No Specific Requirement

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

### 7.14 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

### SW.1.0 TITLE

#### Assessment of Fatigue and Toughness of Steel Pipes and Fittings in Gaseous Hydrogen

### SW.2.0 BACKGROUND

To reach the Government's mandate of Net-Zero Emissions by 2050, the decarbonization of industrial sectors and residential stakeholders are required. Hydrogen gas and its blends with natural gas tend to be a viable energy option. However, transportation and distribution of gaseous hydrogen and its blends by pipeline network is required. The response of existing and new pipes and fittings to pressurized gaseous hydrogen are not completely assessed and understood. More knowledge and data are required to develop conclusive codes and standards.

This research contract aims to assess the degradation of pipes and fittings in high pressure hydrogen environments. To this end, two crucial attributes namely Fatigue Crack Growth Rate (FCGR) and Fracture Toughness ( $J_Q$ ) will be assessed for a few existing and prototype pipes and fittings. These attributes are used for the design and integrity management of pipelines. ASTM E647 testing methods will be used to determine the FCGR and ASTM E1820 practice will be used to measure the fracture toughness of the steel pipes and fittings. Base performance of the examined steels in air, namely FCGR and  $J_Q$  at least with one test, must be determined as well.

The assessment of fatigue and toughness of steel pipes under high pressure gaseous hydrogen requires very specific testing rigs, i.e., a load frame coupled with a high-pressure autoclave which is capable of dynamic loading without any leak and contamination. Further, the equipment must be hosted in a specialized testing facility that monitors and controls the stringent safety aspects and requirements of hydrogen utilization, e.g. blast proof infrastructure with active safety sensors and monitoring. The contractor must have such capabilities and equipped with a sufficient number of these testing rigs. Further, the contractor must have proper expertise to conduct and analyze and interpret the required fatigue and toughness measurements.

The data and information from these assessments are required for the delivery of two ongoing OERD projects (CMAT-22-311 and CMAT-23-121), since none of the NRCAN's facilities is equipped with such capabilities. The aforementioned OERD projects spans four years and provide key information to support the development of codes and standards for transportation and distribution of hydrogen gas and blends by existing and future pipeline network.

### SW.3.0 OBJECTIVES

The scope of this contract is to generate quantitative data for the performance of candidate steel pipes and fittings in gaseous hydrogen environments which are required to evaluate the suitability of these components for the transportation and distribution of hydrogen gas by the existing and future pipeline systems.

The contract will be carried out with the following objectives:

- (5) Assessment of tensile properties, fatigue performance and fracture toughness of selective steel pipes and fittings in air as the reference condition.
- (6) Assessment of fatigue crack growth rate and fracture toughness  $J_Q$  of the selected steel pipes and fittings in high pressure gaseous hydrogen (up to 3000 psi of pure hydrogen gas).
- (7) Determine quantitatively the property degradation of the examined steels under specific hydrogen environment
- (8) Develop knowledge and information to conduct in-situ mechanical testing in high pressure hydrogen gas and blends

The essential data and information collected from this contract will be fed into two NRCAN's OERD projects to assess the suitability and integrity of the selected steel pipes and fittings for hydrogen transportation.



## SW.4.0 PROJECT REQUIREMENTS

### SW.4.1 Tasks and Deliverables

The contract entails two phases spanning two years:

**Phase 1 for 2023-24** to assess the properties of three steel pipes and fittings and as an **option Phase 2 for 2024-25** to measure the degradation properties of additional three steel pipes and fittings. The required materials for these assessments will be provided by CanmetMATERIALS in the form of skelps or pipe segments and the contractor is responsible for cutting, machining and test sample preparations. The planned test matrix are demonstrated in the following tables.

**Table 1- Planned assessments in Phase 1, 2023-24 fiscal year**

Supplied materials as plate/skelp	E647: FCG @3000 psi H2, 1 Hz, R=0.5 at low and high $\Delta K$ (Compact tension in TL orientation no side groove)	E1820: J_Q and K_Q @3000 psi H2 (Compact tension in TL orientation with side groove)	Timeline
Fitting #1 Grade & WT TBD	x3 Plus x1 in air	x3 Plus x1 in air	Within 36 weeks of contract award
X65LM 600 WT 0.4"	x3 Plus x1 in air	x3 Plus x1 in air	Within 36 weeks of contract award
X70HM 565 WT 0.4"	x3 Plus x1 in air	x3 Plus x1 in air	Within 36 weeks of contract award

**Table 2 - Planned assessments (Optional) Phase 2, 2024-25 fiscal year**

Supplied materials as plate/skelp	E647: FCG @3000 psi H2, 1 Hz, R=0.5 at low and high $\Delta K$ (Compact tension in TL orientation no side groove)	E1820: J_Q and K_Q @3000 psi H2 (Compact tension in TL orientation with side groove)	Timeline
Fitting #2 Grade & WT TBD	x3 Plus x1 in air	x3 Plus x1 in air	Within 72 weeks of contract award
X65LM 565 WT 0.4"	x3 Plus x1 in air	x3 Plus x1 in air	Within 72 weeks of contract award
X70HMo 565 WT 0.4"	x3 Plus x1 in air	x3 Plus x1 in air	Within 72 weeks of contract award

To address the planned assessments as depicted in Table 1 and 2, the following tasks will be carried out for Phase 1 (Table 3) and for the **optional** Phase 2 (Table 4).

**Table 3 - Detailed tasks, deliverables and milestones for Phase 1 (2023-2024)**

Tasks	Description	Deliverables	Timeline
1	CMAT will provide one fitting steel and two steel pipes	Acknowledge the receipt of the initial materials	Within 2 weeks of contract award
2	The contractor will design suitable geometry and dimensions of the samples which are required for tensile (ASTM E8), Fatigue (ASTM E647) and Fracture toughness (ASTM E1820) tests and machine triplicate samples.	Three base-line tensile samples , three base-line fatigue in air, three base-line fracture toughness in air and eighteen compact tension samples for fatigue and fracture in hydrogen machined. Drawings for these samples are provided.	Within 4 weeks of contract award
3	The contractor will conduct baseline tensile , fatigue and toughness measurements in air for the supplied three steel pipes/fitting	Preliminary data and results from base-line testing in air, as well as test procedures (via monthly web conference).	Within 10 weeks of contract award
4	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied Fitting #1 Grade in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen, as well as test parameters and procedures (via monthly web conference)	Within 14 weeks of contract award
5	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied X65LM 600 WT 0.4" in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen , as well as test parameters and procedures (via monthly web conference)	Within 20 weeks of contract award
6	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied X70HM 565 WT 0.4" in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen , as well as test parameters and procedure (via monthly web conference)	Within 26 weeks of contract award
7	The contractor will conduct post-test fractography on a partial subset of specimens using optical and scanning electron microscopy.	Preliminary results from post-test fractography (via monthly web conference)	Within 30 weeks of contract award
8	The contractor will summarize the data, analysis and findings in a final technical reports and host a web conference to review the results.	Final report and presentation for Phase One.	Within 36 weeks of contract award

**Table 4 - Detailed tasks, deliverables and milestones for (Optional) Phase 2 (2024-2025)**

Tasks	Description	Deliverables	Timeline
1	CMAT will provide one fitting steel and two steel pipes	Acknowledge the receipt of the initial materials	Within 38 weeks of contract award
2	The contractor will design suitable geometry and dimensions of the samples which are required for tensile (ASTM E8), Fatigue (ASTM E647) and Fracture toughness (ASTM E1820) tests and machine triplicate samples.	Three base-line tensile samples , three base-line fatigue in air, three base-line fracture toughness in air and eighteen compact tension samples for fatigue and fracture in hydrogen machined. Drawings for these samples are provided.	Within 40 weeks of contract award
3	The contractor will conduct baseline tensile , fatigue and toughness measurements in air for the supplied three steel pipes/fitting	Preliminary data and results from base-line testing in air, as well as test parameters and procedures (via monthly web conference).	Within 46 weeks of contract award
4	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied Fitting #2 Grade in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen, as well as test parameters and procedures (via monthly web conference)	Within 50 weeks of contract award
5	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied X65LM 565 WT 0.4" in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen , as well as test parameters and procedures (via monthly web conference)	Within 56 weeks of contract award
6	The contractor will conduct in-situ tests in pressurized hydrogen gas to assess fatigue crack growth rate and fracture toughness $J_Q/K_{JQ}$ for the supplied X70HMo 565 WT 0.4" in triplicate.	Preliminary data and results from in-situ fatigue and fracture testing in hydrogen , as well as test parameters and procedures (via monthly web conference)	Within 62 weeks of contract award
7	The contractor will conduct post-test fractography on a partial subset of specimens using optical and scanning electron microscopy.	Preliminary results from post-test fractography (via monthly web conference)	Within 66 weeks of contract award
8	The contractor will summarize the data, analysis and findings in a final technical reports and host a web conference to review the results.	Final report and presentation for Phase One.	Within 72 months of contract award

**SW.4.2 Meetings**

In order for the Project Authority to ensure the contract be brought in on time, on budget and of acceptable quality, a progress meeting will be held each month via web conferences hosted by the contractor.





### SW.4.3 Reporting Requirements

As shown in the table 3 and 4 in **SW.4.1**, the Contractor must provide status monthly progress (web conference) during the life of the Contract. The final technical report will be provided at the end of each phase which must contain: detailed equipment information, experiment set-up, material used, all the tested parameters and results, discussions, problems to be overcome and a summary.

The Contractor must submit all written reports (status reports and final report) to the Project Authority in electronic Microsoft Office Word.

Any manuscript to be submitted for publication must be approved by the Project Authority before submission.

### SW.5.0 OTHER TERMS AND CONDITIONS

#### SW.5.1 Travel

The Contractor may travel to NRCan to present the final results. All travel will be at the cost of the Contractor and will not be reimbursed by NRCan.

#### SW.5.2 Contractor's Obligations

In addition to the obligations outlined in this Statement of Work, the Contractor must:

- 1) Keep all documents and proprietary information confidential;
- 2) Return all materials belonging to NRCan upon completion of the Contract;
- 3) Participate in teleconferences, as needed;
- 4) Attend meetings at NRCan sites, if required; and
- 5) Maintain all documentation in a secure area.

In satisfying the requirements of this agreement, the Recipient is encouraged to comply with the provisions and intent of the NRCan Scientific Integrity Policy (SIP) and to discharge its contractual obligations in support of research, science, or related activities in a manner consistent with all relevant NRCan SIP provisions. For more information on the Scientific Integrity Policy, please visit the NRCan website at:

<https://www.nrcan.gc.ca/scientific-integrity/21665#a20>

#### SW.5.3 NRCan's Obligations

- 1) Supply of the candidate steel pipes and fittings,
- 2) Attend monthly web conference progress meetings,
- 3) Provide comments on draft reports within ten working days and/or,
- 4) Provide other assistance or support.

Natural Resources Canada is committed to making our Department more inclusive for everyone and fostering an equitable workplace culture that values diversity and creates an environment that is welcoming and rewarding for all. We encourage the businesses that work with us to reflect these values. More information can be found at: <https://www.canada.ca/en/government/publicservice/wellness-inclusion-diversity-public-service/diversity-inclusion-public-service2.html>

#### SW.5.4 Location of Work, Work Site and Delivery Point

The work must be carried out at the Contractor's site and must be delivered to CanmetMATERIALS, NRCan at 183 Longwood Road South, Hamilton, ON L8P 0A5.

#### SW.5.5 Language of Work

English



**ANNEX B - BASIS OF PAYMENT**

**1. Firm Price - Milestone Payments**

The all-inclusive firm price to perform the work is in Canadian funds, applicable taxes excluded. Any Travel and Living Expenses and other miscellaneous expenses must be included in the firm price.

<b>Milestone #</b>	<b>Description of Milestone</b>	<b>Firm Price</b> <small>(Applicable Taxes Excluded)</small>
<b>PHASE 1</b>		
<b>1</b>	Task - 1 to 3	20%
<b>2</b>	Task - 4 to 5	40%
<b>3</b>	Task - 6 to 8	40%
<b>OPTIONAL SERVICE</b>		
<b>PHASE 2</b>		
<b>4</b>	Task - 1 to 3	20%
<b>5</b>	Task - 4 to 5	40%
<b>6</b>	Task - 6 to 8	40%



**APPENDIX 1 - EVALUATION CRITERIA**

Bidders are advised to address these criteria in the following order and in sufficient depth in their proposals to enable a thorough assessment. NRCan’s assessment will be based solely on the information contained within the proposal. NRCan may confirm information or seek clarification from bidders.

Bidders are advised that only listing experience without providing any supporting data to describe responsibilities, duties and relevance to the criteria will not be considered demonstrated for the purpose of this evaluation.

The Bidder should provide complete details as to where, when (month and year) and how (through which activities/ responsibilities) the stated qualifications/experience were obtained. Experience gained during formal education shall not be considered work experience. All criteria for work experience shall be obtained in a legitimate work environment as opposed to an educational setting. Co-op terms are considered work experience provided they are related to the required services.

Bidders are also advised that the month(s) of experience listed for a project whose time frame overlaps that of another referenced project will only be counted once. For example: project one time frame is July 2001 to December 2001; project two time frame is October 2001 to January 2002; the total months of experience for these two project references is seven (7) months.

**1. Technical Criteria**

**1.1 Mandatory Evaluation Criteria**

The Mandatory Criteria listed below will be evaluated on a simple pass/fail basis. Proposals which fail to meet the mandatory criteria will be deemed non-responsive.

Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
M1	<p>The Bidder <b>MUST</b> propose a lead resource with at least 36 months documented experience in conducting experiment and data analysis of <b>Fracture Mechanics</b> between January 1<sup>st</sup>, 2015 and the bid solicitation closing date.</p> <p>The bidder <b>MUST</b> provide the résumé, which demonstrates the required experience of the resource proposed. The bidder agrees that proposed resource will be contacted by NRCan to validate that their resume is factual and represents their experience. The bidder must provide a signed statement by the resource that they agreed to be proposed for this bid solicitation.</p>		



Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
M2	<p>The Bidder <b>MUST</b> demonstrate experience within two (2) projects for which they have <b>determined the fatigue performance of steel alloys according to ASTM E647 standard test method</b> between January 1st, 2010 and the bid solicitation closing date.</p> <p>In order to demonstrate that their company possesses the required experience, the bidder should provide the following information:</p> <ul style="list-style-type: none"> <li>• Project Name and abstract</li> <li>• Project Start and Completion Dates</li> <li>• Organization Name</li> <li>• Contact Name and Contact Information (references*)</li> </ul> <p>* References may be contacted to confirm the information provided.</p>		
M3	<p>The Bidder <b>MUST</b> demonstrate experience within two (2) projects for which they have <b>determined the fracture toughness performance of steel alloys according to ASTM E1820 standard test method</b> between January 1st, 2010 and the bid solicitation closing date.</p> <p>In order to demonstrate that their company possesses the required experience, the bidder should provide the following information:</p> <ul style="list-style-type: none"> <li>• Project Name and abstract</li> <li>• Project Start and Completion Dates</li> <li>• Organization Name</li> <li>• Contact Name and Contact Information (references*)</li> </ul> <p>* References may be contacted to confirm the information provided.</p>		
M4	<p>The Bidder <b>MUST</b> demonstrate experience within two (2) projects for which they have conducted <b>post-test fractography with Scanning Electron Microscopy (SEM)</b> between January 1st, 2010 and the bid solicitation closing date.</p> <p>In order to demonstrate that their company possesses the required experience, the bidder should provide the following information:</p> <ul style="list-style-type: none"> <li>• Project Name and abstract</li> <li>• Project Start and Completion Dates</li> <li>• Organization Name</li> <li>• Contact Name and Contact Information (references*)</li> <li>• At least two (2) examples of these characterizations.</li> </ul> <p>* References may be contacted to confirm the information provided.</p>		



Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
M5	<p>The Bidder <b>MUST</b> demonstrate possessing the capabilities and facilities to conduct <b>in-situ mechanical testing (tensile and fatigue and fracture toughness assessment) in pressurized gaseous hydrogen environment</b>, for at least three (3) months in total prior to the bid solicitation closing date.</p> <p>In order to demonstrate that their company possesses the required capabilities, the bidder should provide the following information:</p> <ol style="list-style-type: none"> <li>1. Load frame technical specifications (including photo)</li> <li>2. Hydrogen autoclave/vessel technical specifications (including photo)</li> <li>3. Name and contact information of the laboratory manager (if more information would be required)</li> </ol>		
M6	<p>The Bidder <b>MUST</b> demonstrate experience within one (1) project for which they have <b>determined the fracture toughness per ASTM E1820 and fatigue performance per ASTM E647 in pressurized gaseous hydrogen environment</b> between January 1st, 2010 and the bid solicitation closing date.</p> <p>In order to demonstrate that their company possesses the required experience, the bidder should provide the following information:</p> <ul style="list-style-type: none"> <li>• Project Name and abstract</li> <li>• Project Start and Completion Dates</li> <li>• Organization Name</li> <li>• Contact Name and Contact Information (references*)</li> <li>• Example results of these measurements (at least one example for each of ASTM E1820 and ASTM E647 test).</li> </ul> <p>* References may be contacted to confirm the information provided.</p>		



**APPENDIX 2 - FINANCIAL BID PRESENTATION SHEET**

**1. Firm Price**

The all-inclusive firm price to perform the work is Canadian funds, applicable taxes excluded. Any Travel and Living Expenses and other miscellaneous expenses must be included in the firm price.

1- DESCRIPTION	FIRM PRICE (Applicable Taxes Excluded)
PHASE 1: Assessment of Fatigue and Toughness of Steel Pipes and Fittings in Gaseous Hydrogen	\$ _____

OPTIONAL SERVICE	
2- DESCRIPTION	FIRM PRICE (Applicable Taxes Excluded)
PHASE 2: Assessment of Fatigue and Toughness of Steel Pipes and Fittings in Gaseous Hydrogen	\$ _____

<b>TOTAL BID PRICE FOR EVALUATION PURPOSES</b> (TOTAL #1 + TOTAL #2)	\$ _____
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