

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

**Bid Receiving  
PWGSC  
33 City Centre Drive  
Suite 480  
Mississauga  
Ontario  
L5B 2N5  
Bid Fax: (905) 615-2095**

**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> Extrusion System	
<b>Solicitation No. - N° de l'invitation</b> 23584-130174/A	<b>Date</b> 2012-11-19
<b>Client Reference No. - N° de référence du client</b> 23584-130174	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$TOR-031-6089	
<b>File No. - N° de dossier</b> TOR-2-35155 (031)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-12-31</b>	<b>Time Zone Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Schmidt, Jeff	<b>Buyer Id - Id de l'acheteur</b> tor031
<b>Telephone No. - N° de téléphone</b> (905) 615-2058 ( )	<b>FAX No. - N° de FAX</b> (905) 615-2060
<b>Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:</b> DEPARTMENT OF NATURAL RESOURCES 183 LONGWOOD RD SOUTH HAMILTON Ontario L8P0A5 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**

Public Works and Government Services Canada  
Ontario Region  
33 City Centre Drive  
Suite 480  
Mississauga  
Ontario  
L5B 2N5

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

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## **PART 1 - GENERAL INFORMATION**

### **1. Security Requirement**

There is no security requirement associated with the requirement.

### **2. Statement of Work**

The Work to be performed is detailed under Article 2 of the resulting contract clauses.

2.1 While all the deliverables must be received within 12 weeks of contract award, the best delivery that could be offered is \_\_\_\_\_ after issuance of contract.

### **3. Debriefings**

After contract award, 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 of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

## **PART 2 - BIDDER INSTRUCTIONS**

### **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 (2012-07-16) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

The text under Subsection 4 of Section 01 - Code of Conduct and Certifications - Bid of 2003 referenced above is replaced by:

Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has 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 provide such a list within the required time frame will render the bid non-responsive. Bidders must always submit the list of directors before contract award.

Canada may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaire-forms-eng.html>) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

The text under Subsection 5 of Section 01 - Code of Conduct and Certifications - Bid of 2003 referenced above is replaced by:

The Bidder must diligently maintain the list up-to-date by informing Canada in writing of any change occurring during the validity period of the bid, and must also provide Canada, when requested, with the corresponding Consent Forms. The Bidder will also be required to diligently maintain the list and when requested, provide Consent Forms during the period of any contract arising from this bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days  
Insert: ninety (90) days

### **2. Submission of Bids**

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

### **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 questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

#### **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.

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

### **1. Bid Preparation Instructions**

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

Section I: Technical Bid (2 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>). To assist Canada in reaching its objectives, bidders are encouraged to:

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

#### **Section I: Technical Bid**

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

#### **Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Goods and Services Tax (GST) or Harmonized Sales Tax (HST) must be shown separately, if applicable.

#### **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **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.

#### **1.1 Technical Evaluation**

##### **1.1.1 Mandatory Technical Criteria**

- 1. The Bidder must meet all the mandatory criteria located at Section 2, Mandatory Equipment and Technical Requirements of Annex A, Statement of Work. The Bidder must clearly address each specification in detail demonstrating compliance to the requirement, with their bid at the time of bid closing.
- 2. Container body material must be standard steel grades including 4340, H11, H13, EN 1.2343, EN 1.2344, EN 1.2367 or suitable alternative. Suitable alternative material must be justified using engineering practices and practical experience. Materials can be substituted with DIN, JIS, ASTM, UNI, BS 970 equivalents. Products that are equivalent in form, fit, function and quality must include complete specifications and descriptive literature for the substitute product.

#### **1.2 Financial Evaluation**

- 1. Bidders must submit pricing in accordance with Annex "B", Basis of Payment, with their bid at bid closing.
- 2. SACC Manual Clause A0220T (2007-05-25) Evaluation of Price

### **2. Basis of Selection**

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

## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

### 1. Code of Conduct Certifications - Certifications Required Precedent to Contract Award

1.1 Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has not been received by the time the evaluation of bids is completed, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Bidders must submit the list of directors before contract award, failure to provide such a list within the required time frame will render the bid non-responsive.

The Contracting Authority may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

### 2. Certifications Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

#### 2.1 Federal Contractors Program - over \$25,000 and below \$200,000

Suppliers who are subject to the Federal Contractors Program (FCP) and have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive federal government contracts over the threshold for solicitation of bids as set out in the Government Contracts Regulations. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

a. ( ) is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;



Solicitation No. - N° de l'invitation

23584-130174/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

tor031

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

23584-130174

File No. - N° du dossier

TOR-2-35155

CCC No./N° CCC - FMS No/ N° VME

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b. ( ) is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;

c. ( ) is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, having not bid on requirements of \$200,000 or more;

d. ( ) has not been declared an ineligible contractor by HRSDC, and has a valid certificate number as follows: \_\_\_\_\_ .

Further information on the FCP is available on the HRSDC Web site.

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

### **1. Security Requirement**

There is no security requirement associated with the requirement.

### **2. Requirement**

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

### **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.

#### **3.1 General Conditions**

2010A (2012-07-16), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

The text under Subsection 4 of Section 29 - Code of Conduct and Certifications - Contract of 2010A referenced above is replaced by:

During the entire period of the Contract, the Contractor must diligently update, by written notice to the Contracting Authority, the list of names of all individuals who are directors of the Contractor whenever there is a change. As well, whenever requested by Canada, the Contractor must provide the corresponding Consent Forms.

### **4. Term of Contract**

#### **4.1 Delivery Date**

All the deliverables must be received within 12 weeks of contract award.

### **5. Authorities**

#### **5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Name: Jeff Schmidt  
Title: Supply Officer  
Public Works and Government Services Canada  
Acquisitions Branch  
Directorate: Ontario  
Address: 33 City Centre Dr  
Mississauga, ON L5B 2N5

Telephone: 905-615-2058  
Facsimile: 905-615-2060  
E-mail address: [jeff.schmidt@pwgsc.gc.ca](mailto:jeff.schmidt@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.

## 5.2 Project Authority

The Project Authority for the Contract is:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone : \_\_\_\_\_

Facsimile: \_\_\_\_\_

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

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

## 5.3 Contractor's Representative

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone : \_\_\_\_\_

Facsimile: \_\_\_\_\_

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

## 6. Payment

### 6.1 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 firm unit price(s), as specified in Annex "B", Basis of Payment for a cost of \$ \_\_\_\_\_. Customs duties are included, and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

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.

### 6.2 Single Payment

SACC Manual clause H1000C (2008-05-12), Single Payment

## 7. Invoicing Instructions

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

## 8. Certifications

8.1 Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

## 9. Applicable Laws

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

## 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 (2012-07-16), General Conditions - Goods (Medium Complexity)
- (c) Annex A, Requirement;
- (d) Annex B, Basis of Payment;
- (e) the Contractor's bid dated \_\_\_\_\_.

## 11. Insurance

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.

## ANNEX "A" STATEMENT OF WORK

### Extrusion Container for 1500 Ton Press

#### 1. Background

CanmetMATERIALS, Natural Resources Canada (NRCan), Hamilton, ON, requires the design, fabrication and delivery of an extrusion container for extrusion of ferrous and non-ferrous alloys for use in their triple-acting 1500 Ton Macrodyne press (double-acting with cushion, see Appendix A to Annex A for complete specifications). A 127 mm (5 inch) hole in the bolster and a three meter deep extrusion pit were created during installation of this press at CanmetMATERIALS to perform vertical extrusion. Extrusion tooling that was re-located from Ottawa do not have the capabilities to perform the required extrusions in ongoing research projects. Specifically, the 50.4 mm (2 inch) bore in these extrusion dies is too small for the required work.

To perform CanmetMATERIALS project tasks, an extrusion container with extrusion dies required for creating bars of varying diameter are required. The extrusion container will be surrounded by support tooling which will allow easy interchange of extrusion dies.

The extrusion container will be utilized with a vertical extrusion tooling system to produce rod and tube from a variety of ferrous and non-ferrous materials, including oxide dispersion strengthened (ODS) steel, zirconium, aluminum, and magnesium alloys.

#### 2. Mandatory Equipment and Technical Requirements

##### 2.1 General Design Requirements and Certifications

Item No.	Requirement
1	The extrusion container must not be prototypes, demonstration models, used or refurbished;
2	Drawings of all components must be provided prior to fabrication.
3	All electrical equipment must be CSA or ULC approved with visible markings;
4	All electrical enclosures must be rated NEMA-12.

##### 2.2 Extrusion Tooling - General

Item No.	Feature	Requirement
1	Components	The following components must be provided: a) A 88.9 mm (3.5 inch) bore extrusion container for extruding 152.4 mm (6 inch) long billets;

		b) Ram with dummy block that attaches via a bayonet style fitting (or another proposed method that allows the dummy block to be removed without tools); c) Clean-out block to remove excess material from container bore.
2	Billet Diameter	88.9 mm (3.5 inch)
3	Billet Length	152.4 mm (6 inch)

### 2.3 Container

Item No.	Feature	Requirement
1	Other	Must use a multi-walled container (includes liner);
2	Other	Die must nest inside container. Container pre-heat must also heat die;
3	Preheat	Resistance heating up to 500 degrees Celsius;
4	Preheat	At least 4 thermocouples for temperature monitoring and control;
5	Preheat	Single Zone Temperature Control
6	Extrusion Pressure	a) Ferrous: 960 Mpa with 1300 °C billet; b) Non-ferrous: 960 Megapascal (MPa) with 600 °C billet; <b>Note:</b> press will be operated in 900 Ton mode for extrusion
7	Diameter	Container outer diameter must be within 630 mm and 750 mm.
8	Container length	Container length must be within 266.7 mm and 280 mm including nested die.
9	Container body material	Must be standard steel grades including : 4340, H11, H13, EN 1.2343, EN 1.2344, EN 1.2367, or suitable alternative*
10	Container liner material	Inconel 718, A-286, EN 1.2367, EN 1.2779 or suitable alternative*

### 2.4 Dies

Item No.	Feature	Requirement
1	Preheat	Die preheat must be performed in-situ (While the die is inside the container not using a die oven). Die preheat must be performed using the same system used to heat the container;
2	Preheat	At least two thermocouples to measure die temperature during extrusion must be incorporated into container;
3	Die outer diameter	Die outer diameter must be less than 125mm (5 inch) to eject die through the press bolster.

### 2.5 Stem and Dummy Block

Item No.	Feature	Requirement
1	Connection	Dummy block must be fixed to ram and must "float" to self align with container;

2	Dummy Block Type	Solid (non-expanding);
3	Stem Load	900 Tons, Ram must not buckle under 900 Tons of load with 2mm of load eccentricity;
4	Other	Clean out block required;
5	Stem Material	Must be standard steel grades including: H13, EN 1.2343 or suitable alternative*;
6	Dummy Block Material	Must be standard steel grades including: H13, H19, H21, Inconel 718 or suitable alternative*
7	Stem length	Must be within 228 mm and 510 mm;
8	Dummy block length	Must be within 50mm and 65 mm.

## 2.6 Heater Power Module Requirements - General

Item No.	Feature	Requirement
1	General	The heater power module is required to power and control the container heating system. A quick connect system must be used so that the power module can be switched for possible use with other containers in the future.

## 2.7 Controls

Item No.	Feature	Requirement
1	Temperature	Temperature set-point with thermocouple for closed loop control
2	Temperature	Temperature set-point with thermocouple for closed loop control
3	Temperature	Preheat system capable of 100 degrees Celsius per hour minimum
4	Accuracy	+/- 2% of temperature setpoint

## 2.8 Safety

Item No.	Feature	Requirement
1	Electrical	Over temperature control with separate thermocouple
2	Facilities	Must use either a 600 Volt Three phase 4-pin IEC receptacle or a 480 V 4-pin IEC receptacle.
3	Safety	Must be ESA compliant or Equivalent

*\* a suitable alternative material must be justified using engineering practices and practical experience. Materials can be substituted with DIN, JIS, ASTM, UNI, BS 970 etc. equivalents. Products that are equivalent in form, fit, function and quality must include complete specifications and descriptive literature for the substitute product. CanmetMATERIALS must approve equivalent.*

### **3. Manuals & Equipment Drawings**

3.1 Manuals must be provided to CanmetMATERIALS in the following formats, two (2) hard copies and one (1) electronic copy, and must include:

- Assembly drawings;
- Bill of Materials including supplier part numbers where applicable;
- Drawings of container, dummy block, and stem showing sufficient detail so that replacements can be purchased when required;
- Complete specifications for:
  - Container and container liner outer diameter;
  - Maximum power draw;
  - Heater power connection type;
  - Heater power module dimensions; and
  - Thermocouple connection type.

Documentation must be provided in PDF format and English language. Drawings may also be supplied in .dxf, .dwg and solidworks format.

### **4. Safety Standards**

All Contractors must adhere to the National Fire Protections Association (NFPA) Code 79:  
Electrical Standard for Industrial Machinery.

### **5. Delivery Location:**

CanmetMATERIALS  
183 Longwood Rd. South, Room G043  
Hamilton, ON L8P 0A5



### Appendix A to Annex A 1500 Ton Press Specifications

The 1500 Ton press can be operated in two modes double-acting with cushion and single-acting with cushion. For extrusion it will be used in single-action with cushion mode. The following specifications are for single-action with cushion mode only. For extrusion the press will be limited to a maximum of 900 Tons.

Detailed specifications and drawings will be made available upon contract award.

Macrodyne 1500 Ton Press Capabilities					
Single Action With Cushion			Dimensions		
1	Geometry				
1.1	Daylight (Fully Open)	42	in	1067	mm
1.2	Punch Stroke	24	in	610	mm
1.3	Punch Shut Height	18	in	457	mm
1.4	Punch Size	84 x 60	(in x in)	2134 x 1524	(mm x mm)
1.5	Bed Size	84 x 62	(in x in)	2134 x 1575	(mm x mm)
1.6	Cushion Stroke	12	in	305	mm
1.7	Cushion Pin Quantity (Max)	96			
1.8	Pin Diameter	1.44	in	37	mm
1.9	Pitch (left-right and front-back)	6	in	152	mm
1.10	T-Slot Size (For mounting to ram holder and Bolster)	1	in	25	mm
1.11	T-slot Centres	6	in	152	mm
1.12	T-Slot Orientation	Front-to-back			
2	Capacity				
2.1	Max Punch Force	1500	Tons	14710	kN
2.2	High-Speed Punch Force	600	Tons	5884	kN
2.3	Cushion Lifting Capacity*	150	Tons	1471	kN
2.4	Cushion Resistance Force**	300	Tons	2942	kN
2.5	Max load per pin	10	Tons	98	kN
* The cushion can only push upwards it can not push down					
** The cushion can resist a downward force of up to 300 Tons					
3	Speed				
3.1	Max Closing Speed (No Load)	500	in/min	212	mm/s
3.2	Max return Speed	380	in/min	161	mm/s
3.3	Punch Speed to 600 Tons	80	in/min	34	mm/s

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			n		
3.4	Punch Speed to 900 Tons	36	in/mi n	15	mm/s
3.5	Punch Speed to 1500 Tons	20	in/mi n	8	mm/s

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**ANNEX "B"**  
**BASIS OF PAYMENT**

Prices are firm, all inclusive in Canadian dollars FOB destination. Transportation charges, Customs duties and Excise taxes are included, and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

**B1. Firm Requirement**

Requirement	\$ Firm Unit Price
The design, fabrication and delivery of an extrusion container in accordance with all the specifications detailed in Annex "A", Statement of Work.	\$ _____