Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Public Works and Government Services Canada
ATB Place North Tower
10025 Jasper Ave./10025 ave. Jaspe
5th floor/5e étage
Edmonton
Alberta
T5J 1S6
Bid Fax: (780) 497-3510

REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION

Proposal To: Public Works and Government Services Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Proposition aux: Travaux Publics et Services Gouvernementaux Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet
TRANSFORMERS

Solicitation No. - N° de l'invitation	**Date**
EP922-180091/A	2017-07-25

Client Reference No. - N° de référence du client
EP922-180091

GETS Reference No. - N° de référence de SEAG
PW-$EDM-064-11143

File No. - N° de dossier	**CCC No./N° CCC - FMS No./N° VME**
EDM-7-40023 (064)	

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2017-09-05

Time Zone
Fuseau horaire
Mountain Daylight Saving Time MDT

F.O.B. - F.A.B.
Plant-Usine: ☐ **Destination:** ☑ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à:	**Buyer Id - Id de l'acheteur**
Scott, Dallas	edm064

Telephone No. - N° de téléphone	**FAX No. - N° de FAX**
(780) 224-7200 ( )	(780) 497-3510

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
Agriculture and Agri-Food Canada
Lethbridge Research Centre
5403 – 1 Ave South

Lethbridge, Alberta T1J 4P4
Canada

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
See Herein	

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N° de téléphone
Facsimile No. - N° de télécopieur

Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

Signature **Date**

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
ATB Place North Tower
10025 Jasper Ave./10025 ave Jasper
5th floor/5e étage
Edmonton
Alberta
T5J 1S6

Canada

TITLE: TRANSFORMERS

TABLE OF CONTENTS

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 Blank; and

Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Requirement, the Basis of Payment, the Evaluation Criteria, and the Electronic Payment Instruments.

1.2 Summary

1.2.1 Work of this Contract comprises the supply and delivery of two Pad Mount Liquid-filled 5MVA, 25kV/346/600V three-phase four-wire transformers for future use in the upgrade of the main service to the AAFC – Lethbridge Research Station. The new transformers are to be taken into storage on the project site, to be available as temporary replacement of existing in-service equipment. In future, the pair of transformers will be used in an all-new, fully redundant main service for the facility, which will replace the existing service.

Prior to the transformers being removed from storage and placed into service, it is the responsibility of the manufacturer to advise the Departmental Representative with respect to the pre-installation inspection of the equipment and provide any pre-service testing required to comply with the terms of the manufacturer's warranty. In addition, specific instructions related to the handling, storage, start-up and commissioning of the transformers are to be provided as, and when, requested by the Departmental Representative for use in the temporary and permanent installation of the transformers.

All the deliverables must be received in accordance with the "Schedule of Milestones" in Part 7.

1.2.2 The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), and the Canadian Free Trade Agreement (CFTA).

1.3 Debriefings

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

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) 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 (2017-04-27), 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

2.2 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.

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 Alberta.

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 (one [1] hard copy OR one [1] fax copy)

Section II: Financial Bid (one [1] hard copy OR one [1] fax copy)

Section III: Certifications (one [1] hard copy OR one [1] fax 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 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 and describe their approach 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 Basis of Payment in Annex "B". The total amount of Applicable Taxes must be shown separately.

3.1.2 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.

3.1.3 Exchange Rate Fluctuation

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

Section III: Certifications

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

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

(a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

(b) An evaluation team composed of representatives of Canada and “DGH Engineering Ltd” will evaluate the bids.

4.1.1 Technical Evaluation

Mandatory evaluation criteria are included in Annex “C”.

4.1.2 Financial Evaluation

Total Evaluated Bid Price will be calculated as follows:

(a) Items in column A will be multiplied by items in column B to equal items in column C
(b) The aggregate of items in column C will equal the Total Evaluated Bid Price

SACC Manual Clause A0220T (2014-06-26), Evaluation of Price

4.2 Basis of Selection

4.2.1 Mandatory Technical Criteria

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

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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

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

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

5.1 Certifications Required with the Bid

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

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the *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.

5.2 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), 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 (http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed).

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 – THIS PART IS INTENTIONALLY LEFT BLANK

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 Requirement

The Contractor must provide Two (2) Pad Mounted Liquid-Filled Three-Phase Four-Wire Transformers in accordance with the Requirement at Annex "A" and the Contractor's technical bid entitled _____, dated _____.

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) issued by Public Works and Government Services Canada.

7.2.1 General Conditions

2030 (2016-04-04), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

7.2.2 Warranty Period

Section 22 of general conditions 2030 (2016-04-04), General Conditions - Higher Complexity - Goods is amended by replacing the period of “12 months” by “Twelve (12) months after completion of Milestone No. 3” and “ twelve (12) months after completion of Milestone No. 4”. All other provisions of the warranty section remain in effect.

7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Delivery Date

All the deliverables must be received on or before _____. *(inserted at contract award)*

7.4.2 Delivery Points

Delivery of the requirement will be made to delivery point(s) specified at Annex “B” of the Contract.

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Dallas Scott
Procurement Officer
Public Services and Procurement Canada
Acquisitions Branch
Western Region

ATB Place, North Tower
5th Floor, 10025 – Jasper Avenue
Edmonton, AB T5J 1S6

Telephone: 780 – 224 – 7200
Facsimile: 780 – 497 – 3510
E-mail address: dallas.scott@pwgsc-tpsgc.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 Technical Authority

The Technical Authority for the Contract is:

(To be named in the contract)

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.

7.5.4 Contractor's Representative

(To be completed by the bidder)

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

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

7.7 Payment

7.7.1 Basis of Payment

Basis of Payment - Firm Unit 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" for a cost of ***$ _____*** (*To be inserted 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 Limitation of Price

SACC Manual clause C6000C (2011-05-16), Limitation of Price

7.7.3 Method of Payment

7.7.3.1 Milestone Payments - Subject to holdback

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, up to 95 percent of the amount claimed and approved by Canada if:
    a. an accurate and complete claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
    b. the total amount for all milestone payments paid by Canada does not exceed 95 percent of the total amount to be paid under the Contract;
    c. all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
    d. all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all Work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.

7.7.3.1.1 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

(Table to be completed at contract award)

Milestone No.	Description or "Deliverable"	Due Date or "Delivery Date"	Amount Claimed (A)	Holdback (5% of A)	Amount Paid (95% of A)
1	Approval and Acceptance of Shop Drawings for Two (2) Transformers in Accordance with Annex "A", Requirement	To be determined by the Project Authority	$ _____ *(25% of Total Evaluated Bid Price in Annex "B", Basis of Payment)*	$ _____	$ _____
2	Supply and Delivery of Two (2) Transformers in Accordance with Annex "A", Requirement	Within fourteen (14) weeks after completion of Milestone No. 1	$ _____ *(70% of Total Evaluated Bid Price in Annex "B", Basis of Payment)*	$ _____	$ _____
3	Commissioning of one (1) of two (2) Transformers in Accordance with Annex "A", Requirement	Within three (3) years of completion of Milestone No. 2	$ _____ *(2.5% of Total Evaluated Bid Price in Annex "B", Basis of Payment)*	$ _____	$ _____
4	Commissioning of two (2) of two (2) Transformers in Accordance with Annex "A", Requirement	Within three (3) years of completion of Milestone No. 2	$ _____ *(2.5% of Total Evaluated Bid Price in Annex "B", Basis of Payment)*	$ _____	$ _____

7.7.4 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);
f. Large Value Transfer System (LVTS) (Over $25M)

7.7.5 *SACC Manual* clauses

C2000C (2007-11-30), Taxes - Foreign-based Contractor
C2604C (2013-04-25), Customs Duties, Excise Taxes and Applicable Taxes - Non-resident

7.8 Invoicing Instructions

7.8.1 Invoicing Instructions - Progress Payment Claim - Supporting Documentation not required

1. The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment.
   Each claim must show:
   a. all information required on form PWGSC-TPSGC 1111;
   b. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
   c. the description and value of the milestone claimed as detailed in the Contract.
2. Applicable Taxes, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
3. The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Project Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.
   The Project Authority will then forward the original and two (2) copies of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.
4. The Contractor must not submit claims until all work identified in the claim is completed.

7.9 Certifications and Additional Information

7.9.1 Compliance

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

7.10 Applicable Laws

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

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 2030 (2016-04-04), General Conditions - Higher Complexity - Goods;
(c) Annex “A”, Requirement;
(d) Annex “B”, Basis of Payment;
(e) the Contractor's bid dated _____.

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

SACC Manual clause G1005C (2016-01-28), Insurance – No Specific Requirement

7.14 *SACC Manual* clauses

A9068C (2010-01-11), Government Site Regulations
B6800C (2007-11-30), List of Non-consumable Equipment and Material
B7500C (2006-06-16), Excess Goods

ANNEX “A”

REQUIREMENT

(Attached; “Tender Issue Specifications 2017-07-05”)

ANNEX "B"

BASIS OF PAYMENT

- Bidders must complete the table below and submit it with their bid
- Firm Unit Prices quoted must be FOB destination including delivery, offloading, assembly, commissioning, applicable customs and duties, DDP (delivery duty paid) to specified "DELIVERY LOCATION" below
- Firm Unit Prices quoted must be firm
- Firm Unit Prices quoted must not include Applicable taxes. Applicable taxes will be added as a separate line item to any invoice issued as a result of a Contract
- Firm Unit Prices quoted must be in Canadian Dollars (CAD)

DELIVERY LOCATION

- Agriculture and Agri-Food Canada
  Lethbridge Research Centre
  5403 – 1 Ave South
  Lethbridge, Alberta T1J 4P4
  Canada

ITEM	DESCRIPTION	QUANTITY (A)	FIRM UNIT PRICE (B)	EXTENDED PRICE (C) = A x B
1	Transformer – in accordance with the requirements in Annex "A", Requirement	2	$_____	$_____
			TOTAL EVALUATED BID PRICE (1C)	***$_____***

ANNEX "C"

EVALUATION CRITERIA

COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS

A complete list of the minimum mandatory performance specifications are detailed below in the "Compliance Matrix". Bidders are to clearly demonstrate compliance with each mandatory specification.

1. Bidders **must** show compliance by addressing each performance specification in the Compliance Matrix, whether the product offered "meets" or "does not meet".

2. It is requested that supporting technical documentation, including but not limited to, specification sheets, technical brochures, photographs or illustrations be provided with the bid at solicitation close and be cross-referenced on the Compliance Matrix for each performance specification to outline where in the supporting technical documentation it demonstrates compliance. It is the Bidders responsibility to ensure that the submitted supporting technical documentation provides detail to prove that the proposed product(s) meet the requirements of the Performance Specification. If published supporting technical document is not available, the Bidder should prepare a written narrative complete with a detailed explanation of how its bid demonstrates technical compliance.

3. If the supporting documentation referenced above has not been provided at bid closing, the Contracting Authority will notify the Bidder that they must provide supporting documentation within two (2) business days following notification. Failure to comply with the request of the Contracting Authority within that time period, will deem the bid non-responsive and the bid will be given no further consideration.

4. Bidders must address any concerns with the performance specifications in written detail to the Contracting Authority before bid closing as outlined in the solicitation document.

5. Failure to meet each performance specification will result in the bid being deemed non-responsive, and be given no further consideration.

COMPLIANCE MATRIX – MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS

REQUIREMENT	MANUFACTURER OFFERED	MODEL NUMBER OFFERED

ITEM #	PERFORMANCE SPECIFICATION	STATUS (M) Mandatory (P) Preferred	PERFORMANCE SPECIFICATION MET? Indicate either "YES" or "NO"	PERFORMANCE SPECIFICATION OFFERED Bidder should indicate how they meet the performance specification by recording this information in this column	CROSS REFERNCE In this column, Bidders should cross-reference where this performance specification is indicated in their supporting documents.
1.0	**Equipment**	M			
1.1	Must be three-phase dead front pad-mounted distribution transformer manufactured to CSA C227.4.	M			
1.2	Must have primary and secondary cable compartments.	M			
1.3	Must be self-contained and steel fabricated for mounting on concrete pad.	M			
2.0	**Transformer Characteristics**	M			
2.1	Primary voltage: 25 kV, 60 Hz, delta connected, three-phase, grounded.	M			
2.2	Secondary voltage: 347/600V, wye connected, three-phase, 4 wire, neutral grounded.	M			
2.3	Capacity: 5000/6250 kVA.	M			
2.4	Basic impulse level: 125 kV	M			
2.5	Maximum RMS short circuit: 250 MVA	M			
2.6	Impedance: not less than 7%	M			
2.7	The average winding temperature rise above ambient temperature is less than 55^0C at rated load and less than	M			

	65^0C when tested at 112% of the base load.				
3.0	**Voltage Taps**	M			
3.1	Two taps 2.5% above rated voltage and two taps 2.5% below rated voltage (split taps).	M			
4.0	**Construction**	M			
4.1	Must have NEMA 4X steel enclosures.	M			
4.2	The high-voltage and low-voltage compartments must be separated by a metal barrier.	M			
4.3	Low-voltage connection is 6000A bus bar for underground connections. Flexible connectors between transformer low-voltage studs and bus bars provided.	M			
5.0	**Accessories**	M			
5.1	Must include oil level indicator with contacts for remote alarm/trip.	M			
5.2	Must include oil temperature indicator with contacts.	M			
5.3	Must include top pressure relief valve.	M			
5.4	Must include bottom drain and sample valve	M			
5.5	Must include top bung for oil filling.	M			
5.6	Must include winding temperature indicator with contacts.	M			
5.7	Must include first stage cooling fans and controls.	M			
5.8	Must include control cabinet with anti-condensation heater (NEMA 4X steel construction).	M			
5.9	Must include emergency pressure relief device.	M			
5.10	Must include top filter press connection.	M			

5.11	Must include top non-flammable insulating liquid sampling device.	M			
5.12	Must include anchor devices, setting templates means for bolting down.	M			
5.13	Must include sudden pressure relay.	M			
5.14	Must include separate 120V AC circuit for fans/heaters.	M			
5.15	Must include alarm contacts on the liquid level gauge, dial-type thermometer, and pressure/vacuum gauges.	M			
5.16	All accessories with contacts must be wired to terminal blocks located within the enclosure.	M			
5.17	Must include dial-type thermometer.	M			
5.18	Must include pressure/vacuum gauge.	M			
5.19	Must include ½” fluid sampling valve.	M			

ANNEX "D"

ELECTRONIC PAYMENT INSTRUMENTS

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

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

PWGSC Project Number R.082782.001

Research Centre Main Transformer Supply

Lethbridge, AB

Tender Issue Specifications

Table of Contents

2017-07-05

Part 1 General

1.1 RELATED REQUIREMENTS

NOT USED.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises the supply only of two Pad Mount Liquid-filled 5MVA, 25kV/346/600V three-phase four-wire transformers for future use in the upgrade of the main service to the AAFC – Lethbridge Research Station. The new transformers are to be taken into storage on the project site, to be available as temporary replacement of existing in-service equipment. In future, the pair of transformers will be used in an all-new, fully redundant main service for the facility, which will replace the existing service.

.2 Prior to the transformers being removed from storage and placed into service, it is the responsibility of the manufacturer to advise the Departmental Representative with respect to the pre-installation inspection of the equipment and provide any pre-service testing required to comply with the terms of the manufacturer's warranty. In addition, specific instructions related to the handling, storage, start-up and commissioning of the transformers are to be provided as, and when, requested by the Departmental Representative for use in the temporary and permanent installation of the transformers.

1.3 CONTRACT METHOD

.1 Construct Work under stipulated price contract.

1.4 WORK BY OTHERS

NOT USED.

1.5 FUTURE WORK

.1 Project is designed for future use of supplied equipment as described in 1.2.1 of this section.

1.6 WORK SEQUENCE

NOT USED.

1.7 CONTRACTOR USE OF PREMISES

.1 Coordinate delivery with the Departmental Representative.

1.8 OWNER OCCUPANCY

NOT USED.

1.9 PARTIAL OWNER OCCUPANCY

NOT USED.

1.10 PRE-ORDERED PRODUCTS/PRE-BID WORK

NOT USED**.**

1.11 PRE-PURCHASED EQUIPMENT

NOT USED.

1.12 OWNER FURNISHED ITEMS

NOT USED**.**

1.13 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

NOT USED.

1.14 EXISTING SERVICES

NOT USED.

1.15 DOCUMENTS REQUIRED

NOT USED.

Part 2 Products

NOT USED.

Part 3 Execution

3.1

.1 It is intended that the transformers will remain in storage on site in the powerhouse until AAFC is able to proceed with the construction of the new Main Transformer in future. It is expected that a warranty plan can be managed to incorporate the actual in-service date. Should failure of the existing on-site transformers occur and one of the new transformers be required as a temporary replacement, this will trigger the commencement of the in-service portion of the warranty period for that transformer.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 Common Work Results For Electrical.

1.2 REFERENCE STANDARDS

NOT USED.

1.3 ADMINISTRATIVE – POST-TENDER CONTRACT EXECUTION

.1 During execution of the work, submit to Departmental Representative submittals listed for review. Submit within four weeks of the execution of the work and in orderly sequence to not cause delay in Work. Failure to submit within four weeks is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units, converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Contracting Authority, in writing at time of providing submittal documents, identifying any adjustments to previously submitted Contract Documents and stating reasons for adjustments.

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to General Conditions in Contract.

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in Alberta, Canada.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment,

indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow 10 days for review of each submission.

.6 Review comments made on shop drawings by Departmental Representative are not intended to change Contract Price. If review comments affect value of Work, state such in writing to Contracting Authority prior to proceeding with Work.

.7 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative and Contracting Authority in writing of revisions other than those requested.

.8 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.9 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Dimensions and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.10 After Departmental Representative's review, distribute copies.

.11 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.12 Submit electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.13 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of contract award for project.

.14 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.15 Submit electronic copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.16 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.17 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.18 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.19 Delete information not applicable to project.

.20 Supplement standard information to provide details applicable to project.

.21 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication of Work may proceed.

1.5 SAMPLES

NOT USED.

1.6 MOCK-UPS

NOT USED.

1.7 PHOTOGRAPHIC DOCUMENTATION

NOT USED.

1.8 CERTIFICATES AND TRANSCRIPTS

NOT USED.

Part 2 Products

NOT USED.

Part 3 Execution

NOT USED.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

NOT USED.

1.2 REFERENCE STANDARDS

NOT USED.

1.3 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.5 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off-site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

NOT USED.

1.7 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.8 REPORTS

.1 Submit 4 copies of inspection and test reports to Departmental Representative.

1.9 TESTS AND MIX DESIGNS

NOT USED.

1.10 MOCK-UPS

NOT USED.

1.11 MILL TESTS

NOT USED.

1.12 EQUIPMENT AND SYSTEMS

NOT USED.

Part 2 Products

NOT USED.

Part 3 Execution

NOT USED.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

NOT USED.

1.2 REFERENCE STANDARDS

.1 Within text of each specifications section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.5 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

1.7 NOT USED

1.8 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

1.9 CO-ORDINATION

NOT USED.

1.10 CONCEALMENT

NOT USED.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 LOCATION OF FIXTURES

NOT USED.

1.13 FASTENINGS

NOT USED.

1.14 FASTENINGS - EQUIPMENT

NOT USED.

1.15 PROTECTION OF WORK IN PROGRESS

NOT USED.

1.16 EXISTING UTILITIES

NOT USED.

Part 2 Products

NOT USED.

Part 3 Execution

NOT USED.

END OF SECTION

Part 1 General

1.1 NOT USED

1.2 NOT USED

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Participate in meeting by telephone call with Departmental Representative and Consultant to:

.1 Verify Project requirements.

.2 Review warranty requirements and manufacturer's installation instructions.

.2 Departmental Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.4 Arrange content under Section numbers and sequence of Table of Contents.

.5 Text: manufacturer's printed data, or typewritten data.

.6 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.7 NOT USED

1.8 NOT USED

1.9 NOT USED

1.10 NOT USED

1.11 NOT USED

1.12 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.13 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts and maintenance materials in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.14 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties. It is intended that the transformers will remain in storage until AAFC is able to proceed with the construction of the new Main Transformer in future. It is expected that a warranty plan can be managed to incorporate the actual in-service date. Should failure of the existing on-site transformers occur and one of the new transformers be required as a temporary replacement, this will trigger the warranty period commencement.

.2 Submit warranty management plan to Departmental Representative for approval.

.3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Departmental Representative for approval.

.6 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until in-service date is determined.

.7 Conduct joint 4-month and 9-month warranty inspections, measured from time of in-service acceptance, by Departmental Representative.

.8 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where delivered.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty subject to item 1.14.1 of this section.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Please for 4- and 9-month post-construction warranty inspections.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Provide copies of instructions, which need to be posted, near equipment where operation is critical for warranty and/or safety reasons.

.9 Respond in timely manner to oral or written notification of required warranty work.

.10 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.15 WARRANTY TAGS

.1 Provide tags for use at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.

.2 Leave date of acceptance until equipment is placed in service.

.3 Indicate following information on tag:

.1 Type of product.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector's signature.

.7 Construction Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

1.2 REFERENCES

.1 Definitions:

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

.2 Reference Standards:

.1 CSA Group

.1 CSA C22.1-15, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)

.1 IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for Pad Mount Transformers and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the province of Alberta, Canada.

.2 Indicate clearances for operation, maintenance, and replacement of operating equipment devices.

.3 If changes are required, notify Departmental Representative of these changes before they are made.

.4 Certificates:

.1 Provide CSA-certified equipment.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for Pad Mount Transformers for incorporation into manual.

.1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

.2 Operating instructions to include following:

.1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.

.2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.

.3 Safety precautions.

.4 Procedures to be followed in event of equipment failure.

.5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

.3 Print or engrave operating instructions and frame in approved laminated plastic.

.4 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.

.5 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section [01 61 00 - Common Product Requirements] [with manufacturer's written instructions].

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect Pad Mount Transformers from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates and labels in English.

2.2 MATERIALS AND EQUIPMENT

.1 Provide equipment in accordance with Section 01 61 00 - Common Product Requirements.

.2 Equipment to be CSA certified.

.3 Factory assemble control panels and component assemblies.

2.3 NOT USED

2.4 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of Departmental Representative.

.2 Decal signs, minimum size 175 x 250 mm.

2.5 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

.2 Provide colour-coding bands for all conductors.

2.6 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with [nameplates] [labels] as follows:

.1 Nameplates: lamicoid, black face, white core, lettering accurately aligned and engraved into core, mechanically attached with self-tapping screws.

.2 Nameplate sizes as follows: 25 x 100 mm, 2 lines, 6 mm high letters.

.2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.

.3 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.

.4 Allow for minimum of twenty-five (25) letters per nameplate or label.

.5 Transformers: indicate capacity, primary and secondary voltages.

2.7 NOT USED

2.8 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust-resistant primer inside and outside, and at least two coats of finish enamel.

.1 Paint outdoor electrical equipment "equipment green" finish.

Part 3 Execution

3.1 NOT USED

3.2 NOT USED

3.3 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.4 NOT USED

3.5 NOT USED

3.6 NOT USED

3.7 NOT USED

3.8 NOT USED

3.9 SYSTEM STARTUP

.1 Instruct Departmental Representative in operation, care and maintenance of systems, system equipment and components.

.2 Instruct Departmental Representative concerning needs for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

3.10 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

NOT USED.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers, Inc. (IEEE)

.1 ANSI/IEEE 386, Separable Insulated Connector Systems for Power Distribution Systems above 600 V, 2016.

.2 EEMAC L9-3, Interchangeability of HV Bushings on Pole Type Distribution Transformers, 1987.

.3 IEEE Std C57.12.00™ standard – Standard for Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers, 2015.

.4 IEEE Std C57.12.28™ standard – Pad-Mounted Equipment - Enclosure Integrity, 2014.

.5 IEEE Std C57.12.90™ standard – Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and IEEE Guide for Short-Circuit Testing of Distribution and Power Transformers, 2015.

.6 IEEE Std C57.12.91™ standard – Guide for Loading Mineral-Oil-Immersed Transformers, 2011.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-C2.1- Single-Phase and Three-Phase Distribution Transformers, Types ONAN and LNAN, 2017.

.2 CAN/CSA-C227.2, Three-Phase, Live Front, Pad Mounted Distribution Transformers, 2013.

.3 CAN/CSA-C227.3, Low-Profile, Single-Phase, Dead Front, Pad-Mounted Distribution Transformers, 2003.

.4 CSAC227.4, Three-Phase Dead Front Pad-Mounted Distribution Transformers, 2017.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, and limitations.

.3 Submit shop drawings and indicate:

.1 Anchoring method and dimensioned foundation template.

.2 Dimensioned cable entry locations.

.3 Dimensioned cable termination height.

.4 Identified internal and external component layout on assembly drawing.

.5 Insulating liquid capacity.

.6 Submit primary fuse and secondary breaker time-current characteristics.

1.4 QUALITY CONTROL

.1 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 – Quality Control.

.1 Certificates: submit production certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.2 Instructions: submit manufacturer's installation instructions.

.1 Departmental Representative will make available 1 copy of systems supplier's installation instructions.

1.5 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for pad mounted distribution transformers for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Include insulating liquid maintenance data.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Ship transformer complete with first fill of liquid.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer' name and address.

Part 2 Products

2.1 EQUIPMENT

.1 Three phase pad mounted transformers: to CAN/CSA-C227.2.

.2 Three-phase dead front pad-mounted distribution transformers manufactured to CSA C227.4.

.3 Separable insulated connectors for power distribution systems above 600 V manufactured to ANSI/IEEE 386.

.4 Oil-filled pad-mounted distribution transformers complete with primary and secondary cable compartments, un-fused options and accessories to form complete factory assembled, self-contained, steel fabricated for mounting on concrete pad.

.5 High-voltage bushings or high voltage bushing wells for connection to distribution system through separable insulated connectors for dead front operation solderless connectors.

.6 Separable insulated connectors.

.7 Primary cable terminals with hole for 9.5 mm diameter, 16-thread bolt for attachment of solder lug or clamp connector in vertical plane with solderless connectors.

.8 Spade type low-voltage terminals.

.9 Connectors for primary and secondary cables.

.10 Mechanical interlock to Section 26 18 41- Interlock Systems to prevent access to primary compartment unless primary supply is isolated at source.

.11 Stays to hold compartment doors in 110 degrees open position.

2.2 TRANSFORMER CHARACTERISTICS

.1 Primary voltage: 25 kV, 60 Hz, delta connected, three-phase, grounded.

.2 Secondary voltage: 347/600V, wye connected, three-phase, 4 wire, neutral grounded.

.3 Capacity: 5000/6250 kVA.

.4 Basic impulse level: 125 kV.

.5 Maximum rms short-circuit: 250 MVA

.6 Impedance: not less than 7%.

.7 Efficiency: greater than 99.5%

.8 The average winding temperature rise above ambient temperature, when tested the base transformer rating, shall not exceed 55 °C, and when tested at 112% of the base rating, shall not exceed 65 °C.

.9 High Performance transformers designed to deliver more energy savings under either linear or non-linear loading that maintains high efficiency levels over the entire load range.

.10 Linear load losses at the transformer's peak design loading and harmonic losses shall be reduced to ensure efficiencies meet NEMA TP-1 requirements even under 'non-linear loading.

.11 For non-linear loading applications ensure the proven harmonic mitigating providing energy efficiency, low inrush and low audible noise.

2.3 VOLTAGE TAPS

.1 The transformer will be furnished with full capacity high-voltage taps. The tap changer shall be clearly labeled to reflect that the transformer must be de-energized before operating the tap changer as required in Section 4.3 of IEEE Std C57.12.34™-2009 standard. The unit shall have two 2 ½% taps above and two 2 ½% below rated voltage (split taps).

2.4 CONSTRUCTION

.1 The core and coil shall be vacuum processed to ensure maximum penetration of insulating fluid into the coil insulation system. While under vacuum, the windings will be energized to heat the coils and drive out moisture, and the transformer will be filled with

preheated filtered degassed insulating fluid. The core shall be manufactured from burr-free, grain-oriented silicon steel and shall be precisely stacked to eliminate gaps in the corner joints. The coil shall be insulated with B-stage, epoxy coated, diamond pattern, insulating paper, which shall be thermally cured under pressure to ensure proper bonding of conductor and paper. Coils shall be copper.

.2 The dielectric coolant shall be listed less-flammable fluid meeting the requirements of Canadian Electrical Code. The dielectric coolant shall be non-toxic*, non-bio-accumulating and be readily and completely biodegradable. The base fluid shall be 100% derived from edible seed oils and food grade performance enhancing additives. The fluid shall not require genetically altered seeds for its base oil. The fluid shall be Factory Mutual Approved®, ULC® Classified Dielectric Medium and ULC® Classified Transformer Fluid.

.3 Tank and Cabinet Enclosure

.1 Provide NEMA 4X steel enclosures housing the high and low voltage bushing. The high-voltage and low-voltage compartments, separated by a metal barrier, shall be located side-by-side on one side of the transformer tank. Each compartment shall have a door that is constructed so as to provide access to the high-voltage compartment only after the door to the low-voltage compartment has been opened. There shall be one or more additional fastening devices that must be removed before the high-voltage door can be opened. Where the low-voltage compartment door is of a flat panel design, the compartment door shall have three-point latching with a handle provided for a locking device. Hinge pins and associated barrels shall be constructed of corrosion-resistant material, passivated ANSI® Type 304 or the equivalent.

.2 A recessed, captive, penta-head or hex-head bolt that meets the dimensions per IEEE Std C57.12.28™-2014 standard shall secure all access doors.

.3 The compartment depth shall be in accordance with IEEE Std C57.12.34™-2009 standard, unless additional depth is specified.

.4 The tank base must be designed to allow skidding or rolling in any direction. Lifting provisions shall consist of four lifting lugs welded to the tank.

.5 Provide lifting lugs on the core and other components of the transformer for detanking purposes. Placement of the lugs will not cause damage to the components during lifting.

.6 The tank shall be constructed to withstand 7 psi without permanent deformation, and 15 psi without rupture. The tank shall include a 15 psig pressure relief valve with a flow rate of minimum 35 SCFM.

.7 The exterior of the unit shall be painted Munsell 7GY3.29/1.5 green (STD). If a special paint color is specified, a federal spec number or paint chip must be provided at the time of order. The cabinet interior and front plate shall be painted gray for ease of viewing the inside compartment.

.8 The tank shall be complete with an anodized aluminum laser engraved nameplate. This nameplate shall meet Nameplate B per IEEE Std C57.12.00™-2010 standard.

.9 High voltage bushings will be installed in the high voltage termination compartment located on the front left of the transformer and requiring access via the low voltage termination compartment on the front right.

.10 The transformer shall be provided with three (3) high-voltage bushings in accordance with Figure 1 dimensions (Figure 4a dimensions may be specified when a larger termination compartment for greater working space is desired) from IEEE Std C57.12.34™-2009 standard for radial feed configurations. The bushing heights shall be in accordance with Figure 3 dimensions (Figure 6 dimensions may be specified for greater bushing height) of IEEE Std C57.12.34™-2009 standard.

.11 Low-voltage connection to be 6000A bus bar for underground connections include flexible connectors between transformer low-voltage studs and bus bars.

.12 Transformer to be floor mounted on steel skid complete with vibration isolation dampers. Submit detail of vibration dampers for approval.

.4 Grounding to the core shall be provided.

2.5 ACCESSORIES

.1 Additional transformer rating nameplate – In addition to the standard nameplate located on the transformer tank, a second nameplate shall be included. The nameplate shall be mounted external to the termination compartments with an industrial grade double-sided adhesive. Its location shall be identified on the data sheet.

.2 External drain valve with sampler – A 1.0” drain valve with sampling device shall be located outside of the cable compartment on the low voltage side of the tank. The valve shall be protected by a hinged cover with padlock provisions.

.3 External instrumentation package – All included gauges and instrumentation devices shall be located outside of the cable compartments such that access to them does not require exposure to any live circuits. They shall be located inside a separate NEMA® 4 rated enclosure on the high voltage side of the tank. Devices shall include the following:

.1 Oil level indicator (with contacts for remote alarm/trip),

.2 Oil temperature indicator (with contacts),

.3 Top pressure relief valve,

.4 Bottom drain and sample valve,

.5 Top bung for oil filling,

.6 Winding temperature indicator (with contacts),

.7 The first stage cooling fans and controls,

.8 Control cabinet with anti-condensation heater (NEMA 4X steel construction),

.9 Emergency pressure relief device,

.10 Top filter press connection,

.11 Top non-flammable insulating liquid sampling device,

.12 Anchor devices, setting templates means for bolting down,

.13 Sudden pressure relay,

.14 Separate 120V AC circuit for fans/heaters.

.4 Alarm contacts shall be included on the liquid level gauge, dial-type thermometer, and pressure/vacuum gauges. Any of the accessories above with contacts shall be wired to terminal blocks located within the enclosure.

.5 For additional safety and ease of maintenance, the following instrumentation devices shall be located on the front of the external load break switch compartment: liquid level gauge, dial-type thermometer, pressure/vacuum gauge, sound level, pressure relief valve and ½" fluid sampling valve. These devices shall be protected by a hinged cover with padlock provisions.

2.6 FINISH

.1 Thoroughly clean the equipment of all film, scale, rust, and weld splatters to base metal by means of sandblasting or equivalent methods, both inside and outside.

.2 Degrease and provide rust-inhibiting treatment to all surfaces.

.3 Immediately upon completion of the cleaning process, the surfaces are to be coated with one coat of primer.

.4 After application of the primer and before painting, all surfaces to be lightly sanding to ensure flatness and quality of the grinding around welds.

.5 All surfaces to be given two (2) coats of baked enamel.

.6 Thoroughly clean the transformer's interior of all construction debris.

.7 Provide 1 litre of touch-up paint per transformer.

2.7 TESTING

.1 The following tests to be performed in the factory, prior to shipment of transformer. Test results are to be supplied with the Operations and Maintenance manual.

.2 Note: The Departmental Representative may want to witness the factory testing. Notify the Engineer of the testing schedule at least four (4) weeks prior to the day of testing.

- .1 Resistance tests of all windings.
- .2 Ratio test at rated voltage and on all tap connections.
- .3 Polarity and phase relationship at the rated voltage connection.
- .4 No-load loss test.
- .5 Exciting current test at rated voltage.
- .6 Impedance and load test with thermographic analysis.
- .7 Dielectric frequency response, both for the bushings and windings.
- .8 Temperature rise test, to be detailed by the quotation.
- .9 60 Hz and lower frequency voltage tests to be described by the quotation.
- .10 The quotation is to include a description of the BIL tests available.

.3 The Departmental Representative shall perform the following field tests to provide the integrity of the equipment after transportation.

.1 Physical inspection.

.2 Transformer ratio, polarity, capacitance and dissipation factor tests, reverse excitation.

.3 Insulation resistance (Megger) test.

.4 Provide recommended Megger test levels with the delivery of the equipment. Also, specify if equipment should not be subjected to high-potential tests.

.5 Provide level of acceptable results for all field tests.

2.8 EQUIPMENT IDENTIFICATION

.1 Nameplate showing information in accordance with CSA C2.01 and CSA C88.

.2 Provide equipment identification by a permanently attached laminated plastic nameplate showing the equipment name/ number assigned by Owner. (To be provided at shop drawing review stage)

2.9 SPARE MAINTENANCE TOOLS

.1 Manufacturer to provide a list of recommended spare parts and maintenance tools. Include prices for individual components.

2.10 SOURCE QUALITY CONTROL

.1 Provide production test certificates to the Department Representative.

2.11 NOT USED

END OF SECTION