

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
**Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada**
Pacific Region
401 - 1230 Government Street
Victoria, B.C.
V8W 3X4
Bid Fax: (250) 363-3344

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 PENSTOCK CYLINDERS	
Solicitation No. - N° de l'invitation EZ108-160719/A	Date 2015-08-11
Client Reference No. - N° de référence du client EZ108-160719	
GETS Reference No. - N° de référence de SEAG PW-\$VIC-249-6792	
File No. - N° de dossier VIC-5-38080 (249)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2015-08-26	
Time Zone Fuseau horaire Pacific Daylight Saving Time PDT	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Cress, Christine	
Buyer Id - Id de l'acheteur vic249	
Telephone No. - N° de téléphone (250) 363-8442 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF PUBLIC WORKS AND GOVERNMENT SERVICES CANADA ENGINEERING ASSETS ESQUIMALT GRAVING DOCK 825 ADMIRALS RD VICTORIA BRITISH COLUMBIA V9A 2P1 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 See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Issuing Office - Bureau de distribution

Public Works and Government Services Canada - Pacific
Region
401 - 1230 Government Street
Victoria, B. C.
V8W 3X4

Solicitation No. - N° de l'invitation

EZ108-160719/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

vic249

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

EZ108-160719

File No. - N° du dossier

VIC-5-38080

CCC No./N° CCC - FMS No/ N° VME

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PART 1 - GENERAL INFORMATION

1.1 Requirement

The requirement is detailed under the "Line Item Detail".

1.2 Debriefings

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

1.3 Trade Agreements

The requirement is subject to the provisions of the Agreement on Internal Trade (AIT).

1.4 Canadian Content

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

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

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

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

The 2003 (2015-07-03) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

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 seven (7) 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 British Columbia.

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 (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.

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 Applicable Taxes must be shown separately.

3.1.1 Exchange Rate Fluctuation

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

Section III: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

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

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria – See Minimum Performance Specifications in Annex A.

4.1.2 Financial Evaluation

SACC Manual Clause A0222T (2014-06-26), Evaluation of Price – Canadian / Foreign Bidders

4.2 Basis of Selection

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

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. 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 Declaration of Convicted Offences

As applicable, pursuant to subsection Declaration of Convicted Offences of section 01 of the Standard Instructions, the Bidder must provide with its bid, a completed Declaration Form (<http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html>), to be given further consideration in the procurement process.

5.1.2 Additional Certifications Required with the Bid

5.1.2.1 Canadian Content Certification

This procurement is conditionally limited to Canadian goods.

Subject to the evaluation procedures contained in the bid solicitation, bidders acknowledge that only bids with a certification that the good(s) offered are Canadian goods, as defined in clause A3050T, may be considered.

Failure to provide this certification completed with the bid will result in the good(s) offered being treated as non-Canadian goods.

The Bidder certifies that:

(____) the good(s) offered are Canadian goods as defined in paragraph 1 of clause A3050T.

5.1.2.1.1 SACC Manual clause A3050T (2014-11-27), Canadian Content Definition

5.2 Certifications Precedent to Contract Award and Additional Information

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

5.2.1 Integrity Provisions – List of Names

Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder.

Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).

Bidders bidding as societies, firms or partnerships do not need to provide lists of names.

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 (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Employment and Social Development Canada (ESDC) - Labour's website.

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

PART 6 - RESULTING CONTRACT CLAUSES

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

6.1 Security Requirements

6.1.1 There is no security requirement applicable to this Contract.

6.2 Requirement - Contract

The Contractor must provide the items detailed under the "Line Item Detail".

6.3 Standard Clauses and Conditions

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

6.3.1 General Conditions

2010A (2015-07-03), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.4 Term of Contract

6.4.1 Delivery Date

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

While delivery is requested by _____, the best delivery that could be offered by bidder is _____.

6.4.2 Shipping Instructions - Delivery at Destination

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

Delivered Duty Paid (DDP) (Esquimalt Graving Dock, 825 Admirals Rd, Victoria, BC Canada V9A 2P1) Incoterms 2000 for shipments from a commercial contractor.

Normal business hours of the Esquimalt Graving Dock are 0700-1600h Monday to Friday, excluding statutory holidays.

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Christine Cress
Public Works and Government Services Canada
Pacific Region, Acquisitions
401 – 1230 Government St
Victoria, BC V8W 3X4
Telephone: 250-363-8442
Facsimile: 250-363-0395
E-mail address: christine.cress@pwgsc.gc.ca

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

6.5.2 Project Authority

The Project Authority for the Contract is: (to be determined at contract award)

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

6.5.3 Contractor's Representative *(Please fill in or delete as applicable)*

Name and telephone number of the person responsible for :

General enquiries:

Name: _____

Telephone No. _____

Facsimile No. _____

E-mail address: _____

Delivery follow-up:

Name: _____

Telephone No. _____

Facsimile No. _____

E-mail address: _____

6.6 Payment

6.6.1 Basis of Payment – Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price, as specified in contract for a cost of \$ _____ (amount 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.

6.6.2 Limitation of Price

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

6.6.3 Method of Payment

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

6.6.4 SACC Manual Clauses

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

6.7 Invoicing Instructions

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

6.8 Certifications

6.8.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing additional information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the additional information, or if 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.

6.8.2 SACC Manual Clauses

A3060C (2008-05-12), Canadian Content Certification

6.9 Applicable Laws

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

6.10 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- a) the Articles of Agreement;
- b) the general conditions 2010A (2015-07-03), General Conditions - Goods (Medium Complexity);
- c) Annex A, Requirement;
- d) Annex B, Insurance Requirements
- e) the Contractor's bid dated _____ .

6.11 SACC Manual Clauses

A9062C (2011-05-16), Canadian Forces Site Regulations
B1501C (2006-06-16), Electrical Equipment, if applicable.

6.12 Insurance – Specific Requirements

The Contractor must comply with the insurance requirements specified in Annex B. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. For Canadian-based Contractors, coverage must be placed with an Insurer licensed to carry out business in Canada, however, for Foreign-based Contractors, coverage must be placed with an Insurer with an A.M. Best Rating no less than "A-". The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

ANNEX "A" - REQUIREMENT

REQUIREMENT

Penstock Cylinder Replacement, Esquimalt Graving Dock

A1. Requirement

Public Works and Government Services Canada (PWGSC), Esquimalt Graving Dock (EGD), Victoria, BC has a requirement to replace six (6) existing hydraulic cylinders for their existing Penstock Gates.

This Requirement is for the supply and delivery of six (6) hydraulic cylinders meeting the requirements and specifications as set out in this document.

This requirement includes the delivery of shop drawings, test reports, manuals, installation instructions and any applicable standard manufacturer warranties.

A2. Background

The EGD is a deep-sea shipbuilding and repair facility on Canada's Pacific Coast and is the largest solid foundation graving dock on the West Coast of the Americas. Located on the southern end of Vancouver Island in Greater Victoria, British Columbia, the EGD has direct vessel access from the Strait of Juan de Fuca, the main shipping channel for Southern British Columbia and the Puget Sound in the United States. The EGD is Crown-owned and has been operated by PWGSC since 1927 providing common services (on a fee-for-service basis) and multi-user access to the dry dock infrastructure for any qualified private sector ship repair company.

The dry dock is comprised of three (3) sections that can be separated with the use of floating caissons. The PWGSC Pumphouse controls the flow of water in and out of the dry dock with hydraulically controlled penstock gates which control water to each individual section of the dry dock.

MINIMUM PERFORMANCE SPECIFICATIONS

Supply and deliver six (6) hydraulic cylinders meeting the requirements and specifications as set out below per unit:

1. Specification Section 21 05 01.01 Supply of Penstock Cylinders, attached.
2. Drawings 00 through 03, attached.

The Work offered meets or exceeds the specifications stated herein.

Signature of Authorized Representative for Compliance

Date

Existing Penstock Gate hydraulic cylinder with fittings shown below and is provided for reference purposes only:



ANNEX "B" – INSURANCE REQUIREMENTS

Commercial General Liability Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
 - d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
 - g. Employees and, if applicable, Volunteers must be included as Additional Insured.
 - h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
 - i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
 - j. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.
 - k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
 - l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
 - m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles
 - o. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
 - r. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8

For other provinces and territories, send to:

Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

Automobile Liability Insurance

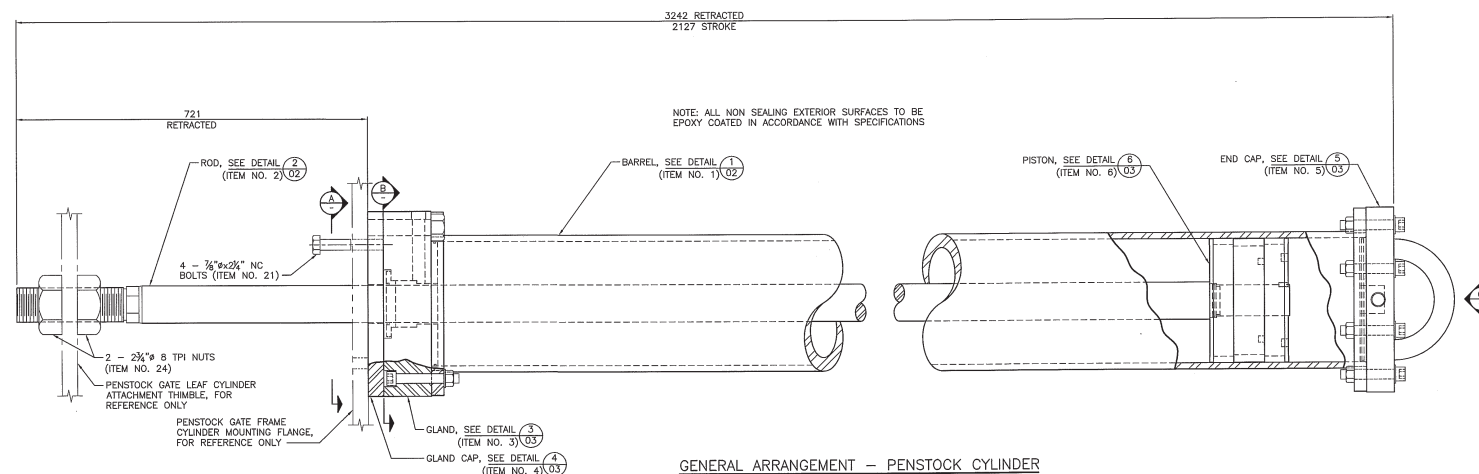
1. The Contractor must obtain Automobile Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence.
2. The policy must include the following:
 - a. Third Party Liability - \$2,000,000 Minimum Limit per Accident or Occurrence
 - b. Accident Benefits - all jurisdictional statutes
 - c. Uninsured Motorist Protection
 - d. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.

Errors and Omissions Liability Insurance

1. The Contractor must obtain Errors and Omissions Liability (a.k.a. Professional Liability) insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature but for not less than \$1,000,000 per loss and in the annual aggregate, inclusive of defence costs.
2. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

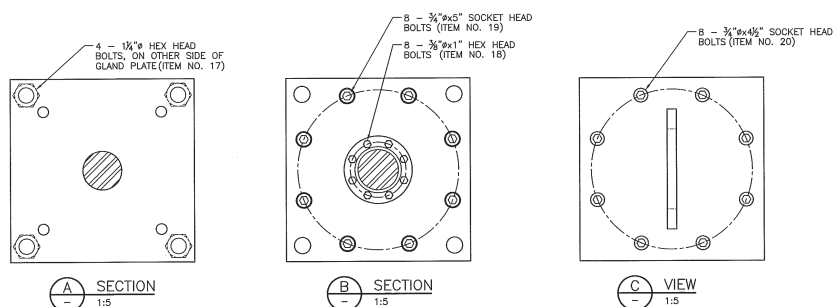
3. The following endorsement must be included:

Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.



CYLINDER DATA	
BARREL:	279.40 O.D. x 254.00 I.D.
ROD:	76.17#
STROKE:	2127
DESIGN PRESSURE:	140 BAR

GENERAL ARRANGEMENT - PENSTOCK CYLINDER
1:5



BILL OF MATERIALS			
ITEM NO.	ITEM	DESCRIPTION	QUANTITY
1	BARREL	SEE SHEET 2	1
2	ROD	SEE SHEET 2	1
3	GLAND	SEE SHEET 3	1
4	GLAND CAP	SEE SHEET 3	1
5	END CAP	SEE SHEET 3	1
6	PISTON	SEE SHEET 3	1
7	O-RING	2-230 N70	1
8	BRONZE BEARING	252.73 O.D. x 222.25 I.D.	1
9	GRUB SET SCREW	3/8" x 1/2" NC	1
10	PISTON SEAL	254.00 O.D. x 228.60 I.D. CHEVRON TYPE PACKING	AS REQ'D
11	O-RING	2-273 N70	2
12	SEAL RETAINER	SAE 660 BRONZE SEAL RETAINER	1
13	BRONZE BEARING	95.25 O.D. x 77.47 I.D.	1
14	ROD SEAL	95.25 O.D. x 75.20 I.D. CHEVRON TYPE PACKING	AS REQ'D
15	WIPER SEAL	76.20# AN-29	1
16	O-RING	2-268 N70	1
17	BOLTS	1 1/4" x 5 1/2" NC S.S.	4
18	HEX BOLTS	3/8" x 1" NC (SAFETY WIRE AFTER INSTALL)	8
19	SOCKET HEAD BOLTS	3/4" x 5" NC S.S.	8
20	SOCKET HEAD BOLTS	3/4" x 4 1/2" NC S.S.	8
21	HEX BOLTS	1/2" x 2 1/2" NC S.S.	4
22	WASHERS	3/4" SAE S.S. FLAT HARD WASHERS	8
23	NUTS	3/4" NC S.S. NUTS	16
24	NUTS	2 1/2" - 8 TPI S.S. NUTS	2

NOTE:
DIMENSIONS SHOWN ARE NOMINAL. SUPPLIER SHALL DETERMINE TOLERANCES AND SURFACE FINISHES REQUIRED TO ACHIEVE PERFORMANCE REQUIREMENTS INDICATED IN SPECIFICATIONS AND TO INDICATE AS REQUIRED ON SHOP DRAWINGS



5		
4		
3		
2	REVIEWED FOR TENDER	20160510
1	ISSUED FOR TENDER	20160604
0	ISSUED FOR REVIEW	20160611
Revision	Description/Description	Date/Date

ESQUIMALT GRAVING DOCK
825 ADMIRALS ROAD
ESQUIMALT, B.C., V8A 2P1

Project title/Titre du projet

PENSTOCK CYLINDER REPLACEMENT

Consultant Signature Only

Designed by/Conçu par
KUMMCS/TMW

Drawn by/Dessiné par
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Project Manager/Manager/Administrateur de Projet
JON SIKKA

Engineer Manager/Architectural and Engineering Services
Société d'ingénierie, Services d'architectes et de génie, 19900

Project Manager/Manager/Administrateur de Projet
Frederick Paul

Drawing title/Titre du dessin

GENERAL ARRANGEMENT

Project No./No. du projet R.016116.098	Sheet/Faute 01 OF 3	Revision 2
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PUBLIC WORKS & GOVERNMENT SERVICES CANADA

PENSTOCK CYLINDER REPLACEMENT - PROJECT No. R.016116.098

DRAWING LIST

<u>SHEET #</u>	<u>DESCRIPTION</u>
00	COVER SHEET
01	GENERAL ARRANGEMENT
02	BARREL AND ROD - DETAILS
03	PISTON, GLAND AND END CAPS - DETAILS



1		
2		
3		
4		
5		
6	ISSUED FOR TENDER	20150604
7	ISSUED FOR REVIEW	20150604

Reviser/Revisé Description/Description Date/Date

Client/Client

**ESQUIMALT
GRAVING DOCK**

825 ADMIRALS ROAD
ESQUIMALT, B.C., V9A 2P1

Project title/titre du projet

**PENSTOCK CYLINDER
REPLACEMENT**

Consultant Signature Only

Designed by/Concept par

KUMBOC/TMM

Drawn by/Dessiné par

PHU SEP2014

PROJECT Project Manager/Administrateur de Projets 195502

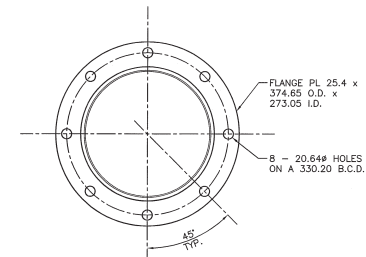
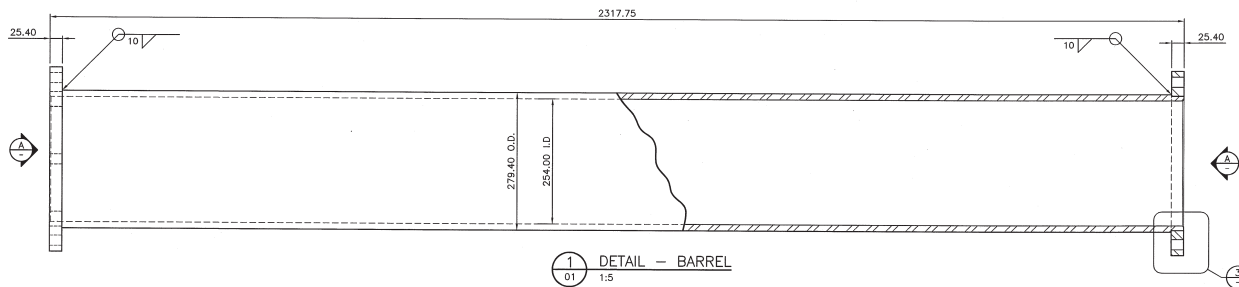
JON BIRKA

Regional Manager, Architecture and Engineering Services
Géomètre régional, Services d'architecture et de génie, 195502

Drawing title/titre du dessin

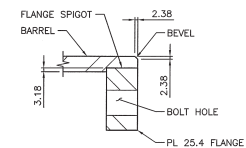
COVER SHEET

Project No./No. du projet	Sheet/Feuille 00 OF 3	Revision no. 1
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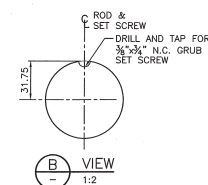
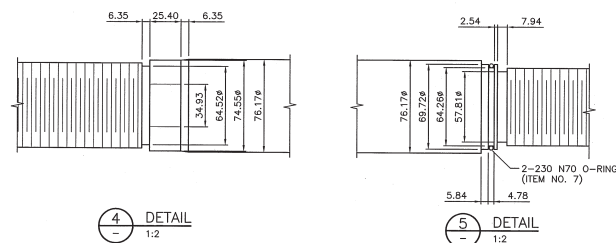
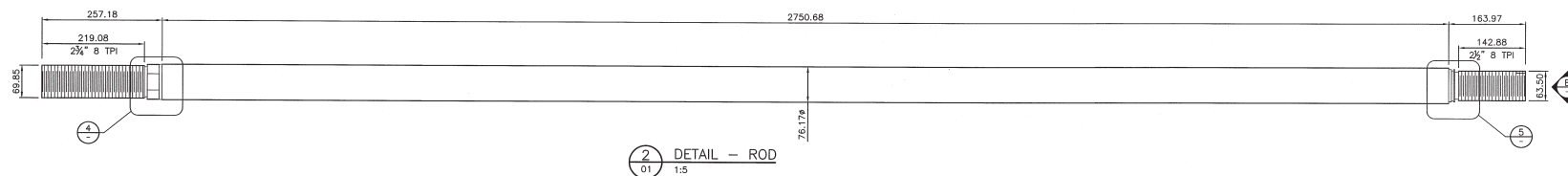


NOTE: TYPICAL BOTH ENDS OF BARREL

A
VIEW
1:5



3
DETAIL
1:2



NOTE:
DIMENSIONS SHOWN ARE NOMINAL. SUPPLIER SHALL DETERMINE TOLERANCES AND SURFACE FINISHES REQUIRED TO ACHIEVE PERFORMANCE REQUIREMENTS INDICATED IN SPECIFICATIONS AND TO INDICATE AS REQUIRED ON SHOP DRAWINGS



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1	ISSUED FOR TENDER	20160604
0	ISSUED FOR BSA REVIEW	20160601
Revisy	Description/Description	Date/Date

Client/client
**ESQUIMALT
GRAVING DOCK**
825 ADMIRALS ROAD
ESQUIMALT, B.C., V9A 2P1

Project title/Titre du projet
**PENSTOCK
CYLINDER
REPLACEMENT**

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Designed by/Conçu par
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**BARREL AND ROD
- DETAILS**

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Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this contract includes supply of six hydraulic cylinders constructed in conformance with the design drawings and technical specifications.

1.2 RELATED REQUIREMENTS

- .1 None

1.3 REFERENCES

- .1 ASTM International
 - .1 ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
 - .2 ASTM B271/271M - Standard Specification for Copper-Base Alloy Centrifugal Castings.
 - .3 ASTM A519 – Standard Specification for Seamless Carbon and Alloy Steel Mechanical Tubing.
 - .4 ASTM A564 / A564M - Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes.
 - .5 ASTM F593 Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
 - .6 ASTM F594 - Standard Specification for Stainless Steel Nuts.
- .2 Canadian Standards Agency
 - .1 CSA G40.20/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CSA W47.1 - Certification of companies for fusion welding of steel.
 - .3 CSA W59 - Welded steel construction (metal arc welding).
 - .4 W178.2-14 - Certification of welding inspectors.
- .3 American Welding Society
 - .1 AWS D1.1 - Structural Welding Code - Steel
 - .2 AWS D14.9/D14.9M - Specification for the Welding of Hydraulic Cylinders.
- .4 Society of Automotive Engineers
 - .1 SAE J429 - Mechanical and Material Requirements for Externally Threaded Fasteners.
 - .2 SAE J995 - Mechanical and Material Requirements for Steel Nuts.
- .5 International Standards Organization
 - .1 ISO 4406 - Hydraulic fluid power -- Fluids -- Method for coding the level of contamination by solid particles.

- .2 ISO 10100 - Hydraulic fluid power -- Cylinders – Acceptance tests.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with PWGSC Procurement Procedures.
 - .1 Shop drawings shall be provided for all fabricated components.
 - .2 The manufacturer and part numbers shall be provided for all purchased components.
 - .3 Submit 1 electronic copy and 2 printed copies of shop drawings complete with Bill of Materials indicating manufacturers and part numbers of purchased components.
- .2 At least 1 week prior to beginning work, submit to Departmental Representative:
 - .1 Shop drawings and proposed specifications of components.
 - .2 Proof of certification for any required fabrication.
 - .3 Written work plan for coating application

1.5 QUALITY ASSURANCE

- .1 All materials used in the construction of the cylinders are to meet the specified material standards and grades.
 - .1 Submit all mill test certificates for all raw materials used in fabrication to the Departmental Representative within 2 days of receipt.
 - .2 Submit packing slips for purchased components within 2 days of receipt.
- .2 All welds are to be inspected or tested by non-destructive means as required by a third party weld inspector engaged by the Contractor. The weld inspector shall be certified in accordance with CSA W178.2 to level 2.
 - .1 100% of fillet welds shall be visually inspected.
 - .2 50% of groove welds and 100% of full penetration welds shall be inspected by ultrasonic or radiographic methods.
 - .3 Submit all weld test results to the Departmental Representative within 2 days of receipt.
- .3 All surface coatings are to be inspected by a third-party NACE certified coatings inspector, engaged by the Contractor.
 - .1 Typical testing SSPC PA2 rule allowing for 80% of minimum DFT for spot measurement shall not apply. The minimum DFT shall be 16 mils on any spot measured.
 - .2 Test for coating continuity (Holiday Testing) in accordance with manufacturer's instructions after the epoxy anti-corrosive has sufficiently cured.
 - .3 Submit all coating test results to the Departmental Representative within 2 days of receipt.

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- .4 Cylinders are to be tested and flushed by the supplier prior to delivery.
 - .1 Cylinders shall be pressure tested in accordance with ISO 10100 by the supplier.
 - .2 Cylinders shall be flushed with hydraulic fluid compatible with Mobil Nuto H hydraulic oil to a cleanliness level of 16/14/12 in accordance with ISO 4406.
 - .3 Cylinder test reports and particulate count reports shall be provided with supply of cylinders.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 All materials shall be transported and stored in accordance with the manufacturer's written instructions.

Part 2 Products

2.1 PERFORMANCE CRITERIA

- .1 All components utilized in manufacture of cylinders are to be suitable for service at a maximum pressure of 140bar (2000psi).
 - .1 Structural elements are to have a 4:1 design factor against burst or rupture.
 - .2 All seals are to be zero-leak type.
 - .3 Cylinders are to be suitable for immersion in a salt water marine environment.
 - .4 Cylinders construction shall be suitable for a maximum piston and rod speed of 100 mm/s.
 - .5 Cylinders shall be free from any seal induced vibration during operation.

2.2 MATERIAL SPECIFICATIONS

- .1 Cylinder barrel material is to be in accordance with ASTM A519 Gr. 1026.
- .2 Cylinder rod material is to be in accordance with ASTM A564 Gr. 630.
- .3 Cylinder end cap, gland or other plate material is to be in accordance with CSA G40.21 Gr. 300W.
- .4 Cylinder piston material is to be in accordance with ASTM A108 Gr. 1018 RT.
- .5 Wear rings are to be C93200 bronze in accordance with ASTM B271.
- .6 O-rings are to be 70 durometer nitrile.
- .7 Piston seals are to be Chevron type seal sets, 2 per cylinder or approved equivalents.
- .8 Rod seals are to be Chevron type seal sets, 1 per cylinder or approved equivalents.

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- .9 Rod wipers are to be AN29 urethane wiper seals or approved equivalents.
- .10 Plain or plated fasteners are to be in accordance with SAE J429 Gr. 8 or SAE J995 Gr. 8.
- .11 Stainless steel fasteners are to be in accordance with ASTM F593 Group 1 or ASTM F594 Group 1.

2.3 COATING MATERIALS

- .1 Cylinder coating is to consist of a high solids polyamide epoxy with 15 year durability suitable for a C5-M environment (high corrosivity – marine) under ISO 12944-2, including immersion, with the following requirements:
 - .1 Coating is to be self-priming.
 - .2 Minimum number of coats = 2.
 - .3 Minimum total dry film thickness = 16 mils
 - .4 Coating shall not be “Bituminous” or contain coal tar.

Part 3 Execution

3.1 CYLINDER MANUFACTURE

- .1 All fabricated components of the cylinders shall be manufactured in accordance with the approved shop drawings.
- .2 Cylinders shall be assembled utilizing the fabricated components and approved seals and wipers.

3.2 COATING INSTALLATION/APPLICATION

- .1 All exterior surfaces of cylinders not excluded in para 3.2.5 shall be coated with the cylinders fully assembled.
- .2 Where necessary remove all weld splatter, smooth weld seams and sharp edges. Fresh water wash to remove all dirt and contamination, as necessary. Degrease according to SSPC-SP1 solvent cleaning.
- .3 Abrasive blast all surfaces to be coated to SSPC SP10, near-white metal. Surface profile shall be >3 mils.
- .4 Coatings shall be applied and cured as per the manufacturer’s written instructions. Stripe coats should be applied to all welds, lap joints, plate edges, corners, sharp edges, and any other areas where spray application of the overall coating system may prove difficult resulting in low dry film thickness.
- .5 All sealing, bearing or faying surfaces shall be protected from coating.

END OF SECTION



Existing Penstock Gate hydraulic cylinder with fittings shown for reference only.