



**RETURN BIDS TO:**

**RETOURNER LES SOUMISSIONS À:**

**Bid Receiving Public Works and Government  
Services Canada/Réception des soumissions  
Travaux publics et Services gouvernementaux  
Canada**

See herein for bid submission  
instructions/  
Voir la présente pour les

instructions sur la présentation  
d'une soumission

NA  
Alberta

**REQUEST FOR PROPOSAL  
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

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

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

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

**Comments - Commentaires**

<b>Title - Sujet</b> Crane Inspections and Repairs	
<b>Solicitation No. - N° de l'invitation</b> ET858-210482/A	<b>Date</b> 2020-08-12
<b>Client Reference No. - N° de référence du client</b> PSPC-ET858-210482	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$CAL-142-7088	
<b>File No. - N° de dossier</b> CAL-0-43018 (142)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2020-09-22</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Mountain Daylight Saving Time MDT
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Blake, Luke J.	<b>Buyer Id - Id de l'acheteur</b> cal142
<b>Telephone No. - N° de téléphone</b> (403) 613-0725 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF PUBLIC WORKS AND GOVERNMENT SERVICES CANADA ST ANDREWS LOCK&DAM 625 RIVER RD LOCKPORT Manitoba R1A2R4 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Public Works and Government Services Canada/Travaux  
publics et Services gouvernementaux Canada  
Harry Hays Building (HHB)  
Room 759, 220-4th Avenue SE  
Calgary  
Alberta  
T2G 4X3

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

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## **PART 1 - GENERAL INFORMATION**

### **1.1 Introduction**

The bid solicitation is divided into six 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 Insurance Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment, the Electronic Payment Instruments, the Federal Contractors Program for Employment Equity - Certification, the Task Authorization Form 572 and any other annexes.

### **1.2 Summary**

Canada owns and operates the St. Andrew's Lock and Dam (SALD), a National Historic Site in Lockport, Manitoba. SALD was constructed between 1907 and 1910 and first operated in 1910. Including the approaches, the overall length of the SALD structure is 447 m. The facility consists of the following:

- two abutments and five piers forming six spans, each 119'-8" in clear width, to pass water;
- a weir (called the "fixed dam") between the piers;
- 89 frames which are swung down from their storage position to rest against blocks on the fixed dam;
  - The 89 frames consist of 47 double and 42 single frames.
  - Each span has 15 frames and curtains except for Span #6 which only has 14 due to the presence of a fish ladder.
  - 89 "Caméré curtains" composed of wood slats hinged together that can be unrolled onto the frames to block water flow.

The frames and curtains together are called the "moveable dam". The facility also contains a navigation lock and a fish ladder.

The Contractor will provide all labour, sub-contractors, supervision, tools, access equipment, materials, transportation, and incidentals required to inspect, maintain, and repair a variety of lifting equipment at St. Andrew's Lock and Dam (SALD).

The Contractor will certify annually that lifting equipment is safe to use for its intended purpose. Period of contract will be for three (3) years with three (3) additional one (1) year options periods.

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The Federal Contractors Program (FCP) for employment equity applies to this procurement; refer to Part 5 – Certifications and Additional Information, Part 7 - Resulting Contract Clauses and the annex titled Federal Contractors Program for Employment Equity - Certification.”

This bid solicitation allows bidders to use the epost Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.”

### **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.

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## **PART 2 - BIDDER INSTRUCTIONS**

### **2.1 Standard Instructions, Clauses and Conditions**

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) 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 (2020-05-28) 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: 120 days

### **2.2 Submission of Bids**

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

#### **PWGSC Western Region Bid Receiving Unit**

Only bids submitted using epost Connect service will be accepted. The Bidder must send an email requesting to open an epost Connect conversation to the following address:

[roreceptionSoumissions.wrbidreceiving@tpsgc-pwgsc.gc.ca](mailto:roreceptionSoumissions.wrbidreceiving@tpsgc-pwgsc.gc.ca)

**Note:** Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions 2003, or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

It is the Bidder's responsibility to ensure the request for opening an epost Connect conversation is sent to the email address above at least six days before the solicitation closing date.

Bids transmitted by facsimile or hardcopy to PWGSC will not be accepted.

### **2.3 Former Public Servant**

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2019-01 of the Treasury Board Secretariat of Canada.

## 2.4 Enquiries - Bid Solicitation

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

## 2.5 Applicable Laws

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

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

## 2.6 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
  - Office of the Procurement Ombudsman (OPO)
  - Canadian International Trade Tribunal (CITT)
- (c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

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

### **3.1 Bid Preparation Instructions**

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

The bid must be gathered per section and separated as follows:

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

Bids transmitted by facsimile or hardcopy will not be accepted.

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

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

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

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

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

**3.1.1** Bidders must submit their financial bid in accordance with the Basis of Payment in Annex "B".

#### **3.1.2 Electronic Payment of Invoices – Bid**

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex "F" Electronic Payment Instruments, to identify which ones are accepted.

If Annex "F" 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 will evaluate the bids.

#### **4.1.1 Technical Evaluation**

##### **4.1.1.1. Mandatory Technical Criteria**

- a) Ability to meet all mandatory technical criteria in Annex "C" Evaluation Criteria.

#### **4.1.2 Financial Evaluation**

Bidders must submit their financial bid in accordance with Annex B - Basis of Payment.

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

### **4.2 Basis of Selection**

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

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

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## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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

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

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

### 5.1 Certifications Required with the Bid

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

#### 5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, if **applicable**, the Integrity declaration form available on the Forms for the Integrity Regime website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

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

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

#### 5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of 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 (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

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.

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Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed annex titled Federal Contractors Program for Employment Equity - Certification, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

### **5.2.3 Additional Certifications Precedent to Contract Award**

#### **5.2.3.1 Education and Experience**

SACC *Manual* clause A3010T (2010-08-16) Education and Experience

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## **PART 6 – INSURANCE REQUIREMENTS**

### **6.1 Insurance Requirements**

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex “H” .

If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

## **PART 7 - RESULTING CONTRACT CLAUSES**

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

### **7.1 Statement of Work**

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A".

#### **7.1.1 Task Authorization**

The Work or a portion of the Work to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

##### **7.1.1.1 Task Authorization Process**

1. The Technical Authority will provide the Contractor with a description of the task using the "Task Authorization Form for non-DND clients" or "Task Authorization" form specified in Annex "D"
2. The Task Authorization (TA) will contain the details of the activities to be performed, a description of the deliverables, and a schedule indicating completion dates for the major activities or submission dates for the deliverables. The TA will also include the applicable basis(bases) and methods of payment as specified in the Contract.
3. The Contractor must provide the Technical Authority, within 5 calendar days of its receipt, the proposed total estimated cost for performing the task and a breakdown of that cost, established in accordance with the Basis of Payment specified in the Contract.
4. The Contractor must not commence work until a TA authorized by the technical authority has been received by the Contractor. The Contractor acknowledges that any work performed before a TA has been received will be done at the Contractor's own risk.

##### **7.1.1.2 Task Authorization Limit**

The Technical Authority may authorize individual task authorizations up to a limit of \$\_\_\_\_\_ (to be determined), Applicable Taxes included, inclusive of any revisions.

Any task authorization to be issued in excess of that limit must be authorized by the Project Authority and Contracting Authority before issuance.

##### **7.1.1.3 Canada's Obligation - Portion of the Work - Task Authorizations**

Canada's obligation with respect to the portion of the Work under the Contract that is performed through task authorizations is limited to the total amount of the actual tasks performed by the Contractor.

#### **7.1.1.4 Periodic Usage Reports - Contracts with Task Authorizations**

The Contractor must compile and maintain records on its provision of services to the federal government under authorized Task Authorizations issued under the Contract.

The Contractor must provide this data in accordance with the reporting requirements detailed below or in Annex E. If some data is not available, the reason must be indicated. If services are not provided during a given period, the Contractor must still provide a "nil" report.

The data must be submitted on a quarterly basis to the Contracting Authority.

The quarterly periods are defined as follows:

1st quarter: April 1 to June 30;

2nd quarter: July 1 to September 30;

3rd quarter: October 1 to December 31; and

4th quarter: January 1 to March 31.

The data must be submitted to the Contracting Authority no later than 15 calendar days after the end of the reporting period.

#### **Reporting Requirement- Details**

A detailed and current record of all authorized tasks must be kept for each contract with a task authorization process. This record must contain:

##### **For each authorized task:**

- i. the authorized task number or task revision number(s);
- ii. a title or a brief description of each authorized task;
- iii. the total estimated cost specified in the authorized Task Authorization (TA) of each task, exclusive of Applicable Taxes;
- iv. the total amount, exclusive of Applicable Taxes, expended to date against each authorized task;
- v. the start and completion date for each authorized task; and
- vi. the active status of each authorized task, as applicable.

##### **For all authorized tasks:**

- i. the amount (exclusive of Applicable Taxes) specified in the contract (as last amended, as applicable) as Canada's total liability to the contractor for all authorized TAs; and
- ii. the total amount, exclusive of Applicable Taxes, expended to date against all authorized TAs.

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## 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

2035 (2020-05-28), General Conditions - Higher Complexity - Services, apply to and form part of the Contract.

## 7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

## 7.4 Term of Contract

### 7.4.1 Period of the Contract

The period of the Contract is from date of Contract to \_\_\_(to be determined at contract award)\_\_\_ inclusive.

### 7.4.2 Option to Extend the Contract

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to three (3) additional one (1) year period(s) under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor at least 30 calendar days before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

## 7.5 Authorities

### 7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Luke Blake  
Title: Procurement Specialist  
Public Works and Government Services Canada  
Procurement Branch

Address: Harry Hays Building Room 759  
220 4th Ave SE  
Calgary AB T2G 4X3

Telephone: 403-613-0725  
Facsimile: 403-292-5786  
E-mail address: [luke.blake@tpsgc-pwgsc.gc.ca](mailto:luke.blake@tpsgc-pwgsc.gc.ca)

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

### **7.5.2 Project Authority**

The Project Authority for the Contract is:

*(To be named in the Contract.)*

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

### **7.5.3 Technical Authority**

The Technical Authority for the Contract is:

*(To be named in Contract.)*

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

### **7.5.4 Contractor's Representative**

*(to be completed by the bidder)*

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

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

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

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

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

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

## 7.6 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2019-01 of the Treasury Board Secretariat of Canada.

## 7.7 Payment

### 7.7.1 Basis of Payment – Firm Prices – Known Work

For the Known Work described in A.4 of the Statement of Work in Annex A :

In consideration of the Contractor satisfactorily completing its obligations under the Contract, the Contractor will be paid a firm price for a cost of \$\_\_\_\_\_ (to be determined). Customs duties are included and Applicable Taxes are extra.

For the firm price portion of the Work only, 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 Basis of Payment - Firm Unit Price - Task Authorizations (Unscheduled Work)

In consideration of the Contractor satisfactorily completing all of its obligations under the authorized Task Authorization (TA), the Contractor will be paid the firm unit price(s) in accordance with the basis of payment, in Annex 'B', as specified in the authorized TA. 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 authorized, in writing, by the Contracting Authority before their incorporation into the Work.

### 7.7.3 Limitation of Expenditure - Cumulative Total of all Task Authorizations

1. Canada's total liability to the Contractor under the Contract for all authorized Task Authorizations (TAs), inclusive of any revisions, must not exceed the sum of \$ \_\_\_\_ (to be determined) \_\_\_\_ . Customs duties are included and Applicable Taxes are extra.
2. No increase in the total liability of Canada will be authorized or paid to the Contractor unless an increase has been approved, in writing, by the Contracting Authority.
3. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
  - a. when it is 75 percent committed, or
  - b. four (4) months before the contract expiry date, or

- 
- c. as soon as the Contractor considers that the sum is inadequate for the completion of the Work required in all authorized TAs, inclusive of any revisions, whichever comes first.
  4. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority, a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

#### **7.7.4 Multiple Payments**

*SACC Manual* clause H1001C (2008-05-12) Multiple Payments

#### **7.7.5 SACC Manual Clauses**

A9117C (2007-11-30), T1204 - Direct Request by Customer Department  
C0710C (2007-11-30), Time and Contract Price Verification  
C0711C (2008-05-12), Time Verification

#### **7.7.6 Electronic Payment of Invoices – Contract**

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

*(to be determined)*

#### **7.8 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.

Each invoice must be supported by:

- a. a copy of time sheets to support the time claimed;
- b. a copy of the release document and any other documents as specified in the Contract;
- c. a copy of the invoices, receipts, vouchers for all direct expenses, and all travel and living expenses;

2. Invoices must be distributed as follows:

- a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
- b. One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

## 7.9 Certifications and Additional Information

### 8.9.1 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.

### 7.9.2 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "FCP Limited Eligibility to Bid" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms 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 Manitoba.

## 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 2035 (2020-05-28) General Conditions – Higher Complexity Services;
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;
- (e) the signed Task Authorizations (including all of its annexes, if any);
- (f) the Contractor's bid dated \_\_\_\_\_ (*insert date of bid*).

## 7.12 SACC Manual Clauses

A3015C (2014-06-26) Certifications – Contract

### **7.13 Insurance – Specific Requirements**

The Contractor must comply with the insurance requirements specified in Annex “H”. 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

### **7.14 Dispute Resolution**

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.
- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading “Dispute Resolution”.

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**ANNEX "A"**

**STATEMENT OF WORK**

*Please see attached "ANNEX A – STATEMENT OF WORK, In-Service Support for Lifting Equipment at SALD".*

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**ANNEX "B"**

**BASIS OF PAYMENT**

**B1 CONTRACT PERIOD**

**B1.1 Initial Period**

1) The initial period of the Contract is between the following dates, inclusive. *(Note the Contracting Authority will insert dates at the time of contract award.)*

- a) Year 1 – From date of contract to \_\_\_\_\_ inclusive.
- b) Year 2 – From \_\_\_\_\_ to \_\_\_\_\_ inclusive.
- c) Year 3 – From \_\_\_\_\_ to \_\_\_\_\_ inclusive

**B1.2 Extended Period**

1) The extended period of the Contract is between the following dates, inclusive.

- a) Optional Year 4 – From \_\_\_\_\_ to \_\_\_\_\_ inclusive
- b) Optional Year 5 – From \_\_\_\_\_ to \_\_\_\_\_ inclusive
- c) Optional Year 6 – From \_\_\_\_\_ to \_\_\_\_\_ inclusive

2) The Contracting Authority will inform contractor a minimum of 30 calendar days before the end of one Year if Canada will exercise the following option Year.

**B2 KNOWN WORK**

**B2.1 Travel and Living Expenses**

1) The Contractor will be reimbursed its authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for profit and/or administrative overhead, in accordance with the meal, and private vehicle allowances specified in Appendices B, C and D of the National Joint Council Travel Directive (<http://www.njc-cnm.gc.ca/directive/d10/en>), and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".

- 2) Canada will not pay the Contractor any incidental expense allowance for authorized travel.
- 3) All travel must have the prior authorization of the Technical Authority.
- 4) All payments are subject to government audit.

**B2.2 Firm Price Work**

1) For the work described in the SOW, sections as shown in the table below, the Contractor will be paid a firm price (excluding travel and living expenses) as follows:

Activity	Firm Prices (applicable taxes extra)					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
<b>A4.1 ACTIVITY 1 - Initial Submittals</b>	\$ _____	N/A	N/A	N/A	N/A	N/A
<b>A4.2 ACTIVITY 2 - Inspections, Maintenance, and Reports</b>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
<b>A4.3 ACTIVITY 3 - Certification</b>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
<b>A4.4 ACTIVITY 4 - Oil Sampling and Analysis</b>	\$ _____	N/A	N/A	N/A	N/A	N/A
<b>A4.5 ACTIVITY 5 - Options Analysis for Safety Improvements</b>	\$ _____	N/A	N/A	N/A	N/A	N/A
<b>A4.6 ACTIVITY 6 - Assistance with Damkeepers' Inspection &amp; Maintenance Program</b>	\$ _____	N/A	N/A	N/A	N/A	N/A

**B3 UNSCHEDULED WORK - TASK AUTHORIZATION**

**B3.1 General**

- 1) The exact scope and timing of work of described in the SOW at section A4.7 ACTIVITY 7 cannot be determined ahead of time.
- 2) The Contractor will provide services on an "as-and-when-required" basis and must obtain written authorization from the Technical Authority or their designate before starting any Unscheduled Work; this is done through the Task Authorization process.

**B3.2 Travel and Living Expenses**

- 1) The Contractor will be reimbursed its authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for profit and/or administrative overhead, in accordance with the meal, and private vehicle allowances specified in Appendices B, C and D of the National Joint Council Travel Directive (<http://www.njc-cnm.gc.ca/directive/d10/en>), and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".
- 2) Canada will not pay the Contractor any incidental expense allowance for authorized travel.
- 3) All travel must have the prior authorization of the Technical Authority.
- 4) All payments are subject to government audit.

**B3.3 Labour - Firm Hourly Rates**

- 1) Canada will pay the Contractor for the actual hours work performed by each labour category.
- 2) Notwithstanding any definitions or terms used elsewhere in this document or in the Contractor's Cost Management System, when negotiating hours of work for contingency work, PWGSC will only consider hours of work directly related to the relevant work.

3) The labour categories are defined as follows:

- a) "Professional Engineers" are engineers holding a license to perform Professional Engineering in Manitoba.
- b) "Trades" is employment requiring Certificate of Qualification acquired through an apprenticeship; examples include electricians and millwrights
- c) "Skilled Labour" is employment requiring experience and specialized training; examples include hoist inspectors, hoist technicians, welding inspectors, and non-destructive testers.
- d) "Common Labour" is employment that does not correspond to any of the above categories, and includes apprentices.

4) The hours are defined as follows:

- a) "Regular Hours" is Monday through Friday, 8:00 to 16:00
- b) Overtime
  - i. "Evenings and Saturdays" is work done Monday through Friday outside the hours defined as regular hours, and all work done on a Saturday
  - ii. "Sundays and Statutory Holidays" is work done on a Sunday or a day which is a Statutory Holiday in the province of Manitoba
  - iii. No overtime will be paid under this Contract unless authorized in writing in advance by the Contracting Authority. All claims for payment must be accompanied by a copy of the Technical

Authority's overtime authorization e-mail and a report containing such information as Canada may require with respect to the overtime work performed.

5) For the cost of labour within Unscheduled Work, the following firm hourly rates apply

a) **Regular Hours:**

Labour Category	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Professional Engineers	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Trades	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Skilled Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Common Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____

b) **Evenings and Saturdays:**

Labour Category	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Professional Engineers	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Trades	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Skilled Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Common Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____

c) **Sundays and Statutory Holidays:**

Labour Category	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Professional Engineers	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Trades	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Skilled Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____

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Common Labour	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
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**B3.4 Sub-contractors, Materials, and Rented Equipment**

- 1) Canada will reimburse the Contractor for the cost of sub-contractors, materials, and rented equipment.
- 2) Cost of materials and rental equipment is the cost incurred by Contractor to acquire a specific part, material, or rental of equipment needed for the work, and includes but is not necessarily limited to the supplier's invoice price (less trade discounts), plus applicable charges related to shipping, foreign exchange, customs duty, and brokerage.
- 3) Mark up includes all internal costs by the Contractor related to researching and sourcing, material handling, and general and administrative expenses plus profit.
- 4) The Contractor shall not be entitled to a separate allowance for the purchase and handling of materials or for the administration of the subcontract.
- 5) For the cost of sub-contractors, materials, and rented equipment within Unscheduled Work, the following mark-up percentage applies:

	All Years
Mark-up on sub-contractors, materials, and rented Equipment	_____ %

**ANNEX B1  
 FINANCIAL BID PRESENTATION SHEET**

**B4 GENERAL**

- 1) Bids will be evaluated on an aggregate price basis as follows:
  - a) For Known Work
    - i) The sum of the firm prices for Activities 1-6 inclusive of Table 1 will determine sub-total (A)
  - b) For Unscheduled Work
    - i. The estimated time for evaluation of Tables 2 through 13 inclusive for all categories of labour multiplied by the appropriate firm hourly rate will determine sub-total (B) of Table 14;
    - ii. The estimated cost of sub-contractors, materials, and rental equipment, multiplied by the mark-up of Table 15 will determine sub-total (C);
- 2) The sum of sub-totals (A) + (B) + (C) will determine the aggregate evaluation price of the Bid (Table 16).
- 3) Bidders must not include tax (GST, PST, HST) in their prices. In all cases, taxes do not form part of the evaluated price.
- 4) In all cases, travel and living expenses do not form part of the evaluation price.
- 5) In all cases, the estimated time and cost of material listed in the Tables are only an approximation of requirements, given in good faith for evaluation purposes only, and do not represent Canada's actual requirement.
- 6) In the case of Bidder's error in arithmetical calculations in completing the tables of this Annex, Canada will correct the arithmetic and the unit price will govern.

**B5 KNOWN WORK**

**Table 1: Known Work (Firm Price)**

Activity	FIRM PRICE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
A4.1 ACTIVITY 1 - Initial Submittals	\$ _____	N/A	N/A	N/A	N/A	N/A
A4.2 ACTIVITY 2 - Inspections, Maintenance, and Reports	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
A4.3 ACTIVITY 3 - Certification	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
A4.4 ACTIVITY 4 - Oil Sampling and Analysis	\$ _____	N/A	N/A	N/A	N/A	N/A
A4.5 ACTIVITY 5 - Options Analysis for Safety Improvements	\$ _____	N/A	N/A	N/A	N/A	N/A

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A4.6 ACTIVITY 6 - Assistance with Damkeepers' Inspection & Maintenance Program	\$ _____	N/A	N/A	N/A	N/A	N/A
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**SUB-TOTAL (A) = SUM OF ALL CELLS IN TABLE 1 = \$ \_\_\_\_\_**

**B6 UNSCHEDULED WORK**

**B6.1 Labour (Firm Hourly Rates)**

**Table 2: Professional Engineers (Regular Hours)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Estimated Hours for evaluation purposes only	80 hrs	80 hrs	80 hrs	80 hrs	80 hrs	80 hrs
Extended Price	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Subtotal Professional Engineers (Regular Hours)	\$ _____					

**Table 3: Professional Engineers (Evenings & Saturdays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Estimated Hours for evaluation purposes only	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs
Extended Price	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Subtotal Professional Engineers (Evenings and Saturdays)	\$ _____					

**Table 4: Professional Engineers (Sundays & Statutory Holidays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Estimated Hours for evaluation purposes only	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs
Extended Price	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Subtotal Professional Engineers (Sunday & Stat. Hols.)	\$ _____					

**Table 5: Trades (Regular Hours)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	200 hrs	200 hrs	200 hrs	200 hrs	200 hrs	200 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal Trades (Regular Hours)	\$ _____					

**Table 6: Trades (Evenings & Saturdays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal Trades (Evenings & Saturdays)	\$ _____					

**Table 7: Trades (Sundays & Statutory Holidays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal Trades (Sunday & Stat. Hols.)	\$ _____					

**Table 8: Skilled Labour (Regular Hours)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	100 hrs	100 hrs	100 hrs	100 hrs	100 hrs	100 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal Skilled Labour (Regular Hours)	\$ _____					

**Table 9: Skilled Labour (Evenings & Saturdays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal	Skilled Labour (Evenings & Saturdays) \$ _____					

**Table 10: Skilled Labour (Sundays & Statutory Holidays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal	Skilled Labour (Sunday & Stat. Hols.) \$ _____					

**Table 11: Common Labour (Regular Hours)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	100 hrs	100 hrs	100 hrs	100 hrs	100 hrs	100 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal	Common Labour (Regular Hours) \$ _____					

**Table 12: Common Labour (Evenings & Saturdays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs	20 hrs
Extended Price	\$	\$	\$	\$	\$	\$

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Subtotal	Common Labour (Evenings & Saturdays)	\$ _____
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**Table 13: Common Labour (Sundays & Statutory Holidays)**

	FIRM HOURLY RATE					
	Year 1	Year 2	Year 3	Option 1 Year 4	Option 2 Year 5	Option 3 Year 6
Firm hourly rate	\$	\$	\$	\$	\$	\$
Estimated Hours for evaluation purposes only	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs	10 hrs
Extended Price	\$	\$	\$	\$	\$	\$
Subtotal (Sunday & Stat. Hols.)	Common Labour					\$ _____

**Table 14: Calculation of Subtotal (B) for Labour within Unscheduled Work**

Professional Engineers - Regular Hours - From Table 2	\$
Professional Engineers - Evenings & Saturdays - From	\$
Professional Engineers - Sunday & Stat. Hols. - From Table	\$
Trades - Regular Hours - From Table 5	\$ _____
Trades - Evenings & Saturdays - From Table 6	\$
Trades - Sunday & Stat. Hols. - From Table 7	\$
Skilled Labour - Regular Hours - From Table 8	\$
Skilled Labour - Evenings & Saturdays - From Table 9	\$
Skilled Labour - Sunday & Stat. Hols. - From Table 10	\$ _____
Common Labour - Regular Hours - From Table 11	\$
Common Labour - Evenings & Saturdays - From Table 12	\$
Common Labour - Sunday & Stat. Hols. - From Table 13	\$ _____
SUB-TOTAL (B) = sum of above = _____	\$

**B6.2 Sub-contractors, Materials, and Rented Equipment**

**Table 15: Sub-total (C) for Sub-Contractors, Materials, and Rented Equipment within Unscheduled Work**

Estimated cost of sub-contractors, materials, and rental equipment (for evaluation purposes only)	\$100,000
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Mark-up on Sub-contractors, Materials, and Rented Equipment	_____ %
SUB-TOTAL (C) = product of above =	\$ _____

### **B6.3 Travel and Living Expenses**

Travel and living expenses do not form part of evaluation price.

### **B7 EVALUATION PRICE**

**Table 16: Bid evaluation price**

Sub-Total (A) from Table 1 =	\$
Sub-Total (B) from Table 14 =	\$
Sub-Total (C) from Table 15 =	\$
Evaluation Price = sum of above = _____	\$

**ANNEX "C"**

**EVALUATION CRITERIA**

**1. MANDATORY EVALUATION CRITERIA**

The Bidder must demonstrate they meet the following mandatory technical criteria. Failure to meet any of the following mandatory technical criteria will render the bid non-responsive and it will be given no further consideration.

Supporting documentation must be included to demonstrate compliance to the mandatory technical criteria.

If the supporting documentation is not 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.

CRITERIA	MET	NOT MET	PAGE REFERENCE
<p><b>M1 Corporate Experience.</b>—Bidder must provide details of three (3) cranes inspected and certified within the last five (5) years. Each reference project must include:</p> <ul style="list-style-type: none"> <li>• description of crane;</li> <li>• crane's hoisting capacity (minimum 5 short tons);</li> <li>• date inspection performed;</li> <li>• client name, address, and contact information; photographs of crane.</li> </ul>			
<p><b>M2 Technical Qualifications - Engineer.</b>—Firm must employ, or have under subcontract, a Professional Engineer who is licensed to practice in Manitoba and who has a minimum of five (5) years' experience inspecting and certifying lifting apparatus to Manitoba requirements.</p> <p>Bidders must provide the proposed engineer's résumé proving compliance with this requirement.</p> <p>In the case the Bidder will be subcontracting for this service, the Bidder must also provide a letter from the intended subcontractor indicating that if the Bidder is awarded the contract, that the</p>			

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proposed subcontract firm will enter a contract with the Bidder to provide the services indicated.			
<p><b>M3 Technical Qualifications - Overhead Crane Inspector.</b>—Firm must employ, or have under subcontract, overhead crane inspectors who meet the qualifications for “inspectors for periodic inspections” in CSA B167.</p> <p>Bidders must submit résumés proposed overhead crane inspectors proving compliance with this requirement.</p> <p>In the case the Bidder will be subcontracting for this service, the Bidder must also provide a letter from the intended subcontractor indicating that if the Bidder is awarded the contract, that the proposed subcontract firm will enter a contract with the Bidder to provide the services indicated.</p>			

ANNEX "D"

TASK AUTHORIZATION FORM

Task Authorization  
Autorisation de tâche

<b>Instruction for completing the form PWGSC - TPSGC 572 - Task Authorization (Use form DND 626 for contracts for the Department of National Defence)</b>	<b>Instruction pour compléter le formulaire PWGSC - TPSGC 572 - Autorisation de tâche (Utiliser le formulaire DND 626 pour les contrats pour le ministère de la Défense)</b>
---	--

**Contract Number**  
Enter the PWGSC contract number.

**Numéro du contrat**  
Inscrire le numéro du contrat de TPSGC.

**Contractor's Name and Address**  
Enter the applicable information

**Nom et adresse de l'entrepreneur**  
Inscrire les informations pertinentes

**Security Requirements**  
Enter the applicable requirements

**Exigences relatives à la sécurité**  
Inscrire les exigences pertinentes

**Total estimated cost of Task (Applicable taxes extra)**  
Enter the amount

**Coût total estimatif de la tâche (Taxes applicables en sus)**  
Inscrire le montant

**For revision only**

**Aux fins de révision seulement**

**TA Revision Number**  
Enter the revision number to the task, if applicable.

**Numéro de la révision de l'AT**  
Inscrire le numéro de révision de la tâche, s'il y a lieu.

**Total Estimated Cost of Task (Applicable taxes extra) before the revision**  
Enter the amount of the task indicated in the authorized TA or, if the task was previously revised, in the last TA revision.

**Coût total estimatif de la tâche (Taxes applicables en sus) avant la révision**  
Inscrire le montant de la tâche indiquée dans l'AT autorisée ou, si la tâche a été révisée précédemment, dans la dernière révision de l'AT.

**Increase or Decrease (Applicable taxes extra), as applicable**  
As applicable, enter the amount of the increase or decrease to the Total Estimated Cost of Task (Applicable taxes extra) before the revision.

**Augmentation ou réduction (Taxes applicables en sus), s'il y a lieu**  
S'il y a lieu, inscrire le montant de l'augmentation ou de la réduction du Coût total estimatif de la tâche (Taxes applicables en sus) avant la révision.

**1. Required Work: Complete sections A, B, C, and D, as required.**

**1. Travaux requis : Remplir les sections A, B, C et D, au besoin.**

**A. Task Description of the Work required:**

**A. Description de tâche des travaux requis :**

Complete the following paragraphs, if applicable. Paragraph (a) applies only if there is a revision to an authorized task.

Remplir les alinéas suivants, s'il y a lieu : L'alinéa (a) s'applique seulement s'il y a révision à une tâche autorisée.

(a) Reason for revision of TA, if applicable: Include the reason for the revision; i.e. revised activities; delivery/completion dates; revised costs. Revisions to TAs must be in accordance with the conditions of the contract. See Supply Manual 3.35.1.50 or paragraph 6 of the Guide to Preparing and Administering Task Authorizations.

(a) Motif de la révision de l'AT, s'il y a lieu : Inclure le motif de la révision c.-à.-d., les activités révisées, les dates de livraison ou d'achèvement, les coûts révisés. Les révisions apportées aux AT doivent respecter les conditions du contrat. Voir l'article 3.35.1.50 du Guide des approvisionnements ou l'alinéa 6 du Guide sur la préparation et l'administration des autorisations de tâches.

(b) Details of the activities to be performed (include as an attachment, if applicable)

(b) Détails des activités à exécuter (joindre comme annexe, s'il y a lieu).

(c) Description of the deliverables to be submitted (include as an attachment, if applicable).

(c) Description des produits à livrer (joindre comme annexe, s'il y a lieu).

(d) Completion dates for the major activities and/or submission dates for the deliverables (include as an attachment, if applicable).

(d) Les dates d'achèvement des activités principales et (ou) les dates de livraison des produits (joindre comme annexe, s'il y a lieu).

---

**B. Basis of Payment:**

Insert the basis of payment or bases of payment that form part of the contract that are applicable to the task description of the work; e.g. firm lot price, limitation of expenditure, firm unit price

**C. Cost of Task:****Insert Option 1 or 2:****Option 1:**

Total estimated cost of Task (Applicable taxes extra): Insert the applicable cost elements for the task determined in accordance with the contract basis of payment; e.g. Labour categories and rates, level of effort, Travel and living expenses, and other direct costs.

**Option 2:**

Total cost of Task (Applicable taxes extra): Insert the firm unit price in accordance with the contract basis of payment and the total estimated cost of the task.

**D. Method of Payment**

Insert the method(s) of payment determined in accordance with the contract that are applicable to the task; i.e. single payment, multiple payments, progress payments or milestone payments. For milestone payments, include a schedule of milestones.

**B. Base de paiement :**

Insérer la base ou les bases de paiement qui font partie du contrat qui sont applicables à la description du travail à exécuter : p. ex., prix de lot ferme, limitation des dépenses et prix unitaire ferme.

**C. Coût de la tâche :****Insérer l'option 1 ou 2****Option 1 :**

Coût total estimatif de la tâche (Taxes applicables en sus) Insérer les éléments applicables du coût de la tâche établies conformément à la base de paiement du contrat. p. ex., les catégories de main d'œuvre, le niveau d'effort, les frais de déplacement et de séjour et autres coûts directs.

**Option 2 :**

Coût total de la tâche (Taxes applicables en sus) : Insérer le prix unitaire ferme conformément à la base de paiement du contrat et le coût estimatif de la tâche.

**D. Méthode de paiement**

Insérer la ou les méthode(s) de paiement établit conformément au contrat et qui sont applicable(s) à la tâche; c.-à.-d., paiement unique, paiements multiples, paiements progressifs ou paiements d'étape. Pour ces derniers, joindre un calendrier des étapes.

---

**2. Authorization(s):**

The client and/or PWGSC must authorize the task by signing the Task Authorization in accordance with the conditions of the contract. The applicable signatures and the date of the signatures is subject to the TA limits set in the contract. When the estimate of cost exceeds the client Task Authorization's limits, the task must be referred to PWGSC.

**3. Contractor's Signature**

The individual authorized to sign on behalf of the Contractor must sign and date the TA authorized by the client and/or PWGSC and provide the signed original and a copy as detailed in the contract.

**2. Autorisation(s) :**

Le client et (ou) TPSGC doivent autoriser la tâche en signant l'autorisation de tâche conformément aux conditions du contrat. Les signatures et la date des signatures appropriées sont assujetties aux limites d'autorisation de tâche établies dans le contrat. Lorsque l'estimation du coût dépasse les limites d'autorisation de tâches du client, la tâche doit être renvoyée à TPSGC.

**3. Signature de l'entrepreneur**

La personne autorisée à signer au nom de l'entrepreneur doit signer et dater l'AT, autorisée par le client et (ou) TPSGC et soumettre l'original signé de l'autorisation et une copie tel que décrit au contrat.

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

Annex  
 Annexe \_\_\_\_\_

**Task Authorization  
 Autorisation de tâche**

Contract Number - Numéro du contrat

Contractor's Name and Address - Nom et l'adresse de l'entrepreneur	Task Authorization (TA) No. - N° de l'autorisation de tâche (AT)
	Title of the task, if applicable - Titre de la tâche, s'il y a lieu
	Total Estimated Cost of Task (Applicable taxes extra) Coût total estimatif de la tâche (Taxes applicables en sus) \$

Security Requirements: This task includes security requirements  
 Exigences relatives à la sécurité : Cette tâche comprend des exigences relatives à la sécurité

No - Non  Yes - Oui If YES, refer to the Security Requirements Checklist (SRCL) included in the Contract  
 Si OUI, voir la Liste de vérification des exigences relative à la sécurité (LVERS) dans le contrat

**For Revision only - Aux fins de révision seulement**

TA Revision Number, if applicable Numéro de révision de l'AT, s'il y a lieu	Total Estimated Cost of Task (Applicable taxes extra) before the revision Coût total estimatif de la tâche (Taxes applicables en sus) avant la révision \$	Increase or Decrease (Applicable taxes extra), as applicable Augmentation ou réduction (Taxes applicables en sus), s'il y a lieu \$
--	--	---

**Start of the Work for a TA : Work cannot commence until a TA has been authorized in accordance with the conditions of the contract.**  
**Début des travaux pour l'AT : Les travaux ne peuvent pas commencer avant que l'AT soit autorisée conformément au contrat.**

**1. Required Work: - Travaux requis :**

A. Task Description of the Work required - Description de tâche des travaux requis	See Attached - Ci-joint <input type="checkbox"/>
B. Basis of Payment - Base de paiement	See Attached - Ci-joint <input type="checkbox"/>
C. Cost of Task - Coût de la tâche	See Attached - Ci-joint <input type="checkbox"/>
D. Method of Payment - Méthode de paiement	See Attached - Ci-joint <input type="checkbox"/>

Annex  
Annexe \_\_\_\_\_

Contract Number - Numéro du contrat

## 2. Authorization(s) - Autorisation(s)

By signing this TA, the authorized client and (or) the PWGSC Contracting Authority certify(ies) that the content of this TA is in accordance with the conditions of the contract.

En apposant sa signature sur l'AT, le client autorisé et (ou) l'autorité contractante de TPSGC atteste(nt) que le contenu de cette AT respecte les conditions du contrat.

The client's authorization limit is identified in the contract. When the value of a TA and its revisions is in excess of this limit, the TA must be forwarded to the PWGSC Contracting Authority for authorization.

La limite d'autorisation du client est précisée dans le contrat. Lorsque la valeur de l'AT et ses révisions dépasse cette limite, l'AT doit être transmise à l'autorité contractante de TPSGC pour autorisation.

\_\_\_\_\_  
Name and title of authorized client - Nom et titre du client autorisé à signer

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
PWGSC Contracting Authority - Autorité contractante de TPSGC

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## 3. Contractor's Signature - Signature de l'entrepreneur

\_\_\_\_\_  
Name and title of individual authorized - to sign for the Contractor  
Nom et titre de la personne autorisée à signer au nom de l'entrepreneur

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



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**ANNEX "F"**

**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);

---

**ANNEX "G"**

**FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY – CERTIFICATION**

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit [Employment and Social Development Canada \(ESDC\) – Labour's website](#).

Date: \_\_\_\_\_ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- A1. The Bidder certifies having no work force in Canada.
- A2. The Bidder certifies being a public sector employer.
- A3. The Bidder certifies being a federally regulated employer being subject to the Employment Equity Act.
- A4. The Bidder certifies having a combined work force in Canada of less than 100 permanent full-time and/or permanent part-time employees.

A5. The Bidder has a combined workforce in Canada of 100 or more employees; and

- A5.1. The Bidder certifies already having a valid and current Agreement to Implement Employment Equity (AIEE) in place with ESDC-Labour.
- OR**
- A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

- B1. The Bidder is not a Joint Venture.

**OR**

- B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

---

## ANNEX "H"

### INSURANCE REQUIREMENTS

#### 1.0 Commercial General Liability Insurance

- (i) 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.
- (ii) 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 Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.

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- 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.

**ANNEX A - STATEMENT OF WORK**  
**In-Service Support for Lifting Equipment at SALD**

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## **A1. SCOPE SUMMARY**

The Contractor will provide all labour, sub-contractors, supervision, tools, access equipment, materials, transportation, and incidentals required to inspect, maintain, and repair a variety of lifting equipment at St. Andrew's Lock and Dam (SALD).

The Contractor will certify annually that lifting equipment is safe to use for its intended purpose.

## **A2. EXISTING DAM AND CRANES**

### **A2.1 Location and Description of St. Andrew's Lock and Dam**

Canada owns and operates the St. Andrew's Lock and Dam (SALD), a National Historic Site in Lockport, Manitoba. SALD was constructed between 1907 and 1910 and first operated in 1910. Including the approaches, the overall length of the SALD structure is 447 m. The facility consists of the following:

- two abutments and five piers forming six spans, each 119'-8" in clear width, to pass water;
- a weir (called the "fixed dam") between the piers;
- 89 frames which are swung down from their storage position to rest against blocks on the fixed dam;
  - The 89 frames consist of 47 double and 42 single frames.
  - Each span has 15 frames and curtains except for Span #6 which only has 14 due to the presence of a fish ladder.
- 89 "Caméré curtains" composed of wood slats hinged together that can be unrolled onto the frames to block water flow.

The frames and curtains together are called the "moveable dam".

The facility also contains a navigation lock and a fish ladder.

### **A2.2 Objective**

Canada wants the lifting equipment at SALD to be inspected and maintained such that it is safely and reliably available for use when needed, certified regularly, and repaired by qualified tradesmen as required.

Canada requires some professional advice and assistance about certain safety aspects of certain cranes.

### **A2.3 Project Constraints**

**Weather.**—Weather is unpredictable and water control requirements may impinge on planned work. Confirm 5 days ahead of planned visits to ensure that there are minimal foreseen water control problems; in case there are, be prepared to reschedule to suit water control operations.

**Road Restrictions.**—Road restrictions may interfere with Contractor's use of trucks and mobile cranes. Road restrictions are generally on from the first week of March through to the end of May, but this varies with the weather. Authorization from Manitoba Highways may be possible if work is required before road restriction ends, but that would be up to the Contractor to coordinate with Manitoba Highways who may or may not grant permission; PWGSC has no control over this.

**Proactive Inspections and Maintenance.**—Use proactive maintenance strategies and identify areas for attention in order to anticipate and avoid future breakdowns and need for repair at awkward and inconvenient times (i.e. be aware of underlying equipment condition, anticipate potential failures, and identify root causes of problems before they develop).

## **A2.4 Lifting Equipment**

### **A2.4.1 Summary**

The site contains a total of 11 pieces of both custom and off-the-shelf lifting equipment used both for the purposes of effecting control of water flow and also for auxiliary purposes. In all cases, the normal operators of the lifting equipment are Crown employees. The equipment is described in detail in Section A3.4.

#### **1) Flow Control Equipment**

- a) **Frame cranes**, 2 of, dating to mid-1980s
  - i) one main frame crane (capable of handling a single and double frame together)
  - ii) one auxiliary frame crane (capable of handling either a single or a double frame, but not both simultaneously)
- b) **Curtain cranes**, 2 of (identical), drawings show date of 1986

#### **2) Auxiliary Equipment**

- a) **Overhead Cranes**
  - i) **Double-Girder Overhead Crane**, located on dam's operational deck, fitted with two hoists, date unknown, but bridge is riveted so definitely old.
  - ii) **Single-Girder Overhead Crane**, located on dam's operational deck, date unknown, but seems more recent than double-girder crane. It is fitted with one hoist.
  - iii) **Double-Girder Overhead Crane**, located in carpentry shop (used to handle rolled-up caméré curtains and other items within that shop), over 100 years old (dates to original construction). It is fitted with one hoist.
- b) **HIAB Cranes**
  - i) **Barge-Mounted HIAB 288 Articulating Crane**, installed in 2010 on SPOONBILL'S pontoon barge and bolted to the deck plates, fitted with grapple, and used for debris removal.
  - ii) **Barge-Mounted HIAB 144 Articulating Crane**, installed in 2001 on EMBARRAS's pontoon barge and bolted to the deck plates, fitted with grapple, and used for debris removal.
- c) **Deck-Mounted Winch**, hydraulic powered, 1 of, fitted on tug EMBARRAS, make, model, and age all unknown

Details are as follows:

### **A2.4.2 Frame Cranes (Main and Auxiliary)**

#### **A2.4.2.1 Description**

The steel frames of the moveable dam come in groups of three: a pair of frames that move together and an adjoining single frame. The frame cranes are custom-designed for this configuration.

The frame cranes date to the early 1970s. They are rail-mounted hydraulic cranes, custom designed for lifting the frames.

**The main frame crane** has two hoists; one hoist handles the single frame and another hoist handles the double frames. The two hoists are mounted together on a single carriage that travels along crane rails running the length of the dam's working deck. This provides lifting locations consistent with the curtain frame arrangements of one double curtain frame, followed by a single curtain frame, repeating through the span.

The **auxiliary frame crane** has only one hoist and can handle either a single frame or a double frame, but not both at the same time. It travels on the same crane rails on the dam's working deck.

Both cranes lift their load with chains that fit into pocket wheels on the hoisting shafts. Pillow block bearings support the shafts. Hydraulic motors drive the gearboxes which in turn drive the shafts. Each hoisting shaft has its own reduction gearbox consisting of a worm gear and mating gears all contained within a single housing. The nameplates for the gearboxes indicate these are by Renold Ltd., Holroyd Gear Products, of Milnrow England. <http://www.renold.com> The hydraulic motors are fed with oil from electrically-driven hydraulic pumps.

In both cases, the 30 HP 600V electric motors were replaced in 2006. A power cable, plugged into various outlets along the working deck, provides electric power.

#### **A2.4.2.2**    **Operation**

The crane operator moves the frame crane to the location of selected dam frames, and feeds three lifting chains (or two if using the auxiliary frame crane) through designated holes and over guide sheaves in the operating deck. Each lifting access hole is equipped with a galvanized guide sheave (wheel) for the chain.

Riggers, working from a platform under the deck, attach the lifting chains to the chain slings fixed to each frame.

The crane operator starts the crane and lifts the frames on the chains. When the frames are in place under the operating deck, the yoke chains are anchored with a pivoting hook on the floor, and the crane is disconnected from the frame.

#### **A2.4.2.3**    **Known Problems**

In 2018, the gearboxes of the main frame crane were drained and brought to a shop for disassembly and overhaul. The bearings were replaced. The hydraulic system was flushed and the fluid replaced with new. A similar project for the auxiliary frame crane is being planned at the time of writing this SOW.

Recent inspections have found the following defects:

1. Machine guarding may not be up to modern requirements (see ACTIVITY 5)
2. A few minor oil leaks or seepage from gearboxes was noted in previous inspections. The leakage was being mitigated with absorbent pads. Investigate and repair leaks.
3. The 2018 General Inspection found most chain guide sheaves at the operating deck level were seized and chain simply rubbing over them. This sliding action was seen to be wearing off the galvanizing. The 2018 inspectors hypothesized that grit and sand, falling from the traffic deck above the operating deck, may be clogging the axles of the guide sheaves (see Figure 17). Clean and lubricate all sheaves to restore free movement.
4. Each pocket wheel on the crane has a contact wheel and a limit switch device behind it, on the chain storage box side (see Figure 16). The purpose of this limit switch was not clear to the inspectors during the 2018 General Inspection, as the contact wheel and the limit switch lever are rather far apart. Damkeepers believe that, if tripped, the crane loses the up/down control pressure and will not operate, but can be overridden. Discuss the issue further with Damkeepers, and attempt to locate original drawings to confirm the intended use of the switch. Test the switch in operation, but when the crane is not actively used for load handling, and try to figure it out. Ensure that it is actually doing what it is supposed to do, or adjust it to make it fulfil its function.
5. Examine in detail the lifting chains (the chains permanently attached to the crane and used with every operation). In 2018, inspectors reviewed a sample of some of the hoisting chains'

links, which showed surface rusting and some pitting, but did not appear to indicate significant wear. As noted in the 2018 General Inspection report, the frame cranes do not typically lift a load over any personnel, so this application does not seem to present the same dangers as an "ordinary" crane; hence, alloy lifting chain does not seem to be required. But this should be confirmed by an engineer more expert in lifting devices.

6. As the main frame crane travels along the rails, certain wheels seem to lose contact with the crane rail. Run the main frame crane along the full length of the crane rail, observing wheels to identify these locations and measure the gap. Check this condition with the auxiliary frame crane as well. Then, shim track to suit.

### ***A2.4.3 Curtain Cranes (East and West)***

#### **A2.4.3.1 Description**

**General.**—The two curtain cranes are custom-designed special-purpose lifting devices used exclusively to roll-up the caméré curtains. The two machines are identical, and are stored at opposite ends of the dam.

The power supply to the curtain cranes is 600 V, taken through a power cord from receptacles located at each pier. The hoisting system of each crane consists of a 3 HP squirrel-cage induction motor, an enclosed gearbox for speed reduction, several stages of open gearing for additional speed reduction, and chain sprockets (one driving, several idlers).

The cranes are not mechanized for travel down the crane rails and must be pushed by hand.

**Caméré Curtains.**—The caméré curtains which the cranes are designed to lift are made of 50 wooden laths each 3-1/16" tall but varying in thickness from 1-5/16" at the top to 3-5/32" at the bottom. Each curtain is 7'-7<sup>3</sup>/<sub>4</sub>" in length. At the bottom of the curtain is a heavy cast iron shoe that seals against the top of the fixed dam.

Each curtain is suspended in front of its frame by two chains at the hinge points 11<sup>1</sup>/<sub>2</sub>" from each end. The curtains are raised and lowered by a chain looped around the curtain at its centre line. Because the chain must pass under the bottom edge of the curtain, which, in its lowest position is nearly 14' below the normal upstream water level, the chain must remain in position at all times. It is one endless chain secured by dogs above the curtain on both sides of the loop. The chains are 62' 6" x <sup>5</sup>/<sub>8</sub>", but the curtain crane only lifts a loop of this chain at any one time, pulling it with the pocket wheel. This curtain configuration has remained consistent since the dam was built.

**Working Load and Load Chains.**— In 1967, a report by consultants T. Lamb, McManus, and Associates indicated the chain tension while lifting the curtains is only 1800 pounds due to the weight of the curtains alone, but that this could be considerably increased by ice and debris. Therefore, <sup>5</sup>/<sub>8</sub>" chain with a safe working load of approximately 6000 pounds was used at that period. The previous curtain crane (the one that had been observed by T. Lamb, McManus, and Associates in 1967) was capable of exerting a pull of approximately 3300 lbs on that chain.

The shop drawing for the 1986 "new" crane (which is the one on site now) shows the cranes are rated pulling capacity is 4125 lbs. These present cranes were designed by A. J. P. Engineering Services of Winnipeg.

#### **A2.4.3.2 Operation**

A team of Damkeepers is involved in curtain operations, though the crane itself is operated by one individual at a time. Voice commands are used between the crane operator and the other Damkeepers.

**Pocket Wheels.**—To lift, the curtain chain is threaded into the pocket wheel system, and removed afterwards. A large pocket wheel along with other pocket wheels and idler wheels on overhung shafts work with a loop of curtain chain, and this is the heart of the hoisting operation. The larger

pocket wheel engages with that portion of the chain that passes over the upstream face of the curtain, and the rotation of the pocket wheel raises or lowers the curtain. The loop of chain passes back down below the deck afterwards, and is not stored within the crane.

**Variation in Chain Speed.**—The smaller pocket wheel engages the portion of the chain on the downstream face of the curtain which is the chain anchor. The hinges joining the curtain laths are on the upstream face of the curtain, i.e. on the inside of the roll. As the curtain rolls up and its diameter increases, the amount of chain being hauled in by one pocket wheel versus the amount being played out by the other pocket wheel become different. The ratio between the chain paid out on the smaller pocket wheel and that being reeled-in on the larger pocket wheel increases as the curtain is raised. The amount of adjustment varies with the position of the roll, and this variation was provided in the previous version of the curtain crane by the operator's manual control of a cone clutch, according to the very detailed 1967 report from T. Lamb, McManus, and Associates. In the present version of the curtain crane, it is not known how this speed variation is provided.

#### A2.4.3.3 **Known Problems**

Recent inspections have found the following defects:

1. Problems with crane rail noted due to mis-alignment in frames; being addressed through frame alignment work at present.
2. Some of the rail clips are missing or loose. These rail clips should be reinstalled and tightened.
3. Machine guarding and safeguarding provided on the curtain cranes is not up to modern requirements (see ACTIVITY 5)
4. Some of the sheaves that act as chain guides (located on the frames) are seized and the chain is simply rubbing over them. This situation increases the wear on the pulley and chains and increases the required effort to lift the curtains. To determine the cause, remove some of the pulleys and inspect the bearing closely. The 2015 Dam Safety Review made several hypotheses on why this could be occurring, noting that it has been happening since the dam was metallized some years ago:
  - Perhaps the metalizing process some years ago reduced clearances, causing binding.
  - Perhaps the metalizing may have changed the friction forces between the sides of the pulleys and the stationary components.
  - Perhaps the metalizing process has contaminated or damaged the bearings.

Investigate the root cause of the issue by removing several sheaves that exhibit this problem and examine their bearings, side clearances, and side roughness. Recommend actions for correcting the problem.

5. Pocket wheels on the crane seem worn. These sprockets had had to be changed in the past due to chains "jumping" out of the sprockets. It may be time to do this again.
6. Electrical control panels mounted on the tops of the cranes were badly corroded and were said to need replacement.
7. Oil leaks and grease drippings had been noted around the machines.
8. An overload reset button on West Crane was found to be broken and said to need replacement.

#### ***A2.4.4 Double-Girder Overhead Crane on Operations Deck***

##### **A2.4.4.1 Description**

This top-running, double-girder, crane has an electric bridge drive (formerly manual) and is fitted with two hoists:

- underhung 1-ton electric chain hoist mounted on a manual trolley
- top-running 5-ton hydraulic hoist by Demag that can be attached to a medium-sized grapple and lowered to water level for debris manipulation

Both hoists are part of the equipment of this contract.

The crane was last inspected by an overhead crane inspector in April of 2019 (report will be made available to Contractor) and a quick visual inspection was performed by Professional Engineers (civil engineers, not crane specialists) as part of the 2018 General Inspection of the Dam as a whole.

##### **A2.4.4.2 Operation**

Normal operation of an overhead crane for both hoists. The reeled hydraulic hose is mounted so that it can be attached to a medium sized grapple and lowered to water level for debris manipulation; when this is done, tag lines are attached to the grapple for control by staff.

##### **A2.4.4.3 Known Problems**

Recent inspections have found the following defects:

1. Crane rail is generally in fair condition with light corrosion on the majority of the steel surface, but several rail clips needs replacement.
2. From the deck level, there appeared to be a gap between the connector angle and the vertical face of the girder. This could be an optical illusion, but should be confirmed as it could be indicative of loose rivets or other connection issue. Replace all missing rivets with bolts.
3. Investigate and repair possible oil leakage in top hoist.

#### ***A2.4.5 Single-Girder Overhead Crane on Operations Deck***

##### **A2.4.5.1 Description**

Single girder top-running crane with electric bridge drive fitted with underhung electric 3.5-ton wire rope hoist by Demag with electric trolley drive.

##### **A2.4.5.2 Operation**

Normal operation for an overhead crane. This crane is used mostly to bring supplies (curtains, castings, and slats) up and down through the opening in the operational deck near the frame cranes' storage shed.

##### **A2.4.5.3 Known Problems**

There are no known problems with this crane.

#### ***A2.4.6 Double-Girder Overhead Crane in Carpentry Shop***

##### **A2.4.6.1 Description**

This crane is a top-running, double-girder, crane of riveted construction. The runway beams and columns, also of riveted construction, are within the carpentry shop. The crane drive is manually operated with chains through open spur gearing. The hoist is top-mounted and is electric.

This crane is historic artefact dating to the original construction of SALD and is still being used for its original purpose. It sees relatively light and infrequent service, it is indoors and protected, and we foresee no reason why it cannot be maintained and conserved in its current condition for decades to come using a sensitive, minimum-intervention, conservation approach suitable for such an historic artefact.

**A2.4.6.2 Operation**

Normal operation for an overhead crane.

**A2.4.6.3 Known Problems**

There are no known problems with this crane.

Note that any repairs that would be required to this crane would have to be done in conformance with the Parks Canada document *Standards and Guidelines for the Conservation of Historic Places in Canada*; in addition, the Technical Authority will provide guidance in this regard at the time, if it should arise.

**A2.4.7 *Barge-Mounted HIAB Articulating Cranes (288 and 144)***

**A2.4.7.1 Description**

These two HIAB articulating cranes are fitted to the decks of the two pontoon barges. Each crane is fitted with a grapple on the boom for retrieving debris which accumulates against the caméré curtains.

The HIAB cranes are vehicle-style cranes, not marine cranes. They have been bolted onto the square tubes that form the frame around the pontoons. There is also a square tube installed on each crane to act as an outrigger for better stability and less chance of twisting.

The cranes' hydraulic power units are located on their respective tugs, and hoses connect between tug and barge (with the boat's diesel engine as prime mover). The power unit is located in the engine room and attached to the main engine. The oil tanks are also located in the engine room compartment. The hydraulic oil is environmentally-friendly Greenplus Hydraulic fluid ES.

**A2.4.7.2 Operation**

The HIABs are operated from their respective operator's stations adjacent to the booms. SPOONBILL's crane also has a wireless remote controller and EMBARRAS's crane has a wired remote.

**A2.4.7.3 Known Problems**

Recent inspections have found leaks in main cylinder on the HIAB 288. A rebuild kit has been purchased and is on hand.

**A2.4.8 *Deck-Mounted Winch on Tug EMBARRAS***

**A2.4.8.1 Description**

The single-drum, base-mounted, winch, which is of an unknown date but is quite old, is fitted to the deck of the tug EMBARRAS. It is a hydraulic winch, driven from the same hydraulic power unit on the tug used to power the barge's HIAB crane and with which it shares the same oil reservoir. There is no existing documentation on the winch and there is no nameplate fitted to the frame.

**A2.4.8.2 Operation**

The winch is used mostly to snug-up the tug and barge, but also for winching objects up onto the island on occasion.

**A2.4.8.3 Known Problems**

Recent inspections have found some defects, the repair of which is being arranged at the time of writing this SOW.

**A3. GOVERNING DOCUMENTS**

In performing the work of the contract, the Contractor must comply with the following:

**A3.1 Legal and Regulatory**

1. Workplace Hazardous Materials Information System (WHMIS 2015)
2. The Environment Act S.M. 1987-88, c. 26
  1. Notice and Reporting Regulation 126/2010
3. The Manitoba Hydro Act, RSM 1987, c. H190
  1. Manitoba Electrical Code 76/2018
4. The Waste Reduction and Prevention Act, SM 1989-90, c. 60
  1. Used Oil, Oil Filters and Containers Stewardship Regulation 86/97
5. The Workplace Safety and Health Act RSM 1987, c. W210
  1. Workplace Safety and Health Regulation 217/2006
6. The Dangerous Goods Handling and Transportation Act, CCSM, c. D12
  1. Storage and Handling of Petroleum Products and Allied Products Regulation, 188/2001

**A3.2 Codes, Standards, and Best Practice Documents**

1. Use the latest version of all standards.
2. In the event of a conflict between the contents of this document and the applicable portions of the referenced documents, inform the Technical Authority of the differences and request a resolution.
  1. ASME B30.2 Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)
  2. ASME B30.17 Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)
  3. ASME B30.7 Winches
  4. ASME B30.10 Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings
  5. ASME B30.22-2016 Articulating Boom Cranes
  6. CAN/CSA B167 Overhead cranes, gantry cranes, monorails, hoists, and jib cranes
  7. CAN/CSA C22.1 Canadian Electrical Code, Part 1 (as modified by Manitoba Regulation 76/2018 to become the Manitoba Electrical Code)
  8. CSA C22.2 No. 33 Construction and Test of Electric Cranes and Hoists
  9. CAN/CGSB-48.9712-2014 Non-destructive testing - Qualification and certification of NDT personnel
  10. CSA W59 Welded steel construction (metal arc welding)

11. CSA W178.1 Certification of Welding Inspection Organizations
12. CSA W178.2 Certification of Welding Inspectors
13. CSA Z150.3 Safety code on articulating boom cranes
14. CAN/CSA Z460 Control of hazardous energy - Lockout and other methods
15. CAN/CSA Z462 Workplace electrical safety
16. OSHA 1910.179 Overhead and gantry cranes
17. OSHA 1926.1413 Wire rope--inspection
18. Parks Canada's Standards and Guidelines for the Conservation of Historic Places in Canada  
<https://www.pc.gc.ca/en/agence-agency/bib-lib/~media/7BB32C7184D74AAE8C8569899279B8DF.ashx>

### **A3.3 Internal Documents**

1. The following documents are available only in the languages indicated:
  1. Generic manuals from the manufacturer for the HIAB cranes. Need to quote serial number when requesting parts.
  2. 1986 shop drawing for Curtain Cranes
  3. Some previous inspection reports for overhead cranes

## **A4. TECHNICAL REQUIREMENTS**

### **A4.1 ACTIVITY 1 - Initial Submittals**

#### ***A4.1.1 General***

1. This Activity is required only in the first year of the Contract, but additional paperwork must be submitted in subsequent years if there are any changes which merit it.
2. Submit the following preliminary documentation no later than 15 calendar days after Award:
  1. **Project Manager's** name and contact information (ref. Section A6.1.1)
  2. Contact information for **24/7 Answering Service** (ref. Section A6.1.2)
  3. **Schedule** (ref. Section A6.2)
  4. **Qualifications** of technical personnel and names of subcontractor firms (ref. Section A6.1.3)
  5. **Health and Safety Submittals** (ref. Section A6.5.3)
  6. **Environmental Protection Plan** (ref. Section A6.6.2)
  7. **Inspection Checklists** to be used during the contract (ref. Section A5.1.2)
3. Technical Authority will review and comment on submittals. Contractor must revise and resubmit as needed. This process will continue until acceptable submittals have been made.
4. Contractor may not go on site until acceptable submittals have been received.

#### ***A4.1.2 Contractor's Inspection Checklists***

1. For each lifting device, develop and submit a proposed checklist for the Contractor to use during the inspections. Submit these checklists as part of the initial paperwork of Activity 1.
2. Scope of inspections must be in sufficient detail for a professional engineer to assess the capability of the lifting equipment for certification to Manitoba Regulation 217, Part 23.

3. Components to be inspected and maintained are as follows for each crane:
4. **Frame Cranes**
  1. Crane proper: for all components of crane itself, electrical, mechanical, hydraulic, and structural; and for the load-carrying chains permanently on machines, Professional Engineer must make a list of critical component and provide pass/fail inspection criteria and procedures for each of these critical components, and Contractor must follow this for the duration of the contract.
  2. Runway: crane rails, rail clips and fasteners; fish plates (also known as joint bars), and end stops
  3. Associated structures: chain holes on deck, including their sheaves and anchor mechanism
  4. Electrical: power system from receptacles back to distribution panels
5. **Curtain Cranes**
  1. Crane proper: for all components of crane itself, electrical, mechanical and structural; and load-carrying chains permanently on machines, Professional Engineer must make a list of critical component and provide pass/fail inspection criteria and procedures for each of these critical components, and Contractor must follow this for the duration of the contract.
  2. Runway: crane rails, rail clips and fasteners; fish plates (also known as joint bars), and end stops, and also turntables
  3. Associated structures: pulleys for curtain chains located within frames
  4. Electrical: power system from receptacles back to distribution panels
6. **Overhead Cranes (all)**
  1. Crane proper: for all components of crane itself and all hoists, general scope as per “Periodic” inspection as defined in CSA B167 supplemented with other best practices for this type of equipment as exemplified in ASME B20.2, OSHA 1910.179, or other standards recommended by the crane inspector.
  2. Runway: crane rails, rail clips and fasteners; fish plates (also known as joint bars), and end stops
  3. Wire rope, chains, and blocks: Wire rope: inspect to industry best practices as exemplified in OSHA 1926.1413 or other standards as recommended by the crane inspector.
  4. Hooks: inspect for conformity to ASME B30.10 including measurement of throat diameter. Include inspection of spares.
  5. Electrical: power system back to distribution panels.
7. **HIAB Articulating Cranes**
  1. Crane proper: for all components of crane itself, electrical, mechanical, hydraulic, and structural: general scope as defined in CSA Z150.3 (both “Periodic” and “Annual inspection of load-bearing components”), supplemented with industry best practices as exemplified in ASME B30.22, or other standards recommended by the crane inspector. For barge-mounted cranes, pay particular attention to connection between crane and hull, as this is a highly customized arrangement.
  2. Mounting: Inspect carefully those portions of the barge hull to which the cranes are bolted.
  3. Grapple: inspect to industry best practices as recommended by the crane inspector.
  4. Electrical and hydraulic: power units located respectively on EMBARRAS and SPOONBILL.
8. **Deck-Mounted Winch**
  1. Winch proper: for all components of the winch itself, electrical, mechanical, hydraulic, and structural, general scope as per “Periodic” inspection as defined in ASME B30.7 supplemented with industry best practices for this type of equipment as recommended by the crane inspector.

2. Mounting: Inspect carefully those portions of the hull to which the winch is bolted.
3. Wire rope: inspect to industry best practices as exemplified in OSHA 1926.1413 or other standards as recommended by the crane inspector.
4. Electrical and hydraulic: power unit located on EMBARRAS

## **A4.2 ACTIVITY 2 - Inspections, Maintenance, and Reports**

### **A4.2.1 Annual Inspections**

1. Follow checklists developed as part of Activity 1.
2. Damkeepers undertake regular (approximately monthly, but varies with equipment) inspections and maintenance of these devices (primarily lubrication). Therefore, at each inspection, discuss with Damkeepers all observations they have made during their work.
3. For all defects found during inspections, conduct troubleshooting sufficient to determine cause for equipment malfunction and to establish the scope of necessary repairs.
4. **If the inspection reveals defects that render the equipment unable or unsafe to operate, immediately tag the equipment with “DO NOT USE” and advise the Technical Authority and the Damkeepers by telephone, following up with email the same day to provide pictures of the defect in question.**

#### **A4.2.1.1 Special Requirements for Curtain Cranes**

1. This work to the curtain cranes is required in the first year of the contract only.
2. **Removals and Re-Installation**
  1. Remove the two curtain cranes and bring them to a shop.
  2. Contractor to provide all cranes, trucks, protective devices, and transportation between dam and shop, and on the return between shop and dam.
  3. Coordinate exact dates of removal and re-installation with Technical Authority.
3. **Disassembly and Internal Inspection.**—Disassemble the cranes, clean all components, and perform a complete and detailed internal inspection. Inspect gears and shafts for cracks with non-destructive methods.
4. **Report**
  1. Prepare and submit a report on as-found condition.
  2. Report must include photographs of components with noticeable damage and all other observations made by the inspecting technician.
  3. Group or label photographs so we can tell which crane and which component is being shown. Include a price quote for each repair recommendation broken into numbers of hours of work required to implement and cost of all materials, parts, and sub-contractor services required.
  4. Include recommendations for spare parts the Contractor feels we ought to keep on hand.
5. **Overhaul.**—As the price of overhaul work cannot be estimated ahead of time, it will be paid through the Task Authorization process; see ACTIVITY 7.

### **A4.2.2 Annual Maintenance**

1. Annual maintenance consists of proactive maintenance functions (such as but not limited to: lubrication, verification and/or adjustment of oil levels, changing of hydraulic filters, other verifications and adjustments done in the field to restore correct tolerances, and the replacement of worn parts

- before failure occurs). This may include disassembly, cleaning, adjustment, and re-assembly of an item or component.
2. Scope of annual maintenance is from O&M Manuals, this Statement of Work, and best practices for this type of equipment.
  3. Perform maintenance at the same time as inspection, for best logistical efficiency.
  4. After inspection and maintenance work is complete, restore the systems to their original operational state.
  5. Dispose of all wastes as required by local authorities having jurisdiction and the accepted Environmental Protection Plan. Hazardous waste includes but is not necessarily limited to lubricants, filters, solvents, dirty rags, etc.

#### ***A4.2.3 Reporting Requirements***

1. Record inspections in logbook for each lifting device.
2. Submit separate reports for each device. Divide report by system.
3. If applicable, report must make recommendations for repair of defects and include an all-inclusive cost estimate for parts, labour, and special equipment rentals required to effect repairs as well as delivery time estimate for parts. This information will be used in the preparation of Additional Work Requests (AWR) for repairs through the Task Authorization process.
4. Report may also include items that, in the professional opinion of the inspector, would improve the reliability or longevity of the equipment, again including a priority and a cost estimate or cost range.
5. **Deadline.**—Within 20 days of on-site work, submit a signed detailed inspection report to the Technical Authority. Submit in PDF format via email or FTP site to Technical Authority's email.
6. **Language.**—Reports must be submitted in English.
7. **Acceptance Criteria for Reports**
  1. Report must use a clear and consistent terminology to describe which piece of equipment is being discussed.
  2. Photographs and sketches must be sufficient to describe all defects found, their severity and implications, and all repairs recommended.
  3. Sketches may be neatly hand-drawn; CAD is not a requirement.
  4. Correct and grammatical English must be used and the entire report must be entirely understandable and un-ambiguous.
  5. Incomplete, unclear, poorly organized, poorly spelled, and ungrammatical reports will be returned to the Contractor for remedial editing at the Contractor's expense as often as necessary until a good report is produced.

#### ***A4.2.4 Additional Reporting Requirements (First Year Only)***

For each of the known defects listed in SOW Section A3.4 (subsections entitled “Known Problems”) for each crane, confirm that the defects still exist (i.e. have not yet been addressed), and prepare a price proposal for their repair in the format of a Price Proposal in response to a Request for Task Authorization.

#### **A4.3 ACTIVITY 3 - Certification**

1. Certify annually that each piece of lifting equipment meets the requirements of Manitoba Regulation 217 Part 23.

2. Professional Engineer must date, sign, and seal the certification.
3. Provide a separate written certification for each piece of lifting equipment, either with the inspection report or (if certification cannot be given until certain defects are rectified) after repairs.

#### **A4.4 ACTIVITY 4 - Oil Sampling and Analysis**

1. This Activity is required only in the first year of the Contract.
2. Take oil samples from each enclosed gearbox and each hydraulic system, and send samples to a specialized lab for testing to at least the following:
  1. acidity (pH and/or Acid Number)
  2. water (parts per million)
  3. viscosity at 40°C
  4. ISO Cleanliness Code
  5. metal analysis (wear metals, contaminant metals, additive metals)
3. Provide a single oil report for all cranes that includes the raw test data, analyzes and interprets the significance of these results. Make recommendations based on the test results.

#### **A4.5 ACTIVITY 5 - Options Analysis for Safety Improvements**

This Activity is required only in the first year of the Contract.

##### **A4.5.1 Background**

The operation of the dam has been essentially the same since its construction, though the specific lifting equipment has changed.

Previous inspections found deficiencies in guarding and safeguarding of curtain and frame cranes, particularly at the pocket wheels, although other potential pinch-points exist (see Section A3.4.2.3 and A3.4.3.3).

##### **A4.5.1.1 Frame Cranes**

Dating to the 1970s, these cranes are merely old and not historic. The 2015 Dam Safety Report found noted that the pocket wheels on the frame cranes are not equipped with guards to prevent staff from inadvertently getting caught in the moving parts. The same observation had been noted by other inspectors. For these frame cranes, unlike the curtain cranes, the lifting chains do not have to be installed and removed at every frame; this conveniently makes guarding and safeguarding options easier.

The 2015 report noted that both the Manitoba Workplace Safety and Health Regulation MR217/2006 and CSA Z432 Safeguarding of Machinery require guarding on these sprockets. To reach this determination, the engineers in 2015 deemed severity of the potential injury as "serious", exposure as "infrequent", and the likelihood of avoidance of the hazard as "likely". For this application, they believed a fixed barrier guard would be appropriate.

##### **A4.5.1.2 Curtain Cranes**

The curtain cranes are closer to the original configuration than the frame cranes, judging by older photographs. A detailed machinery assessment done in 1967 by T. Lamb, McManus, and Associates found for the curtain cranes "no real safety hazard to operating personnel in the present system used for operating the curtains." Hazard mitigation via strict work procedures, which is the approach taken for the last 50+ years, seems to be working, as there have been no accidents related

to Damkeepers being harmed by the exposed pocket wheels and idlers within the corporate memory of the Damkeepers.

By nature of the operations of the curtain cranes, Damkeepers must manipulate chains onto a pocket wheels on the cranes and then remove it from the crane when the frames or curtains are in proper position. The chain remains within the pocket wheel on the frame crane, which makes potential solutions easier to implement.

However, the tight quarters around the curtain cranes (which are operated on a narrow catwalk) make any sort of guard doors awkward, and the Damkeepers have previously expressed concerns that such guards would seriously impair their operations.

#### ***A4.5.2*** ***Scope of Work***

1. Develop and assess a number of (minimum 3) alternative means of protecting personnel from the pocket wheels, pinch points, and other moving parts while the frame cranes and curtain cranes are in operation.
2. Seek and incorporate input from Damkeepers in this exercise, as their input on practicality and ergonomics will be most valuable.
3. Submit a report discussing the findings. Include options, pros and cons, and costs of implementing proposed modifications.

#### **A4.6** **ACTIVITY 6 - Assistance with Damkeepers' Inspection & Maintenance Program**

1. This activity is required in the first year of the Contract only.
2. Although the Damkeepers have been doing inspections and maintenance of the cranes, it is not clear if each one is undertaking exactly the same activities, therefore it is necessary to bring consistency to this process.
3. Discuss with the Marine Superintendent (Chief Damkeeper) the existing maintenance program, and review the previous reports and records he has on hand for each crane.
4. For each crane:
  1. Develop a suitable customized inspection checklist for the Damkeepers to use to do pre-operation inspections and more detailed "frequent" inspections between the annual inspections done by the Contractor as part of this Contract.
    1. For each crane, recommend an inspection frequency for the Damkeepers based on the duty cycles of each crane (obtain this information from discussions with the Damkeepers).
  2. Develop a suitable written maintenance checklist for each crane the Damkeepers to undertake activities such as lubrication, topping-up of hydraulic oil, etc.

#### **A4.7** **ACTIVITY 7 - Unscheduled Repair Work**

1. **Administrative**
  1. Repairs can be found to be needed either as a result of defects found during inspections or as a result of in service breakdowns. The scope of repairs cannot be predicted ahead of time, and so will be treated as "Unscheduled Work" and handled through the Task Authorization process. This includes the repair of the known problems for each crane described in Section A3.4, as the full scope of what is required to fix the problem cannot be determined until the cranes are examined hands-on.
  2. **Task Authorization Process.**—See Contract.
  3. **Proposal in Response to Request for Task Authorization.**—To conform to Basis of Payment and for assistance in reviewing estimates for Task Authorization work, divide cost estimate for Price

Proposal (submitted in response to each Request for Task Authorization) into the following three categories:

1. travel estimate (subdivide into accommodations, per diem for meals, and vehicle costs)
  2. labour (subdivide by labour category, including hours)
  3. parts, materials, sub-contractors, and rental equipment (subdivide by sub-category)
2. **Tools and Equipment.**—Provide all tools, materials necessary for repair. Provide all equipment necessary for access. Provide temporary lighting as needed. Provide portable generators as needed.
  3. **Personnel.**—Provide all supervision, skilled trades, and labour required to effect repairs, either by own forces or through the use of subcontractors. Provide all personal protective equipment required for the work. If using subcontractors, provide a supervisor who is an employee of the Contractor, to be on site at all times when subcontractors are on site, and give that supervisor the authority to stop work in case of problems of health and safety.
  4. **Temporary Facilities.**—Depending on size of repair crew and duration of repair, Technical Authority may be able to accommodate Contractor's staff for washrooms and lunch rooms. Technical Authority will indicate this, one way or the other, in RTA memo. If this accommodation will not be possible, the Contractor must include in his price proposal the cost for him to provide all toilets, potable, water, and lunch room facilities required for his staff for the duration of the repair work.
  5. **Engineering.**—Repairs that affect lifting capacity must be made only under the direction and control of a professional engineer and must be certified by the professional engineer that the workmanship and quality of the materials used has restored the components to not less than their original capacity, as per Manitoba Regulation 217, paragraph 23.5.
  6. **Requirements for Response Time**
    1. **Flow Control Equipment.**—Target time window for repairs will depend on the water flow conditions at the time of breakdown. Generally, the Technical Authority would like to see repairs completed within 7 calendar days. However, at certain times of the year, when weather conditions so dictate, repairs may be required within 24 hours. Technical Authority will indicate exact time requirement in the RTA memo. Contractor price proposal in response to RTA must include sufficient resources to effect repairs in that time.
    2. **Auxiliary Equipment.**—Target time window for repairs will generally be more relaxed than for flow control equipment. Generally, the Technical Authority would like to see repairs to the auxiliary equipment completed within 21 calendar days. Technical Authority will indicate exact time requirement in the RTA memo. Contractor price proposal in response to RTA must include sufficient resources to effect repairs in that time.
  7. **Permits.**—Permits may be required for some types of repairs (e.g. Manitoba Hydro Electrical Permits, etc.). Whenever such cases occur, the Contractor must pay all fees and obtain all permits before starting Work. Provide authorities with plans and information for acceptance certificates. Submit certificates from Authority Having Jurisdiction as evidence that Work done meets their requirements.
  8. **Protection.**—Ensure persons and property are protected from accidents or damage during repair work. This includes taking safety and fire protection measures as described in national and provincial codes and standards and measures prescribed by Authorities Having Jurisdiction.
  9. **Parts**
    1. Use only new parts and materials used in effecting repairs must be new and as recommended by the OEM for the equipment in question.
    2. Replacement parts must, where possible, be obtained from the original equipment manufacturer. Where this is not possible, replacement parts must meet or exceed the original equipment manufacturer's performance specifications.

3. Deliver, store, and handle parts and materials with manufacturer's labels intact. Prevent damage during delivery, handling, storage, and installation.
  4. Verify proper function of replacement parts before equipment is returned to service.
10. **Electrical**
1. Carry-out all electrical and electronic installations, renewals, and repairs in accordance with latest version of Manitoba Electrical Code and manufacturer's requirements.
  2. Electrical products must be approved by Canadian Standards Associations (CSA) and bear CSA label. Alternatively, where a product does not bear a CSA label, arrange for approval in writing by authority having jurisdiction.
  3. Submit for all new parts and equipment a Certificate of Origin from the Manufacturer for validation of authenticity.
  4. Record those electrical repairs which requiring inspection by Manitoba Hydro in the electrical log book (a separate log book for this work), as well as in the main equipment log book.
11. **Original Equipment Manufacturer (OEM) Involvement.**—Should a need arise which requires OEM involvement with such equipment, liaise with OEM as required and ensure the Work is completed in conformity with OEM requirements. Comply with manufacturer's latest printed instructions for installation of replacement parts and materials.
12. **WHMIS.**—Submit Safety Data Sheets for all products used.
13. **Testing.**—Upon completion of repairs, undertake at minimum whatever other tests are required to prove that the repair has been effective.
14. **Regulatory Inspections.**—Upon completion of repairs, ensure all work requiring regulatory inspection (e.g. Manitoba Hydro) is actually inspected by the applicable authority, and provide Technical Authority will copies of the documentation proving that the inspections were conducted and the work approved.
15. **Housekeeping.**—Leave the dam and work areas clean upon completion of work each day. Provide lockable storage for all tools, materials, and equipment as necessary. Dispose of rubbish and waste materials off-site daily, in accordance with local requirements for waste disposal.
16. **Report.**—Upon completion of work, provide to the Technical Authority a written Service Report describing all work performed, number of hours on site, parts replaced, and all testing done.
17. **Warranty.**—Warrant all materials and workmanship for a period of one year after date of Technical Authority's acceptance. If at any time during this period, the work requires repairs for reasons of faulty parts, materials, or workmanship, Contractor must effect repairs again, at no additional cost.

## **A5. ADMINISTRATIVE REQUIREMENTS**

### **A5.1 Contractor's Team**

#### **A5.1.1 Project Manager**

Appoint a Project Manager to plan, direct, control, and make decisions for the Contractor and who must be the main point of contact between the Contractor and the Technical Authority.

#### **A5.1.2 Answering Service**

1. Maintain an answering service (24 hours a day, 7 days a week).
2. Response time to calls for urgent repair service must be such that a team of technicians can be on-site at the dam within 24 hours.

**A5.1.3**     **Technical Personnel**

1. Have on staff, or provide under sub-contract, all the skills required to perform work of this contract.
2. Contractor is responsible for selecting the mix of skills required to complete any given service, keeping in mind the need to comply with statutory and regulatory requirements as well as the scope of work from this SOW. Repairs will require different skill sets from inspections.
3. In all cases, substitute personnel (e.g. in case of illness of original personnel, etc.) must hold equivalent qualifications to the original personnel. Submit proof thereof to Technical Authority as soon as need for substitute personnel is known.
4. For all in-house resources, submit actual names of individuals and proof of qualifications with the Activity 1 paperwork.
5. In the case of subcontracted personnel, submit with Activity 1 paperwork the name of firm with whom Contractor intends to subcontract. Then:
  1. When using a sub-contractor to perform Known Work, then submit actual names and proofs of qualification for subcontract personnel with the Activity 1 paperwork.
  2. When using a sub-contractor to perform Unscheduled Work, then submit actual names and proofs of qualification for subcontract personnel at the time of submitting a Proposal in response to a Request for Task Authorization.
6. **Qualifications.**—NOTE: A single individual may hold more than one skill qualification.
  1. **Electricians** must be licensed to work in Manitoba as Journeyman *Construction Electrician*. Proof: Manitoba Certificate of Qualification or a Red Seal endorsement on an out-of-province Certificate of Qualification.
  2. **Hoist Inspectors** must have sufficient knowledge in the field of cranes and hoists and sufficiently familiar with the relevant regulations, codes, standards, and best practices to be able to identify deviations from proper conditions. Hoist inspectors must have a minimum of 2000 hours of field experience directly relate to the maintenance servicing, repairing, and testing of cranes and hoists. Proof: A letter from a training provider indicating that the inspector has completed hoist inspection training is sufficient for the knowledge requirements. A résumé showing sufficient experience repairing and/or inspecting hoists and/or cranes to meet the experience requirement.
  3. **Hoist Technicians** must have sufficient skill and knowledge in the diagnosing and repairing defects in cranes and hoists. Proof: A letter from a training provider indicating that the inspector has completed hoist mechanic training is sufficient for the knowledge requirements. A résumé showing 3 years' experience repairing hoists and/or cranes is sufficient to meeting the experience requirement.
  4. **Millwrights** must be licensed to work in Manitoba as Journeyman *Industrial Mechanic (Millwright)*. Proof: Manitoba Certificate of Qualification or a Red Seal endorsement on an out-of-province Certificate of Qualification.
  5. **Non-Destructive Testers** must be certified Level 1 or Level 2 to CAN/CGSB 48.9712-2104 *Non-destructive Testing – Qualification and certification of NDT personnel*, in both or either of the “Welds and Weldments” or the “Engineering Materials and Components” Sectors (i.e. Sectors W and/or E). Proof: Certifications of currently meeting these requirements.
  6. **Professional Engineers** must be licensed to work in Manitoba and have a minimum of 5 years' experience in the design, construction, or maintenance of cranes; knowledge of the relevant regulations, codes, standards, and best practices; knowledge of associated hazards necessary to carry out the inspection; and the ability to make professional judgements about the safe condition of the hoists and what measures need to be taken to ensure their continued safe operation. Proof: Submit PEO number and résumé showing this background.

7. **Welding Inspectors** must be certified Level 2 or Level 3 to CAN/CSA W178.2 *Certification of Welding Inspectors* with code endorsement to CSA W47.1/W59 *Welded Structures*. Company must be certified to CSA W178.1 *Certification of Welding Inspection Organizations*. **Proof:** Certifications of currently meeting these requirements.

#### **A5.1.4**    **Sub-Contracting**

1. Sub-contracting is permitted with written approval of the Technical Authority.
2. Subcontractors must fulfil all the requirements of the Contract.
3. Contractor is responsible for coordinating work of his sub-contractors and for supervising them when on the dam site.

#### **A5.2**    **Schedule**

1. Except in special cases (to be identified by Technical Authority if any arise), inspections are to take place between 8 AM and 4:30 PM Monday through Friday to suit normal hours of work for Damkeepers.
2. Confirm with the Technical Authority at minimum two weeks before intended inspection date. Note although it is unlikely in the summer, an inspection may need to be re-scheduled on short notice for water or debris-control reasons.
3. Supply sufficient personnel so that on-site inspections of each category of crane listed below can take place over a maximum of three days, to minimize effects on normal work of Damkeepers.

##### **1. For Curtain Cranes**

###### *1. In the first year of the contact*

1. Remove the curtain cranes from the dam immediately after the Damkeepers have taken-up the moveable dam for the winter (this is usually mid-October). Coordinate the exact date with the Technical Authority. One curtain crane will be located between spans 1 and 2; the other at span 6.
2. Bring curtain cranes to a shop for disassembly and inspection and provide report by end of December outlining what work will be required for overhaul.
  1. **Note 1:** exploration and report on the subject of safety improvements (i.e. ACTIVITY 5) need not necessarily be completed as part of the overhaul work, although it can be if this is convenient.
  2. **Note 2:** in the case of long-lead-time parts, installation of replacement parts may be deferred to the 2nd winter. Technical Authority will issue a Task Authorization for the overhaul work, and the cranes must be re-installed on the dam by mid-May in time for re-deployment of the moveable dam after freset.
3. Provide all mobile cranes, trucks, and protection for the curtain cranes whilst in transit between dam and shop.
4. Curtain cranes must be back on the dam and available for work by the time the dam is set out in the spring. This may require coordination with spring road restrictions which are usually on until the end of May.

2. *In subsequent years.*—Undertake inspection fieldwork between mid-June and the end of July, working on one crane at a time so that the other one is available for Damkeepers if needed. Submit report by end of August.

2. **For overhead cranes on the dam deck.**—Undertake inspection fieldwork between mid-June and the end of July. Submit report by end of August.

3. **For overhead crane in the carpentry shop.**—Undertake the fieldwork between mid-June and end of August. Submit report by end of October.
4. **For articulating boom cranes on the barges.**—Undertake fieldwork between mid-June and September, while the barges are still afloat. Work on one at a time, so that the other one is available for the Damkeepers if needed. Submit report by the end of November.
5. **For Frame Cranes.**—Undertake inspection fieldwork after dam is removed in the fall (usually mid-October). Submit report by end of December.

### **A5.3 Access to Equipment**

1. Damkeepers will unlock and lock doors and gates as required for Contractor access. Contractor will not be provided with a key.
2. Contractor must provide all ladders, scaffolding and access platforms, harnesses, and rope access equipment necessary to undertake the work.

### **A5.4 Meetings**

1. A kick-off meeting will be held a few days after submittal of documents from Activity 1. The discussion must include, but not necessarily be limited to, a review of the project requirements and the Contractor's schedule and identification of items on critical path.
2. Progress Review Meetings will be held as mutually agreed between the Contracting Authority, the Technical Authority and the Contractor.
3. Meetings will be held by teleconference unless otherwise agreed between the Contracting Authority, the Technical Authority and the Contractor.

### **A5.5 Health & Safety**

#### **A5.5.1 Responsibility**

1. When on the dam site, the Contractor is responsible for health and safety of his own personnel and all sub-contractors and must comply with the requirements of the Province of Work.
2. Whenever sub-contractors are working at the dam, provide a Supervisor at the dam site, who is an employee of the Contractor, and who will be responsible for the site. Supervisor must have the authority to stop Work when, at Supervisor's discretion, it is necessary or advisable to do so for reasons of health or safety.
3. Contracting Authority and Technical Authority may stop Work for health and safety considerations.
4. Immediately address health and safety non-compliance issues, whether identified by authority having jurisdiction, or by Contracting Authority, or by Technical Authority.
5. Submit to the Technical Authority, within twenty-four (24) hours of occurrence, reports of all accidents, incidents, and/or near-misses that occur during the term of the Contract and also copies of all reports or directions issued by Federal or Provincial health and safety inspectors.
6. If unforeseen or peculiar safety-related conditions arise during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of the Province of Work and advise Contracting Authority and Technical Authority both verbally and in writing.

#### **A5.5.2 Existing Known Site Conditions**

1. Currently known hazards and conditions at the dam site include, but are not necessarily limited to, the following:
  1. Weather hazards (extreme hot, cold, precipitation) for all but the shop crane

2. Trip-and-fall hazards such as uneven ground and slippery surfaces
3. Pinch hazards
4. Electrical hazards including high voltage and potential for arc flash
5. Contact with oil and grease
6. Working at heights
7. Confined space (inside hull of boats)
8. Working on a boat (for barge-mounted crane)

**A5.5.3**     **Submittals**

1. PWGSC requires a variety of submittals proving Contractor compliance with legislated requirements. Hence, submit the following as part of Activity 1 paperwork:
2. **Company information:**
  1. **Clearance Letter** showing compliance with the requirements of the Workers Compensation Board of Manitoba.
  2. Company's **Health & Safety Policy Statement** meeting the requirement of the Provincial Occupational Health and Safety Act.
  3. Company's **Occupational Health and Safety Program** meeting the requirements of the Provincial Occupational Health and Safety Act.
3. **Site-Specific Hazard Assessment and Health and Safety Plan (SSHAHSP)**
  1. Develop written SSHAHSP based on hazard assessment before starting Work on site. Implement and enforce requirements of SSHAHSP whenever work takes place at the dam site.
  2. If work arises in the course of the contract where the hazards for performing the work are different than the hazards assumed in the SSHAHSP, then provide a one-off document pertaining to that work alone. If such cases arise, it is most likely to be in the course of a Request for Task Authorization (RTA) for repairs.
  3. Provide name of person(s) responsible for ensuring adherence to SSHAHSP whilst at the dam sites.
  4. Revise and re-submit SSHAHSP as often as required. Technical Authority's review of SSHAHSP should not be construed as approval and does not reduce the Contractor's overall responsibility.
  5. SSHAHSP must include the following:
    1. **Part 1 – Safety Hazard Assessment.**—Consider the operations to be performed at the dam site and identify safety hazards. Currently known hazards include, but are not necessarily limited to, the ones listed in Section A6.5.3, as well as all other hazards Contractor foresees arising during Work.
    2. **Part 2 – Mitigation Measures.**—For each safety hazard identified, describe measures and controls that will be used to protect employees and subcontract personnel and for ensuring compliance with Federal, Provincial, and Municipal laws and regulations. Mitigation measures may include a range of engineering controls, work practices, and personal protective equipment.
    3. **Part 3 – Emergency Contacts.**—Provide a list of contact names, roles, and phone numbers for crew(s) working on site. This must include all sub-contractors. Include name of nearest health facility, a map showing its location, and how it will be contacted during an emergency.
    4. **Part 4 – Contingency and Emergency Response Plan.**—Describe standard operating procedures specific to the project site to be implemented during emergencies.

## **A5.6 Environmental Protection**

### **A5.6.1 Responsibility**

1. **Objective.**—The work must not release any deleterious substance into the environment nor may it disturb habitat and/or individual of any species.
2. Contractor is responsible for protection of the environment during all work at the dam site.
3. Clean up work area. Handle wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines. Submit copies of all waste disposal certificates.
4. Immediately address environmental non-compliance issues, whether identified by authority having jurisdiction or by Contracting Authority or Technical Authority. Contracting Authority or Technical Authority may stop work if non-compliance of environmental requirements is not corrected.
5. When working with liquids, provide appropriate spill kits, to be on-site and available at all times, and be prepared to mitigate, intercept, clean up, and dispose of spills that may occur. Be responsible for all costs of cleaning up spills.
6. Upon request, provide to Contracting Authority and Technical Authority all additional evidence of compliance with municipal, provincial, and federal environmental laws and regulations.
7. Submit copies of all environmental incident and accident reports to Contracting Authority and Technical Authority.

### **A5.6.2 Environmental Submittals**

1. Develop and submit an Environmental Protection Plan (EPP) for work to take place at the dam site. Include name of person(s) responsible for ensuring adherence to EPP during time on site. EPP must contain:
  1. **Hazard Assessment.**—Assess and list environmental hazards specific to work at the dam site. Known hazards include risk of spills of hydraulic fluid and gearbox oil. There may be others depending on Contractor's chosen work procedures.
  2. **Mitigation Measures.**—For each hazard listed, describe what procedures and materials you will use to prevent damage to surrounding environment and for ensuring compliance with Federal, Provincial, and Municipal laws and regulations.
  3. **Environmental Emergency Measures.**—Describe equipment and procedures you will use in event of spills and all other potential environmental emergencies.
  4. **Waste Disposal.**—Identify methods and locations for hazardous and non-hazardous waste handling and disposal.
2. Implement and enforce requirements of EPP whenever work takes place at the dam site.

### **A5.6.3 Spills**

1. During all operations where there is a risk of spill, such as handling of oils, take measures to prevent release of spills or leaks into environment.
2. Be prepared to mitigate, intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Provide site crew with an appropriately-sized spill kit and ensure they keep spill kit on-site it handy at all times during work for which a risk of spills exists.
3. Follow accepted spill procedures described in reviewed Site-Specific Environmental Protection Plan.
4. Be responsible for all costs of cleaning up any spills.
5. Promptly report spills and releases potentially causing damage to environment to:

1. Technical Authority
2. Manitoba Conservation at (204) 944-4888
3. Authority Having Jurisdiction or interest in spill or release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
6. Further information on dangerous goods emergency clean-up and precautions including a list of companies performing this work can be obtained from Transport Canada's 24-hour number (613) 996-6666 collect.

## A6. IMAGES

### A6.1 Facility Location and General Views

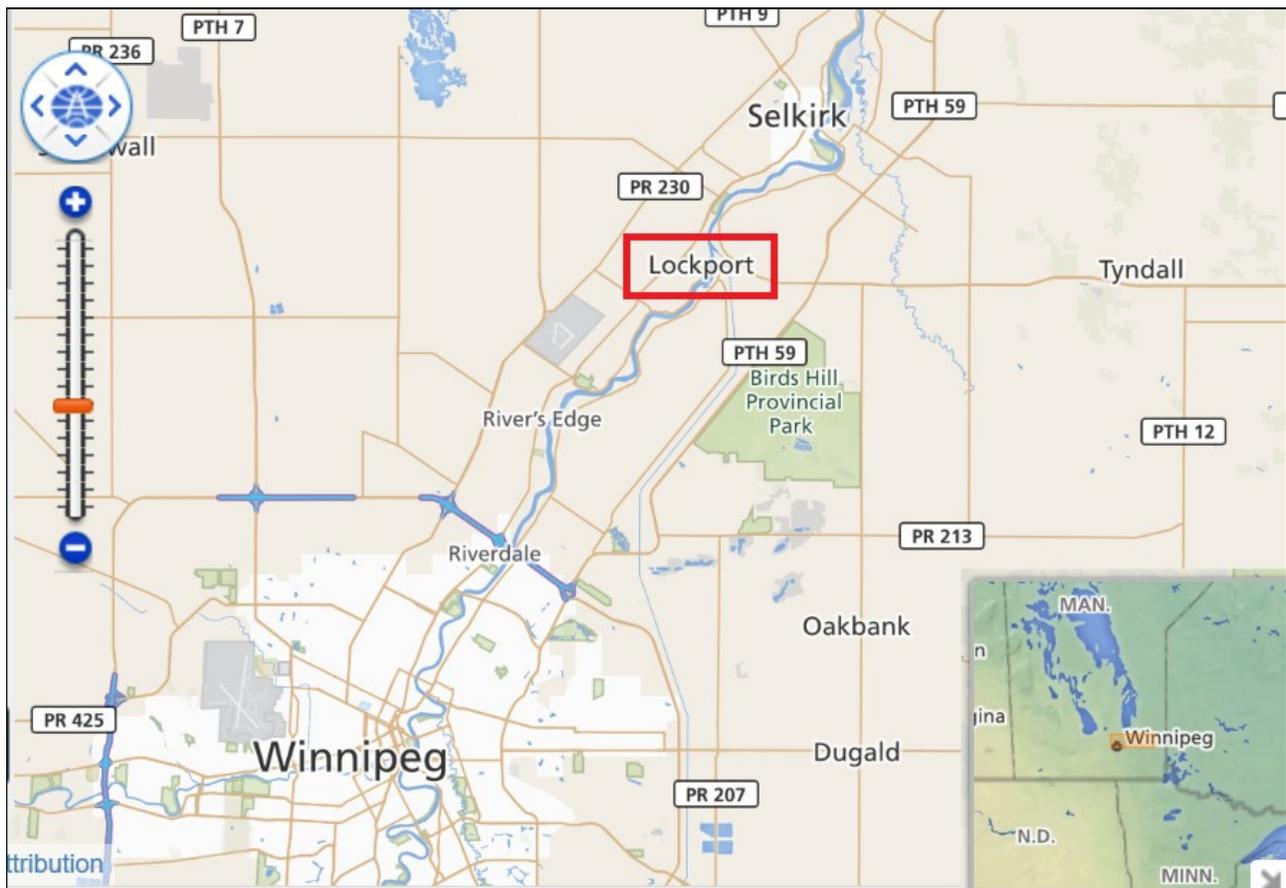


Figure 1: Location of Lockport, MB  
Rand McNally maps



*Figure 2: St. Andrew's Lock and Dam in 1923. View looking upstream (south).*

Image from the Archives of Manitoba, FA23.22 Red River, as found at <http://www.mhs.mb.ca/docs/sites/standrewslockanddam.shtml>



*Figure 3: Downstream (north) side of St. Andrew's Lock and Dam.*

Curtains have been removed at left, and frames are lifted at right.

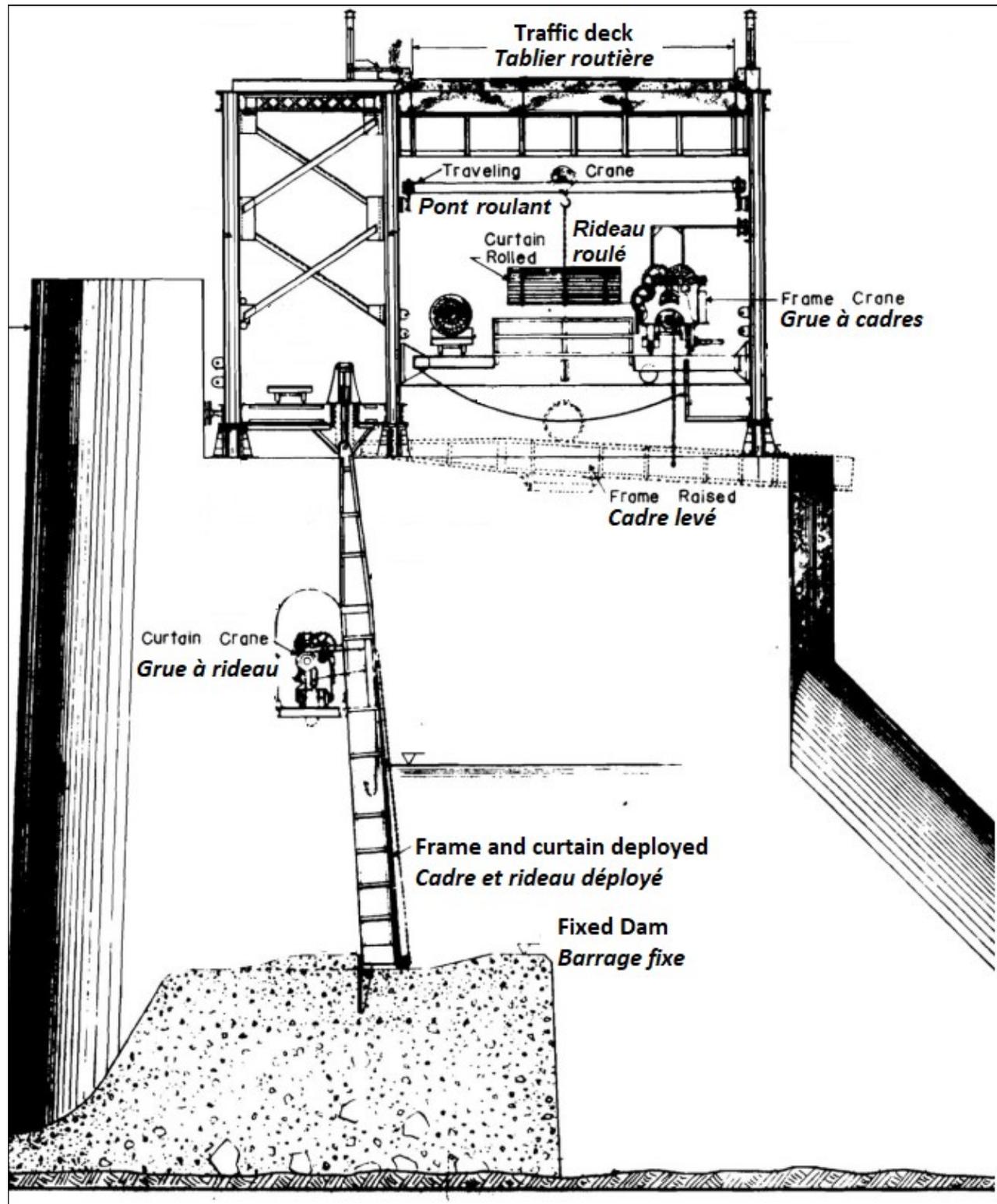


Figure 4: Cross-section of dam, showing details of moveable dam (i.e. Caméré curtain and frame system). Water flows right to left in this view. Location of curtain crane, frame crane, and overhead crane are shown.

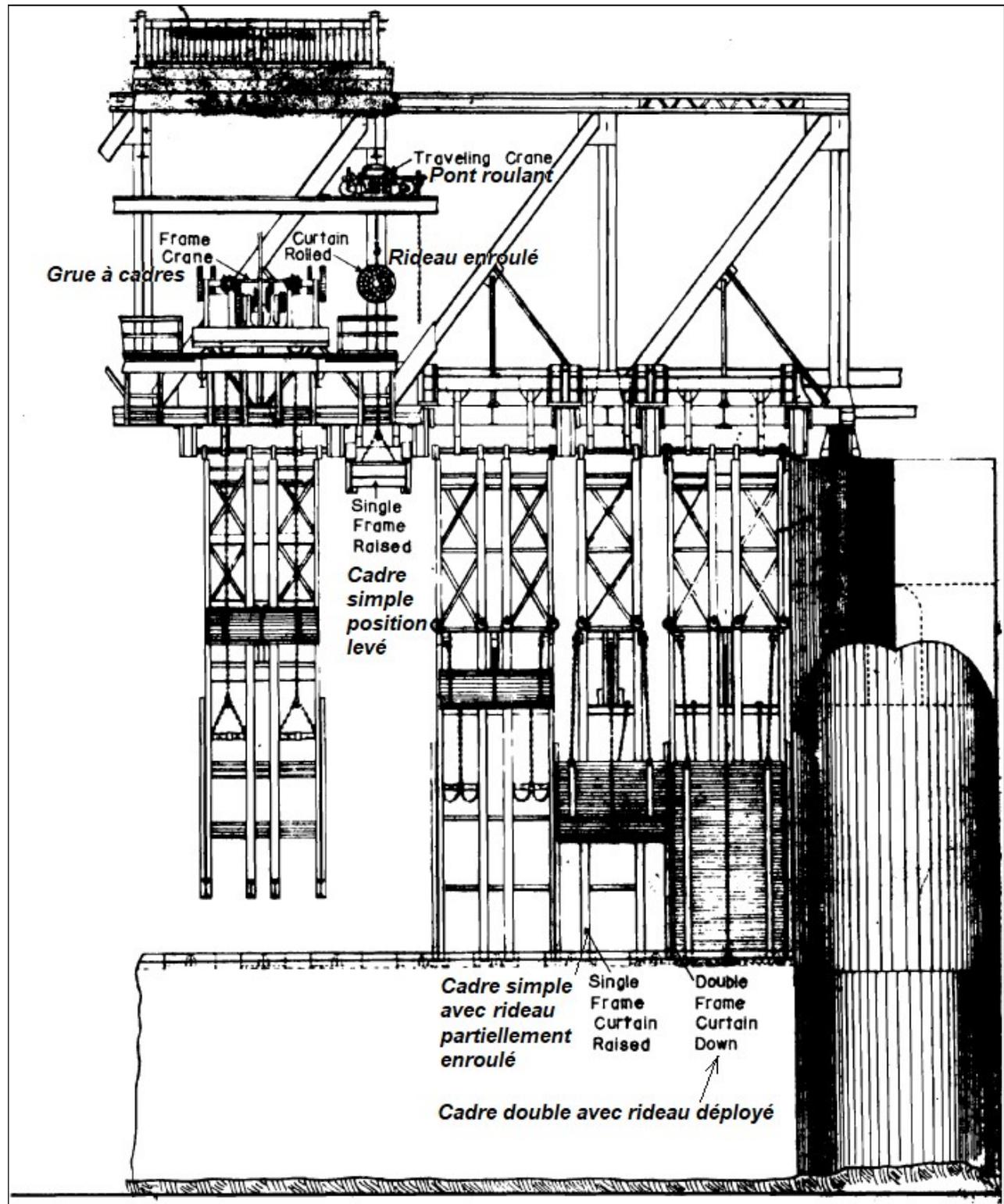


Figure 5: View looking downstream, showing details of moveable dam (i.e. Caméré curtain and frame system). Location of frame crane and overhead crane are shown.



*Figure 6: Caméré curtains on their frames*  
Curtains deployed at left, and in process of being rolled-up for winter on right.



*Figure 7: Detail of dam showing one bay in the process of having its frames raised for winter.*



*Figure 8: Last frames being hoisted in one bay, to prepare for winter.*

A6.2 Frame Cranes



*Figure 9: Main frame crane (in red rectangle) on operating deck, as seen looking downstream. Frames are in the process of being lifted for the winter.*



*Figure 10: Main frame crane on operating deck, looking upstream.*



*Figure 11: Main frame crane on operating deck, end view.*

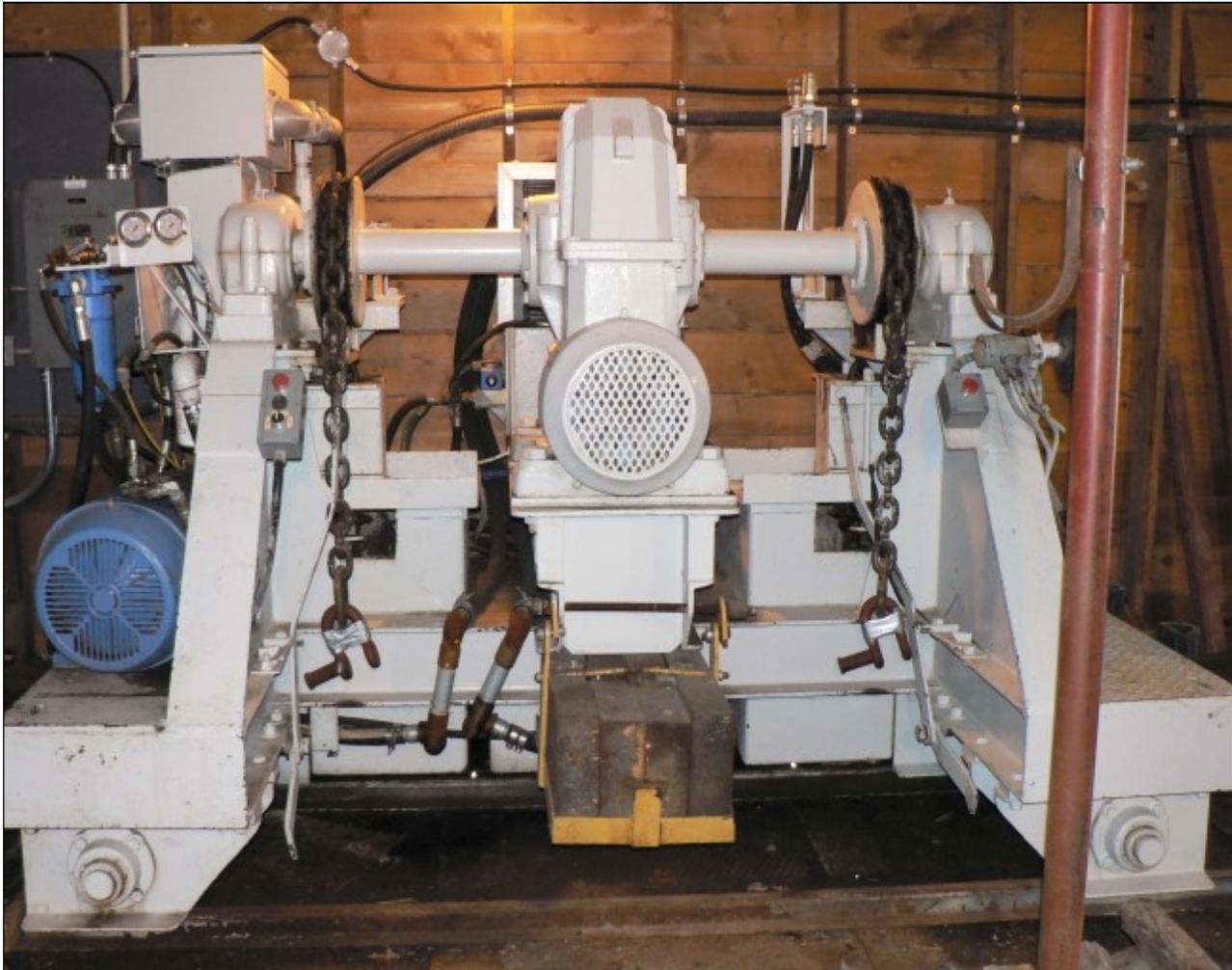


Figure 12: Auxiliary frame crane



Figure 13: Frame crane, as seen whilst lifting frame.



Figure 14: Frame cranes, lifting chain, typical condition from 2018 General Inspection report.

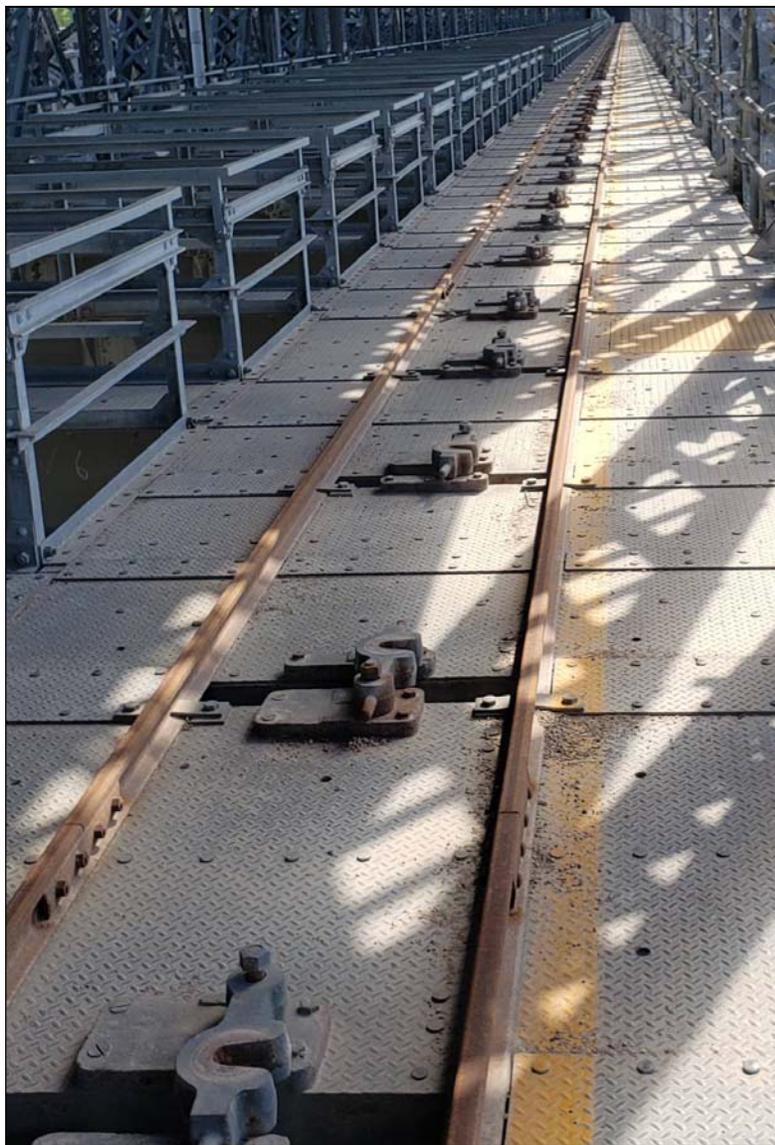


Figure 15: Frame cranes, crane rail, with chain anchor points between rails.



*Figure 16: Frame crane, limit switch with unknown function.*



*Figure 17: Chain guide sheave at dam deck appears to be clogged with gravel.*

A6.3 Curtain Cranes

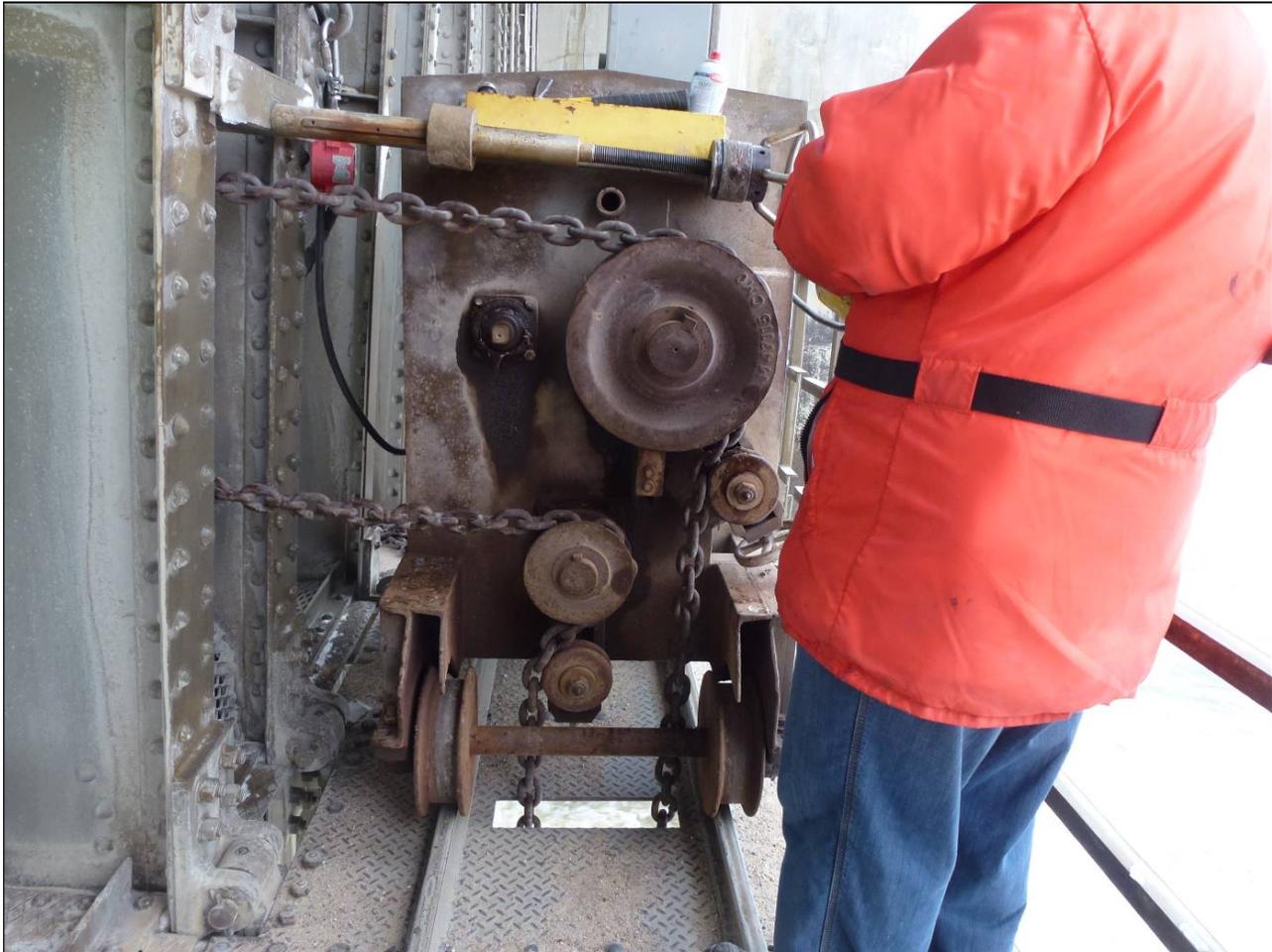


Figure 18: Curtain crane in use.



*Figure 19: Curtain crane, other side from previous picture.*



*Figure 20: Curtain crane, detail*



Figure 21: Curtain crane, spur gear detail

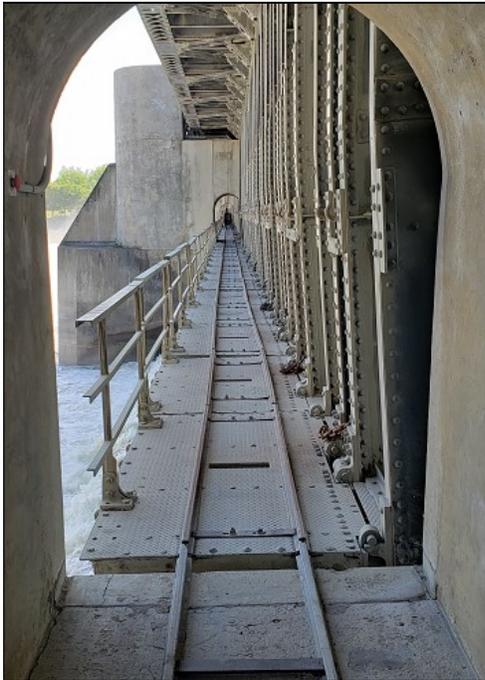


Figure 22: Curtain crane, crane rails.



Figure 23: Curtain crane, worn pocket wheel in 2015.

#### A6.4 Double-Girder Overhead Crane on Operations Deck



Figure 24: Double-girder overhead crane on operations deck, showing 1-ton and 5-ton hoists. Single-girder crane visible in background of photo.



*Figure 25: Double-girder overhead crane on operating deck, detail of end truck.*



*Figure 26: Double-girder overhead crane on operating deck, detail of 5-ton hydraulic hoist*

The reels of hydraulic hose are to power the grapple.



*Figure 27: Double-girder overhead crane on operating deck, detail of 5-ton hoist.*



*Figure 28: Double-girder overhead crane on operating deck, detail of 5-ton hoist.*



*Figure 29: Double-girder overhead crane on operating deck, detail of 1-ton chain hoist and end truck.*



*Figure 30: Double-girder overhead crane on operating deck, detail of 1-ton chain hoist.*



Figure 31: Double-girder overhead crane on dam deck, detail of end truck and underside of 5-ton hoist.

**A6.5 Single-Girder Overhead Crane on Operations Deck**



*Figure 32: Single-girder overhead crane on operations deck, detail showing 3.5-ton wire rope hoist.*

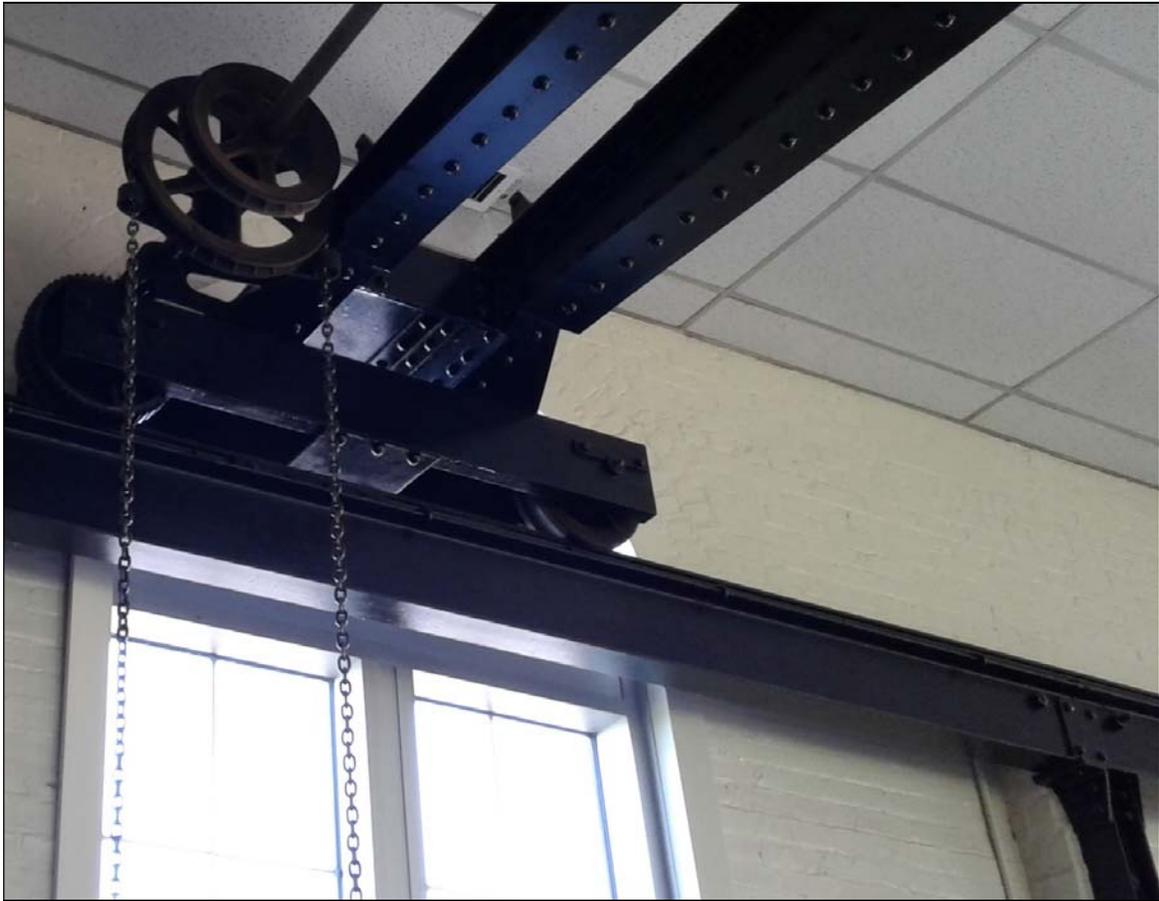


Figure 33: Single-girder overhead crane on operating deck, detail of 3.5-ton wire rope hoist.

A6.6 Overhead Crane in Carpentry Shop



*Figure 34: Overhead crane in carpentry shop, showing electric chain hoist*



*Figure 35: Overhead crane in carpentry shop, detail of end truck*

A6.7 HIAB Articulating Cranes



*Figure 36: HIAB 288 articulating crane on SPOONBILL's debris barge.  
Tug SPOONBILL seen behind.*



*Figure 37: Another view of HIAB 288 articulating crane on SPOONBILL's debris barge.*



Figure 38: Debris barge in use.

#### A6.8 Deck-Mounted Winch



Figure 39: Deck-mounted winch on EMBARRAS



Figure 40: Deck-mounted winch on EMBARRAS, detail