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

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NA
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INVITATION TO TENDER
APPEL D'OFFRES

Tender 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.

Soumission 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 et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Issuing Office - Bureau de distribution
Travaux publics et Services gouvernementaux Canada
Place Bonaventure, portail Sud-Oue
800, rue de La Gauchetière Ouest
7e étage, suite 7300
Montréal
Québec
H5A 1L6

Title - Sujet Water Treatment -- St-Armand	
Solicitation No. - N° de l'invitation EF928-210499/A	**Date** 2020-10-26
Client Reference No. - N° de référence du client R.050773.009	**GETS Ref. No. - N° de réf. de SEAG** PW-$MTC-790-15902
File No. - N° de dossier MTC-0-43059 (790)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2020-11-19**	**Time Zone** **Fuseau horaire** Heure Avancée de l'Est HAE
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Guilbault, Isabelle	**Buyer Id - Id de l'acheteur** mtc790
Telephone No. - N° de téléphone (514) 476-8192 ( )	**FAX No. - N° de FAX** ( ) -
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:** TPSGC/PWGSC PL.BONAVENTURE,PORTAIL S-O 800 RUE DE LA GAUCHETIERE O B7300 MONTREAL Québec H5A1L6 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

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

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

Canada

INVITATION TO TENDER

WATER TREATMENT SYSTEM UPGRADE
ST-ARMAND BORDER CROSSING (QUEBEC)

IMPORTANT NOTICE TO BIDDERS

PROMPT PAYMENT IN THE CONSTRUCTION INDUSTRY

Prompt Payment Principles

Public Services and Procurement Canada advocates that construction-related payments should follow these three principles:

- **Promptness**: The department will review and process invoices promptly. If disputes arise, Public Services and Procurement Canada will pay for items not in dispute, while working to resolve the disputed amount quickly and fairly
- **Transparency**: The department will make construction payment information such as payment dates, company names, contract and project numbers, publicly available; likewise, contractors are expected to share this information with their lower tiers
- **Shared responsibility**: Payers and payees are responsible for fulfilling their contract terms including their obligations to make and receive payment, and to adhere to industry best practices

For more information: http://www.tpsgc-pwgsc.gc.ca/biens-property/divulgation-disclosure/psdic-ppci-eng.html

PWGSC UPDATE ON ASBESTOS USE

Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at https://www.tpsgc-pwgsc.gc.ca/biens-property/ami-asb/amiante-asbestos-eng.html

NOTE TO BIDDERS: ***THERE WILL BE NO PUBLIC OPENING FOR THE PURPOSES OF THIS SOLICITATION. SEE SI05 FOR FURTHER INSTRUCTIONS.***

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SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the Bid Documents:

   a. Invitation to Tender - Page 1;
   b. Special Instructions to Bidders;
   c. General Instructions - Construction Services - Bid Security Requirements R2710T (2019-05-30)
   d. Clauses & Conditions identified in “Contract Documents”;
   e. Drawings and Specifications;
   f. Bid and Acceptance Form and related Appendix(s); and
   g. Any amendment issued prior to solicitation closing.

   Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

2. General Instructions - Construction Services - Bid Security Requirements R2710T is incorporated by reference and is set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to the Contracting Authority named on the Invitation to Tender - Page 1 at isabelle.guilbault@tpsgc-pwgsc.gc.ca. Except for the approval of alternative materials as described in GI15 of R2710T, enquiries should be received no later than **five (5) business days** prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may result in an answer NOT being provided.

2. To ensure consistency and quality of the information provided to Bidders, PWGSC will examine the content of the enquiry and will decide whether or not to issue an amendment.

3. All enquiries and other communications related to this bid sent throughout the solicitation period must be directed ONLY to the Contracting Authority named in paragraph 1. above. Failure to comply with this requirement may result in the bid being declared non- compliant.

SI03 REVISION OF BID

A bid may be revised by facsimile in accordance with GI10 of R2710T. The facsimile number for receipt of revisions is 514-496-3822.

SI04 BID RESULTS

1. There will be no Public Opening for the purposes of this solicitation.

2. The responsive bid carrying the lowest price will be recommended for contract award.

3. Following solicitation closing, bid results may be obtained by e-mail a request to isabelle.guilbault@tpsgc-pwgsc.gc.ca.

SI05 INSUFFICIENT FUNDING

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

a. cancel the solicitation; or

b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid.

SI06 BID VALIDITY PERIOD

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders will have the option to either accept or reject the proposed extension.

2. If the extension referred to in paragraph 1. above is accepted, in writing, by all those who submitted bids, then Canada will continue immediately with the evaluation of the bids and its approvals processes.

3. If the extension referred to in paragraph 1.above is not accepted in writing by all those who submitted bids then Canada will, at its sole discretion, either

   a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or

   b. cancel the invitation to tender.

4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI11 of R2710T.

SI07 CONSTRUCTION DOCUMENTS

The successful Contractor will be provided (**with 1 electronic or paper copy)** of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Obtaining more copies will be the responsibility of the Contractor including costs.

SI08 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies
http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494&section=text#appL

Buy and Sell
https://www.achatsetventes-buyandsell.gc.ca

Canadian economic sanctions
http://www.international.gc.ca/sanctions/index.aspx?lang=eng

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf

Bid Bond (form PWGSC-TPSGC 504)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf

Performance Bond (form PWGSC-TPSGC 505)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505_eng.pdf

Labour and Material Payment Bond (form PWGWSC-TPSGC 506)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf

Standard Acquisition Clauses and Conditions (SACC) Manual
https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

PWGSC, Industrial Security Services
http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html

PWGSC, Code of Conduct and Certifications
http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html

Construction and Consultant Services Contract Administration Forms Real Property Contracting
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

Declaration Form
http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html

Trade agreements
https://buyandsell.gc.ca/policy-and-guidelines/Policy-and-Legal-Framework/Trade-Agreements

CONTRACT DOCUMENTS (CD)

1. The following are the Contract Documents:

   a. Contract Page when signed by Canada;
   b. Duly completed Bid and Acceptance Form and any Appendices attached thereto;
   c. Drawings and Specifications;
   d. General Conditions and clauses

GC1	General Provisions – Construction Services	R2810D	(2017-11-28);
GC2	Administration of the Contract	R2820D	(2016-01-28);
GC3	Execution and Control of the Work	R2830D	(2019-11-28);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2016-01-28);
GC6	Delays and Changes in the Work	R2860D	(2019-05-30);
GC7	Default, Suspension or Termination of Contract	R2870D	(2018-06-21);
GC8	Dispute Resolution	R2880D	(2019-11-28);
GC9	Contract Security	R2890D	(2018-06-21);
GC10	Insurance	R2900D	(2008-05-12);
Allowable Costs for Contract Changes Under GC6.4.1		R2950D	(2015-02-25);

   e. Supplementary Conditions
   f. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
   g. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
   h. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2. The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual

3. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

SUPPLEMENTARY CONDITIONS (SC)

SC01 INDUSTRIAL SECURITY RELATED REQUIREMENTS, DOCUMENT SAFEGUARDING

There is no document security requirement applicable to this Contract.

SC02 LIMITATION OF LIABILITY

GC1.6 of R2810D is deleted and replaced with the following:

GC1.6 Indemnification by the Contractor

1. The Contractor shall indemnify and save Canada harmless from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by Canada or in respect of claims by any third party, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by, or attributable to the activities of the Contractor in performing the Work, provided such claims are caused by the negligent or deliberate acts or omissions of the Contractor, or those for whom it is responsible at law.

   The Contractor's obligation to indemnify Canada for losses related to first party liability shall be limited to:

   a. In respect to each loss for which insurance is to be provided pursuant to the insurance requirements of the Contract, the Commercial General Liability insurance limit for one occurrence as referred to in the insurance requirements of the Contract .

   b. In respect to losses for which insurance is not required to be provided in accordance with the insurance requirements of the Contract, the greater of the Contract Amount or $5,000,000, but in no event shall the sum be greater than $20,000,000.

   The limitation of this obligation shall be exclusive of interest and all legal costs and shall not apply to any infringement of intellectual property rights or any breach of warranty obligations.

3. The Contractor's obligation to indemnify Canada for losses related to third party liability shall have no limitation and shall include the complete costs of defending any legal action by a third party. If requested by Canada, the Contractor shall defend Canada against any third party claims.

4. The Contractor shall pay all royalties and patent fees required for the performance of the Contract and, at the Contractor's expense, shall defend all claims, actions or proceedings against Canada charging or claiming that the Work or any part thereof provided or furnished by the Contractor to Canada infringes any patent, industrial design, copyright trademark, trade secret or other proprietary right enforceable in Canada.

5. Notice in writing of a claim shall be given within a reasonable time after the facts, upon which such claim is based, became known.

SC03 INSURANCE TERMS

1) Insurance Contracts

(a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.

(b) 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.

2) **Period of Insurance**

(a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.

(b) The Contractor must be responsible to provide and maintain coverage for Products/Completed Operations hazards on its Commercial General Liability insurance policy, for a period of six (6) years beyond the date of the Certificate of Substantial Performance.

3) **Proof of Insurance**

(a) Before commencement of the Work, and no later than thirty (30) days after contract award, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.

(b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

4) **Insurance Proceeds**

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

5) **Deductible**

The payment of monies up to the deductible amount made in satisfaction of a claim must be borne by the Contractor.

BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION

Water Treatment System Upgrade at the St-Armand Border Crossing (Quebec)

BA02 LEGAL NAME AND ADDRESS OF BIDDER

Legal Name: _____

Operating Name (if any):_____

Address: _____

Telephone: _____ Fax: _____

PBN: _____
https://buyandsell.gc.ca/for-businesses/selling-to-the-government-of-canada/register-as-a-supplier

E-mail address: _____

Industrial Security Program Organisation Number (ISP ORG#) _____
(when required)

BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the Total Bid Amount of

$ _____excluding Applicable Taxe(s).
(amount in numbers)

BA04 BID VALIDITY PERIOD

The bid must not be withdrawn for a period of 60 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Bidder's offer by Canada, a binding Contract will be formed between Canada and the Bidder. The documents forming the Contract will be the Contract Documents identified in "Contract Documents (CD)" section.

BA06 CONSTRUCTION TIME

The Contractor must perform and complete the Work from the date of notification of acceptance of the offer until February 28, 2021.

BA07 BID SECURITY

The Bidder must enclose bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

BA08 SIGNATURE

_____
Name and title of person authorized to sign on behalf of Bidder (Type or print)

_____ _____
Signature Date

APPENDIX 1 - INTEGRITY PROVISIONS

(Text copied from the Ineligibility and Suspension Policy http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html dated 2016-04-04)

List of names: All Bidders, regardless of their status under the Policy, must submit the following information when participating in a procurement process or real property transaction:

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

If the list of names has not been received in a procurement process or real property transaction by the time the evaluation of Bids or Offers is completed, or has not been received in a procurement process or real property transaction where no Bid/Offer will be submitted, the Contracting Authority will inform the Bidder of a time within which to provide the information. Providing the required names is a mandatory requirement for award of a contract or real property agreement. Failure to provide the list of names within the time specified will render a Bid or Offer non-responsive, or the Bidder otherwise disqualified for award of a contract or real property agreement.

APPENDIX 2 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

(page 1 of 2)

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA APPRENTICE PROCUREMENT INITIATIVE

1. To encourage employers to participate in apprenticeship training, Bidders, bidding on construction and maintenance contracts by Public Works and Government Services Canada (PWGSC) are being asked to sign a voluntary certification, signaling their commitment to hire and train apprentices.

2. Canada is facing skills shortages across various sectors and regions, especially in the skilled trades. Equipping Canadians with skills and training is a shared responsibility. The Government of Canada made a commitment to support the use of apprentices in federal construction and maintenance contracts. Contractors have an important role in supporting apprentices through hiring and training and are encouraged to certify that they are providing opportunities to apprentices as part of doing business with the Government of Canada.

3. The Government of Canada is encouraging apprenticeships and careers in the skilled trades. In addition, the government offers a tax credit to employers to encourage them to hire apprentices. Information on this tax measure administered by the Canada Revenue Agency can be found at: www.cra-arc.gc.ca. Employers are also encouraged to find out what additional information and supports are available from their respective provincial or territorial jurisdiction.

4. Signed certifications on page 2 of 2 will be used to better understand contractor use of apprentices on Government of Canada maintenance and construction contracts and may inform future policy and program development.

5. The Contractor hereby certifies the following:

   In order to help meet demand for skilled trades people, the Contractor agrees to use, and require its subcontractors to use, reasonable commercial efforts to hire and train registered apprentices, to strive to fully utilize allowable apprenticeship ratios * and to respect any hiring requirements prescribed by provincial or territorial statutes

   The Contractor hereby consents to this information being collected and held by PWGSC, and Employment and Social Development Canada to support work to gather data on the hiring and training of apprentices in federal construction and maintenance contracts.

   To support this initiative, a voluntary certification signaling the Contractor's commitment to hire and train apprentices is available at page 2 of 2.

   If you accept fill out and sign page 2 of 2.

   ***** ***The journeyperson-apprentice ratio*** *is defined as the number of qualified/certified journeypersons that an employer must employ in a designated trade or occupation in order to be eligible to register an apprentice as determined by provincial/territorial (P/T) legislation, regulation, policy directive or by law issued by the responsible authority or agency.*

Voluntary Certification

(To be filled out and returned with bid on a voluntary basis)
(page 2 of 2)

Note: The contractor will be asked to fill out a report every six months or at project completion as per sample "Voluntary Reports for Apprentices Employed during the Contract" provided at Annex C

Name: _____

Signature: _____

Company Name: _____

Company Legal Name: _____

Solicitation Number: _____

Number of company employees: _____

Number of apprentices planned to be working on this contract: _____

Trades of those apprentices:

_____

_____

_____

_____

_____

_____

_____

ANNEX A - CERTIFICATE OF INSURANCE (Not required at solicitation closing)

CERTIFICATE OF INSURANCE

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

Description and Location of Work	Contract No.
Water Treatment System Upgrade at the St-Armand Border Crossing (Quebec)	EF928-210499/001/MTC
	Project No. R.050773.009

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code

Name of Insured (Contractor)	Address (No., Street)	City	Province	Postal Code

Additional Insured

Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
Commercial General Liability				**$**	**$**	**$**
Umbrella/Excess Liability				**$**	**$**	**$**
Builder's Risk / Installation Floater				**$**		
Insert other type of insurance as required				**$**		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

CERTIFICATE OF INSURANCE Page 2 of 2

General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The Policy shall be endorsed to provide the Owner with not less than 30 days' notice in writing in advance of any cancellation or change or amendment restricting coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.

The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:

(a) Blasting.
(b) Pile driving and caisson work.
(c) Underpinning.
(d) Removal or weakening of support of any structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.

The policy must have the following minimum limits:

(a) **$5,000,000** Each Occurrence Limit;
(b) **$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
(c) **$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.

Builder's Risk / Installation Floater

The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.

The policy must permit use and occupancy of any of the projects, or any part thereof, where such use and occupancy is for the purposes for which a project is intended upon completion.

The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.

The policy must have a limit that is **not less than the sum of the contract value** plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.

The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2).

The insurance must be placed with a member of the International Group of Protection & Indemnity Associations or with a fixed market in an amount of not less than the limits determined by the *Marine Liability Act*, S.C. 2001, c. 6. Coverage must include crew liability, if it is not covered by the statutory requirements of the Territory or Province having jurisdiction over such employees.

The policy must waive all rights of subrogation against Canada as represented by Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.

Other types of Insurance

To be inserted below according to specifics of project.

Use separate page if needed.

ANNEX B - VOLUNTARY REPORT FOR APPRENTICES EMPLOYED DURING THE CONTRACT (Sample)

(This report is not required at bid deposit)

The Contractor should compile and maintain records on the number of apprentices and their trade that were hired to work on the contract.

The Contractor should provide this data in accordance with the format below. If no apprentices were hired during the contract period, the Contractor should still provide a "nil" report.

The data should be submitted to the Contracting Authority either six months after contract award or at the end of the contract, whichever comes first.

Number of apprentices hired	**Trade**

SPECIFICATION OF WORK
WATER TREATMENT SYSTEM UPGRADE AT THE ST-ARMAND BORDER CROSSING

Prepared by:
Environmental Services
Public Services and Procurement Canada

October 2020

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1.0 Background

As a federal employer, the Canada Border Services Agency (CBSA) must ensure that the water intended for human consumption provided to its personnel at border crossings across the country is drinkable and that the water supply is reliable and sufficient.

The CBSA is responsible for about twenty-four (24) border crossings in Quebec with a non-municipal drinking water supply. Many of these crossings are isolated, and most of them rely on local sources like groundwater. Water treatment processes such as filtration, softening and disinfection vary considerably between locations.

The CBSA has been conducting various levels of water quality monitoring at its facilities since 2004, as part of its National Potable Water Monitoring Program. Raw water samples have been collected from most of these sites for a few years.

The analyses carried out show that in several cases, treatment devices must be added to the treatment line in place to guarantee safe water at all times.

The CBSA has directed Public Services and Procurement Canada (PSPC) to retain the services of a firm qualified to work on the water treatment system at the St-Armand (Philipsburg) border crossing in the Montérégie region.

2.0 Site description

The border crossing addressed in this mandate, its characteristics and identified needs are the following:

- Address: 10 Route 133, St-Armand, QC, J0J 1T0
- Buildings: 2 buildings named “international” and “commercial”
- Number of employees: maximum 25 employees per day
- Opening hours: open 7 days a week, 24 hours a day
- Wells:
    - #1 (commonly known as the “Des frères” well) is located along Route 133 South, more than 32 metres deep, was dug in 1989, has a 1/2 HP submersible pump and an estimated capacity of 13,000 litres/day.
    - #2 (commonly known as the “commercial” well) is located at the southern end of the commercial building, more than 92 metres deep, was dug around 1960, has a 1 HP submersible pump and an estimated capacity of 56,000 litres/day.
- Estimated daily water consumption: 20,000 litres/day
- Existing water treatment equipment: 2 paralleled softeners, 1 chlorine metering pump, 6 contact tanks 1.8 m high by 1.2 m in diameter and 2 pressure pumps.

Objectives of the water treatment system upgrade:

- Control the discharge of chloride and sodium ions when backwashing the softeners
- Increase disinfection capacity by adding UV reactors
- Reduce the concentration of sodium and total dissolved solids for distribution to two of the site's kitchenettes.
- Reduce the hardness and the total dissolved solids in the water supplying a humidifier

Taking into account the current treatment line, problems with water quality and results of the bacteriological and physicochemical analyses for each of the two wells, a firm named Asisto Inc. developed plans and specifications to specifically define the work to be carried out. These documents are included in Appendix 1.

An updated analysis of the two wells' physicochemical characteristics was performed, and the results are included in Appendix 2.

3.0 Mandate

The mandate of the contractor selected for the work will involve installing the equipment required to modify and complete the water treatment system while consistently ensuring the bacteriological and physicochemical quality of the drinking water.

The work must take into consideration the site's particularities, which include, but are not limited to, the equipment already in place, the characteristics of the drinking water and the observed problems with water quality.

The objectives of the mandate are the following:

- Provide and install the equipment required in accordance with this work specification and the attached plans.
- Produce a maintenance and operations manual for all of the equipment in the water treatment system.

To do so, the selected firm must carry out all of the required tasks, including:

- List the proposed equipment in accordance with the specifications of the plans and specifications in Appendix 1;
- Propose a schedule of work for written approval;
- Install the equipment, commission it, and collect water samples before and after treatment (water inlet and kitchen faucet). Validate its performance under the Canadian Drinking Water Guidelines and Schedule 1 of the Regulation respecting the quality of drinking water;
- Train one technician designated by PSPC to maintain the equipment installed; and

- Provide a maintenance and operations manual for the equipment (French version only). This document must include the following:
  - Cover page;
  - Overall photograph of the treatment chain with the main components identified;
  - Name, serial number and certification of main equipment;
  - Recommended maintenance and frequency of maintenance for main equipment; and
  - Maintenance manuals for the main equipment installed by the contractor.

4.0 Specific administrative clauses

4.1 General scope of the work

The contractor must provide all of the materials and equipment required, of the described quality, as well as the labour and tools needed to perform the work described in the plans and specifications.

4.2 Laws and regulations, permits and patents

The contractor must respect the laws and regulations, codes (with the main ones being: the Quebec Construction Code, NFPA and the Canadian Electrical Code with Quebec amendments), applicable ordinances and the requirements of the relevant authority.

The contractor must obtain all of the permits, licences, patents and certificates required to carry out the work. The contractor must provide certificates indicating that the work is in compliance with the Commission des normes, de l'équité, de la santé et de la sécurité au travail (CNESST) regulations.

4.3 Standards

For any standards mentioned hereinafter, refer to the latest version of those standards.

4.4 Technical specifications

The contractor must provide the PSPC representative with a digital copy for Acrobat Reader (PDF) of the technical specifications indicating the characteristics, construction details, capacity, performance, quality, installation details, etc. for all of the devices and equipment, as well as special details related to installation.

4.5 Marked-up drawings and instruction manuals

The PSPC representative must receive training on the operation and maintenance of all systems and equipment. Before the work is provisionally accepted, the contractor must provide one paper copy and one digital copy (email or USB) to the PSPC representative of the instruction manual including all of the operation and maintenance instructions for the main pieces of equipment requiring periodic maintenance or potential repairs, a copy of the shop drawing as approved, a

copy of the manufacturer and the contractor's written warranty, a sheet containing the address for the manufacturer's maintenance service and three copies of the redlined plans.

4.6 Equivalents

The products proposed as equivalents must be approved by the PSPC representative. If changes to the planned installations are required as a result of the equivalents, the additional costs must be covered by the sub-contractor who proposed the equivalent. In addition, the contractor who presents the equivalent is responsible for proving to the PSPC representative that the product is indeed equivalent, providing any elements required to support it.

4.7 Dimensions

The contractor must verify all of the dimensions before the beginning of work on the site, and notify the consultant (project engineer employed by PSPC) and the PSPC representative of any error and/or omission. Do not take measurements from the scale plans; only the measurements indicated are valid. The measurements indicated on the plans are in metres (unless otherwise specified).

4.8 Access and storage of materials

The work will be carried out on an active CBSA site. Access to the work site is regulated and the contractor must take that into account. The contractor must use the regulated access to enter the work site and repair any damage resulting from its use.

The contractor must not block the entrances and exits to neighbouring buildings and protect the users of those buildings from the hazards resulting from the work site.

The contractor must agree with the owner on locations to store materials, as applicable.

4.9 Work on-site

The activities of the CBSA take precedence over the project at all times.

4.10 Maintaining water supply during the work

The site will remain in operation, and therefore the contractor must put procedures in place to limit the impacts on water quality and distribution. These procedures, and their phasing, must be submitted to the consultant for approval. The consultant may request changes to reduce the impacts on the production and distribution of drinking water. Except in cases of night work imposed by the owner, the contractor may not make any claims. The contractor must take into account the installation of temporary mains and valves to facilitate the work and limit water shut-offs. The contractor may shut the water off on two occasions for a duration of one hour each. The water shut-offs must be approved ahead of time by the consultant and PSPC representative, and the work carried out during these shut-offs must be done in the presence of the operator.

4.11 Materials and installation

The materials used must be new and top-quality. Any equipment that is part of the systems must be CSA-approved for use. It must be installed according to manufacturer recommendations.

4.12 Recyclable materials

The owner reserves the right to collect recyclable materials and has the final say on any materials such as fittings, pipes, process equipment, etc. that are disposed of.

The contractor will be responsible for all materials not collected by the owner, and must load, transport and dispose of them away from the work site or in a site designated by the owner. The contractor is entirely responsible for the site and the disposal method used for the materials.

4.13 Passing near buildings and other existing work

Anywhere the work comes near the buildings and other ongoing work, the contractor must take all necessary precautions to avoid damaging said buildings and work. The contractor is solely responsible for any damage to property.

4.14 Cleaning

At all times, the contractor must take the measures required to regularly clean dirty surfaces during the execution of the work until the end of the work. In addition, the contractor must also take all necessary measures to control dust until the end of the work.

For the work to be accepted, the contractor must clean the places affected by interior and exterior work to the satisfaction of the consultant at the end of every work day.

The work site must be left neat and tidy at the end of every work day to the satisfaction of the owner.

4.15 Restoration of work site

The contractor must plan and is responsible for any holes, sealing any openings and repairs inside the service buildings to install the mains and their supports.

The contractor must plan and is responsible for repairing the lawn where it has been damaged by the work by spreading 150 mm of sifted topsoil and covering it with top-quality grass sod.

4.16 Contradictions between the plans and specifications

Overall, the specifications take precedence over the plans.

Nonetheless, if there is a contradiction between the specifications and the plans, the contractor must immediately notify the consultant and PSPC representative.

The contractor cannot claim any fees for contradictions between the specifications and the plans, between two elements and/or many elements of the specifications or between two or more elements of the plans.

4.17 Communication

Any decisions required for the work to be carried out efficiently must be made in close collaboration between the contractor, the consultant and the PSPC representative. The contractor is not authorized to communicate directly with CBSA personnel. The contractor must not share any information with CBSA personnel.

4.18 Start-up meeting

A start-up meeting with all of the stakeholders will be held at the beginning of the project, and will be coordinated by PSPC. This meeting will cover, but will not be limited to, the following items:

- Roles of the stakeholders;
- Project presentation and background;
- Contractor's proposal (presentation of equipment and certification); and
- Schedule of work for the project.

5.0 General technical clauses

5.1 Object of the work

This call for tenders from PSPC concerns the upgrading of the drinking water treatment system at the St-Armand border crossing and the installation of two residential reverse osmosis systems in the sinks in the two buildings' employee dining rooms.

5.2 Scope of the work

This call for tenders from PSPC concerns the upgrading of the drinking water treatment system at the St-Armand border crossing and the installation of two residential reverse osmosis systems in the sinks in the employee dining rooms in the commercial and the international buildings.

The work covered in this section consists mainly of, but is not limited to, the following:

- Dismantling and disposing of the existing reverse osmosis system through the isolating valves, as represented on the plans.
- Dismantling and disposing of the platform on which the salt bags for the softeners are currently stored.
- Replacing the existing 37 mm (1 ½ inch) copper pipe fittings before and after the softeners with new 50 mm copper pipe fittings.
- Modifying the wells' force mains as shown on the plans and to allow the following features:
  - Extending the wells' force mains to the wall above the current chlorination by adding sections of 37 mm PVC pipes. Providing and installing a 37 mm valve at the end of the "commercial" well's force main, before the connection with the "Des frères" well force main.
  - Providing and installing the sections of pipe and the required fittings to connect the two wells' force mains into one projected shared 50 mm PVC pipe.

- Providing and installing the fittings required to connect the projected shared main to the 63 mm copper pipe that feeds the softeners.
- Providing and installing a 50 mm bronze or PVC check valve on the wells' new shared main before the connection to the 63 mm pipe leading to the softeners.
- Providing and installing two valves, specifically:
  - One 37 mm PVC valve to insulate the "commercial" well's force main before the connection to the main pipe; and
  - One 50 mm PVC valve on the wells' shared main that feeds the softeners.
- Providing and installing a tee on the 63 mm copper return pipe for the softened water that will direct that water to the UV reactors through a 50 mm PVC pipe. Providing and installing a 50 mm PVC isolating valve on the pipe leading to the UV reactors.
- Providing and installing a 50 mm PVC bypass pipe with a 50 mm isolating valve to direct the water from the wells directly to the UV reactors while allowing, through a clever valve configuration, the backflow water from the feed pumps to flow through the softeners.
- Dismantling and relocating the water intake pipe that is currently connected to the "Des frères" well force main onto the new shared pipe.
- Providing and installing a hydropneumatic tank operating at 200 kPa on the feed pipe for the softeners (63 mm), including the required fittings and an isolating valve to insulate the tank if needed.
- Providing and installing a pressure switch on the feed pipe for the UV reactors, including the electrical connection from the electrical outlet for the chlorine metering pump. The pressure switch must be configured to ensure the operation of the two well pumps when the pressure drops to 200 kPa and to stop them when the pressure reaches 410 kPa.
- Providing and installing a pressure regulation valve on the feed pipe for the UV reactors to ensure a pressure of 200 kPa is maintained and will shut off when the maximum level is reached in the contact tanks (existing level indication).

- Replacing the existing 37 mm fittings at the entrance and exit of the softeners with new 50 mm fittings, including the valves and connectors on the 63 mm copper pipes and the softeners' control heads (50 mm).
- Dismantling and relocating the chlorine metering pump and its containment pan to the location indicated on the plans. Its performance will not be changed and a single intake point will be kept: the one that is currently furthest and that, at the end of the work, will be below the UV reactors.
- Providing and installing a regulated system for discharging regeneration water from the softeners that includes, but is not limited to:
  - A storage tank for the regeneration water from the softeners in which the contractor will direct the softeners' discharge pipes.
  - A duplex pump skid (mounted or framed) for peristaltic metering pumps to regulate the discharge of regeneration water in the drain. The skid must be prefabricated and mounted by the provider and include the following accessories: isolating valves,

calibration cylinders, backpressure valves, glycerin pressure gauges, etc. The contractor must also provide and install the pipes leading to the tanks and discharging to the drain; and
  - Providing and installing a double electrical outlet from the existing electrical power source for reverse osmosis to connect the duplex skid pumps.

- Providing and installing a UV disinfection system that includes:
  - Three UV reactors installed in parallel, each with a 5 micron filter, a 10 gpm flow restrictor, a check valve, three isolating valves (before the filter, after the filter, after the UV reactor), a 4-20 mA UV sensor interface and a monitoring module shared between the three UV reactors for diagnosing the reactors;
  - An air release valve on the feed pipe shared by the UV reactors; and
  - Three double electrical outlets installed from the electrical outlet on the opposite wall to power the UV reactors and the relocated chlorine metering pump.

- Connecting the pipes at the exit of the three UV reactors to the feed pipe for the existing contact tanks. It should be noted that a motorized valve whose opening is tied to the level indicator is currently installed in the contact tanks and that the other end of the feed pipe for the tanks must be shut with a PVC plug.
- Providing and installing two reverse osmosis systems with 9-gallon flat-bottomed storage tank and counter faucets to be installed under the sinks in the international and commercial service buildings, including the changes made to kitchen furniture for the installation of this equipment.
- Providing and installing supports and attachment hardware for all of the equipment and pipes installed as part of the work.
- Adding 12 mm of insulation to the pipes with a vapour barrier and protective covering on all projected pipes of a similar colour and finish to the existing insulation/pipe.
- Identifying the pipes and the existing and projected processing and electrical equipment.
- Preparing the shop drawings for the processing and electrical equipment.
- Commissioning all of the projected and relocated equipment, including the following work:
  - Verifications, testing and commissioning;
  - Manufacturing and operating warranties;
  - Maintenance and operations manuals in French;
  - Having the personnel trained by the technicians for the providers of the equipment installed;
  - Operating warranties;
  - Providing technical assistance to the equipment suppliers for the installation and connection of all the components listed above for the testing and commissioning of the equipment;
  - Providing a report written by the provider on the compliance of the installation and the equipment's operation; and
  - Cleaning and restoring the site after the work is completed.

5.3 Requirements

5.3.1 Shop drawings

The contractor must submit all plans, shop drawings and technical specifications for the proposed equipment within 21 days of the contract award. The contractor is responsible for verifying the exact and final dimensions on the site and including them in the shop drawings to be submitted so that all of the new equipment fits in perfectly with the existing equipment. The contractor must ensure the precision and accuracy of the plans and shop drawings to avoid delays in approval. Any corrections must be minor.

Any shortcomings in these aspects will be attributed to the contractor with regard scheduling delays.

5.3.2 Compliance of drinking water

All materials, equipment and accessories in direct or indirect contact with drinking water must comply with NSF 61.

6.0 Specific technical clauses for components

6.1 Plumbing and valving

Unless otherwise indicated, the contractor must follow these standards for the specified division. These standards are not intended to restrict or replace the opinion of a professional.

All thermoplastic plumbing must come from one single provider.

All accessories and valving must come from one single provider.

The physical locations of the plumbing, valving and accessories to be installed in the building are indicated on the plans in a diagram, and no dimensions are clearly specified.

The contractor is responsible for establishing the final location of the equipment and all other components so that they are accessible to operations personnel.

The fittings must be waterproof, and can be either Chemflare, glued, sleeve, threaded or flanged.

The sleeve joints must be cold welded.

Whether the contractor is part of the process engineering or not, the contractor must provide all of the separable union fittings required to easily dismantle the plumbing. All of the equipment connected to the thermoplastic plumbing must be connected using separable union fittings.

The water systems installed as part of this work include, but are not limited to, the following type of equipment: plumbing, supports, guides, anchors, valving and accessories.

Connections to existing copper pipes must be made using a copper tee of the same diameter welded to the existing pipe. Installing tees made of another material is forbidden.

The existing cut PVC pipes with abandoned sections must be blocked with a glued plug. On sodium hypochlorite pipes, the contractor must use glue specifically made for that purpose.

6.1.1 Thermoplastic plumbing

The minimum requirements for PVC plumbing are:

- Type 1, grade 1120 CPVC under standard ASTM D1758, schedule classification 12454-a, Schedule 80 ASTM D-1 1784 for screwed fittings, Schedule 80 for solvent-glued fittings ASTM D-2564, 2855 with socket fittings.

6.1.2 Pipe supports

The pipes will be supported by supports on the walls or ceiling.

The plumbing and the accessories must be attached in compliance with the manufacturer's recommendations.

Suspension strap supports are forbidden.

All of the supports must include at least the three following components: anchor sleeve, suspension rod, clamp and strap.

The rods must be made of stainless steel, aluminium or fiberglass with mechanical threading that is long enough to adjust the various levels of plumbing.

The space between supports must not exceed 1.5 m.

The supports must be placed less than 300 mm (12'') from each of the horizontal elbow fittings.

The height of the suspension rods must be adjusted to allow equal load distribution.

A dielectric fitting must be used when stainless steel comes into contact with another material, or another stainless steel component. In that case, neoprene must be placed between the support and the pipe when the use of a dielectric fitting is possible.

6.1.3 Location

The service plumbing must be installed in the available spaces in the most practical way possible. The circulations proposed in the plans and diagrams are for information purposes. The contractor may propose a different installation and implement it if it is approved by the operator (technician responsible for the building's operation) and the consultant. Any unused pipes must be removed up to the main line's closest connection.

6.1.4 Valving

Unless otherwise indicated, the valving must comply with ANSI standards, Class 200, 1400 kPa, shock-resistant, with internally threaded or weldable ends.

All valving components of the same type must be manufactured by a single provider.

The valving components must comply with the standards set by the Manufacturers Standardization Society of the Valve and Fittings Industry.

The materials used to manufacture the valving must comply with the standards set by the American Society for Testing and Materials (ASTM).

Ball valve

The valves must have a diameter equal to or lesser than 63 mm and be screwable: 316 stainless steel, PTFE bushing, robust chrome stopper, Teflon seat and lever control.

The ball valves and the ball check valves must be made of PVC with compatible fittings and bushings.

Ball check valve

The components of the ball check valve (O-ring, ball, body, SPT connection) must be made of Schedule 80 PVC.

The ball check valve must be able to be mounted horizontally or vertically.

The valve must be removable without damaging the plumbing. The ball check valves and foot valves must be “true union” PVC and the inline strainers must be “true union.”

Drain valve

Unless otherwise indicated, drain valves must be installed at lower points. The drain valves must be 19 mm in diameter, made of bronze and have threaded ends to connect to a flexible pipe.

Pressure regulating valve

The pressure regulating valve must have a pilot that maintains pressure above 200 kPa before the valve. The valve must be open and closed progressively to avoid pressure surges. This pilot will receive information on the levels in the contact tanks and will shut off when the maximum level is reached and turn on when the minimum level is reached.

The valve must have a position indicator (open/closed).

A support must be installed below and above this valve and the contractor is responsible for connecting and putting the valve into service.

6.1.5 Testing

The testing will be performed by applying 550 kPa of pressure for a 1-hour period. Testing must not be performed until enough time has passed since the last fitting has been connected end-to-end to the glued fitting. The contractor must submit the procedure ahead of time to the consultant and the PSPC representative.

The portion of pipe isolated by drain valves must be filled with water and pressure must be applied to the plumbing. The pump, connecting pipes and all required devices such as pressure gauges, etc. must be provided and installed by the contractor. The pressure gauge must be installed at the lowest point of the plumbing.

Before applying the test pressure, all air must be removed from the plumbing. If there are no permanent air release valves at every high point, the contractor must provide and install main stops at those points so that all the air can be released as the pipe fills with water. Once the air is completely removed, the main stops must be shut and pressure may be applied.

All of the plumbing, fittings, valves and connectors must be carefully examined during testing. All of the plumbing and valves broken by this pressure test must be removed and replaced with adequate equipment by the contractor, and testing may resume until the plumbing is entirely waterproof.

6.2 UV disinfection system

6.2.1 Scope of the work

Provide and install the materials, equipment and installations required to deliver a UV disinfection system consisting of three closed reactors for a pressurized flow with low-pressure, high-intensity mercury lamps. These reactors must be installed in parallel as shown on the operation diagram. The system must be complete and operational with its control equipment and accessories, as indicated and specified in this document. The disinfection system must be installed by the contractor and verified by qualified personnel from the system provider. The system must be commissioned by the contractor with the provider’s cooperation.

6.2.2 Acceptable products

A) Quality assurance

The ultraviolet disinfection system must be certified, MELCC approved, and have a data sheet on the department site prior to bid closing.

Any manufacturer that submits a system that is not recognized as an equivalent must submit its product at least 15 days prior to bid opening to be considered.

Provide proof of performance in similar applications with low-pressure lamp systems. The manufacturer must be able to demonstrate the performance of at least 10 installations with the same type of equipment in Quebec.

The proposal must include a detailed description of the unit, the control panel, lamps and ballasts, engineering reports indicating pressure drop, reactor performance, UV dose, testing equipment, and sampling and calculation methods.

Provide a manufacturer's statement indicating any non-compliances or exceptions from the specifications, indicating the specification in question and the proposed alternative, as well as the reason for the exception.

The physical layout of the system as shown in the engineering drawings must be maintained.

B) General requirements

Provide a complete system, pre-mounted on polyester panels in groups of three units, with prefilter(s), reactor(s), automatically closing solenoid valve(s), integrated or external flow restrictor(s), control panel(s) with integrated ballast, safety fan(s), UV intensity sensor(s), UV intensity sensor interface(s) and monitoring and communication module.

C) Design criteria

Provide a set of UV equipment to disinfect potable water. The set must have the following characteristics:

- Peak flow: 1.26 l/s (20 US gpm)
- UV dose: 40 mj/cm2
- Water temperature: between 5°C and 30°C
- Air temperature: between 0°C and 40°C
- UV transmittance @ 254 nm: 75%
- Iron content (fe): <0.3 mg/l
- Hardness: <120 mg/l
- Equipment redundancy: 3 units required (2+1)

The UV system will be pre-mounted on vertical panels in groups of three units, and will occupy the following space:

- Height: +/- 2.15 m / width: +/- 2.21 m maximum
- Connection diameter: 50 mm (2 in)
- Certified in accordance with standard NSF/ANSI 55 Class A.
- Wetted parts are made of Teflon, Viton or stainless steel (type 304 or 316).
- UV lamps can be changed without emptying the water from the system.
- The power supply for the UV system ballast is 120vac, 60Hz, 1 phase.
- Provide a 4-20 mA interface for the UV intensity sensor, with alarm thresholds
- Provide cables with cable troughs, grounded power outlets, cases, covers, etc.

D) Prerequisites for performance

A minimum UV dose of 40 mj/cm^2 at 1.26 l/s (20 US gpm) at the end of the lamp's service life is required for each unit.

E) Shop drawings

Prepare engineering drawings for review, indicating the following:
- A complete description with sufficient details for comparing items to specifications;
- Dimensions and installation requirements;
- Electrical drawings.

F) Spare parts

The following spare parts must be provided:
- A spare lamp for each unit;
- A spare sleeve for each unit;
- 3 ballasts minimum;
- 3 UV sensors minimum;
- 3 spare cartridges for 5-micron filters.

6.2.3 UV reactor characteristics and accessories

A) Prefilter

Prefilters will be provided with a 5-micron filter cartridge. Each prefilter will be designed to handle 75 l/min (20 US gpm) of flow and 690 kPa (100 psi) of pressure. Each unit will be made of NSF polypropylene and incorporate three separate parts, with a locking ring for quick and easy disassembly. The prefilter must include a connection for a pressure gauge and a connection for a lower drain with a drain plug. The input and output connectors are 25 mm (1'' FPT).

The prefilters will be provided with a 5-micron filter cartridge made of NSF polypropylene, and will be resistant to a temperature of 38°C.

Two pressure gauges must be installed for each filter, upstream and downstream, to measure the pressure drop associated with clogging in the filter cartridge.

B) UV reactors

The reactor will be made of 316L stainless steel, with 1 ¼ '' MNPT input connectors and 1'' FNPT output connectors, and an internal flow restrictor. The reactor will be designed for vertical installation. Each reactor must include a safety solenoid valve and a UV intensity sensor.

The UV lamp will be a high-intensity amalgam lamp, and must be under warranty for continuous operation for two years. The lamp power will be 200 watts. The lamp must be inside a shock-resistant quartz sleeve.

The reactor will be cooled by natural air convection, and a safety fan will be included to prevent high temperatures inside the reactor during zero-flow periods.

Each reactor must include a control panel with integrated ballast. The ballast will be designed with a reset button in case of overload. No fuses will be accepted for ballast protection. The power source for the panel will be 120 volts, 60 Hz, one (1) phase, 1.6 amperes. Total consumption will be 160 watts.

C) Interface for UV intensity sensor

Each UV reactor must include a 4-20 mA interface for the UV intensity sensor. The interface must include three separate levels of intensity: low UV anomaly, low UV warning and normal UV. These signals can be connected to an external alarm panel or remote monitoring.

D) System monitoring module

A monitoring module must be installed to monitor system performance. The module must be able to monitor up to nine UV reactors. Each module must include two external contacts (1 nc/1 no). The module must provide information on each reactor's operational history, operating time and UV dose. The module must be able to take a memory card to save all data remotely. The module will allow the user to select a display language (English or French).

6.2.4 Execution

A) Installation

In accordance with approved drawings and manufacturer instructions.

B) Start-up and training

The manufacturer or a certified person must perform the final start-up of the UV disinfection system after it is installed on site. Following start-up, training must be provided to the people responsible for operating the system. On-site service must include at least two days on site, including at least four hours of training for operating personnel.

An operating and maintenance manual must be provided to the operator and the PSPC representative. Two hard copies and one electronic copy (email or USB) must be provided prior to start-up.

C) Leak testing

The testing will comprise a pressure test at 550 kPa for one hour, similar to the test prescribed for piping and valves, as well as all tests used to verify correct operation, to be conducted by a UV reactor supplier technician, who must provide a statement of compliance for the setup and operation.

6.3 Hydropneumatic tank

6.3.1 Scope of work

Provide and install a pulsation dampener with a pressure switch, which will trigger the starting and stopping of the well pumps for respective pressures of 200 and 410 kPa. The system will be complete and operational, with control equipment and accessories, including an isolation valve installed on the tank's service line and a pressure switch for well pump operation.

6.3.2 Acceptable products

The hydropneumatic tank must have a minimum capacity of 300 litres, be preset to 175 kPa, and be able to withstand 1,400 kPa of pressure. It will be adapted for use with potable water (NSF/ANSI 61) and be bolted to the floor.

6.4 Storage tank for softener regeneration water

6.4.1 Scope of work

Provide and install a tank with a minimum capacity of 1,360 litres to receive softener regeneration water and allow for its regulated release to the drain by the pumps.

6.4.2 Acceptable products

Closed tank made of white PEHD, 1,360 litres, compliant with the following minimum requirements:

- Volume of at least 1,360 litres
- Through-wall adaptors:
  - 25 mm NPT with EPDM joint on the lower part of the tank for pump suction
  - 50 mm NPT with EPDM joint on the upper part for supply from softeners
  - 50 mm NPT on the side of the tank, on the upper part, for overflow directed toward the drain
  - 25 mm NPT on the lower part for emptying directed toward the drain
- Access cover on the upper part with a diameter of at least 400 mm
- Material: PEHD

The contractor must provide and install PVC pipes and isolation ball valves with a diameter corresponding to the through-wall adaptors.

6.5 Duplex pump skid for draining regeneration water

6.5.1 Scope of work

Provide and install a duplex pump skid made up of two peristaltic pumps to drain the softener regeneration water tank at a flow rate of 76 L/hr. Each pump is designed to provide the required discharge rate, in order to ensure redundancy. The pumps and their accessories will be installed on a pre-fabricated and pre-mounted panel provided by the pump supplier, including the accessories required for correct system operation (isolation valve, back pressure valve, calibration cylinder, hoses, etc.) and the installation of a duplex electrical outlet to connect pumps using the existing power supply for the reverse osmosis system. The pre-mounted panel will be attached to the wall in the location of the existing reverse osmosis system.

Provide and install the following conduits:

- 25-mm PVC conduit for pump supply from the tank
- Transparent 13-mm PEHD conduit for tank return
- Transparent 13-mm PEHD conduit for drain backflow

Provide and install a detection or level measurement system in the tank to control the start-up and stoppage of the drain pumps.

6.5.2 Acceptable products

A) Design

The two pumps must be identical. The operating point of the peristaltic pumps is 76 L/hr at 400 kPa, with a rotation speed of 55 rpm. The pumps must be **pre-fabricated, pre-mounted on a skid and pre-tested at the factory by the supplier before being sent to the site.** The peristaltic pumps must meet the following minimum requirements:

- Maximum flow rate of 122 L/hr at 100% motor speed at 60Hz;
- Maximum backflow pressure of 6 bar (70 psi);
- The pump will turn at a maximum speed of 55 rpm to reach a flow rate of 78 L/hr and 88 rpm to reach a maximum flow rate of 122 L/hr;
- ANSI 150# 12-mm universal flange, 316 stainless steel, single piece with 316 stainless steel insert. The hose is used as a seal between the cast casing and the pump connections;
- Natural rubber hose, construction reinforced with cord at each layer of material;
- The reduction gear is attached to the pump shaft to allow for slight movement, ensuring a longer life for the reducer;
- Pump maintenance must be performed quickly on site;
- The pump can run dry without the risk of premature wear on the hose;
- The rotation direction of the pump can be reversed;
- The carbon steel side cover has a plexiglass window for inspection of the rotation of the cast rotor;
- Spacing between the rotor and the reduction gear eliminates any risk of cross-contamination between the product and the oil;

- The speed reducer is equipped with a heavy-duty bearing;
- Includes a 1/2 HP motor, 56c TEFC casing;
- One reduction gear to adjust the rotor rotation to 58 rpm for a frequency of 60 Hz;
- Consistent torque ratio of 10:1;
- Power: 230v/3/60Hz;
- NEMA 4x variable speed drive, input 230 v, output 115 volts/1 ph 60Hz, with potentiometer for manual adjustment, installed and prewired on the pump;
- The pump is provided assembled and pre-filled with lubricant;
- Two-year warranty on manufacturer defects in the pump, excluding lubricant and hose;
- One-year warranty on the motor and speed reducer;
- Spare parts: 2 rubber hoses and 2 bottles of lubricant (1 per pump).

B) Alarms

The system must be able to transmit the following alarms:

- Error relays indicating an error and/or providing a warning to the controller/control panel; (option, not included) or status relays;
- Three indicator lights showing operating conditions:
  - Green light: pump functioning;
  - Yellow light: minor error warning;
  - Red light: major operating error alarm, pump stopped.

6.6 Reverse osmosis system

6.6.1 Scope of work

Provide and install two residential reverse osmosis systems in the kitchens of the two buildings, including hydraulic connections, storage tanks, faucets dedicated to osmosis water and accommodations for fixtures under the sinks.

6.6.2 Acceptable products

The reverse osmosis system must be made up of the following elements:

- Prefiltration for sediments;
- Cartridge dechlorination;
- Thin film composite osmosis membrane with a high rejection rate.

The design capabilities for the reverse osmosis system are the following:

- 20 l/d of osmosis water produced at 345 kPa for the commercial building
- 60 l/d of osmosis water produced at 415 kPa for the international building

Each reverse osmosis system will be equipped with a flat-bottomed 9 USG storage tank and a faucet.

The contractor will also be responsible for providing and installing all piping, fittings, accessories and supports required for the water supply, faucet supply and drainage.

7.0 Specific technical clauses – electricity

7.1 Work description

Provide all labour, materials, equipment, tools and services required to complete the electrical work set out in the plans and specified in this section or other sections of the specifications.

7.2 Scope of work

- Dismantle and dispose of the electrical elements associated with the mechanical process elements dismantled as part of the work;
- Provide and install all equipment, wiring, conduits, accessories, and supports required to connect the new mechanical process equipment;
- Provide and install new duplex electrical outlets as indicated in the plans to connect the new mechanical process equipment;
- Prepare shop drawings. These drawings must be prepared and signed by an engineer in good standing with the OIQ, specializing in this discipline;
- Identify the wiring, equipment and other accessories;
- Test, start up and adjust (if required) the equipment provided and installed by the contractor;
- Manufacturing and operating warranties;
- Maintenance and operation manuals in French;
- All related work required for the completion of the work.

7.3 Codes, standards, permits, taxes

Perform the installation in accordance with the Quebec Construction Code – Chapter V, Electricity: CSA c22.10-18, Industrial Control Equipment: CSA c22.2-14, and the National Building Code.

Meet all the requirements of the Bureau des Examinateurs Électriciens du Québec. Have plans approved upon contract award. The contractor must obtain from the consultant the number of copies of the plans required. If there is a discrepancy between the plans and the requirements of the Bureau des Examinateurs Électriciens du Québec, the contractor will provide the consultant and the PSPC representative with a copy of the comment letter for analysis. Copies of the plans will be covered by the owner.

Comply with applicable public utility standards, such as Bell Canada, Hydro-Québec, Videotron, etc.

Perform the work in accordance with the standards in effect.

All work must be completed in accordance with standard trade practices. The work and materials will comply with building codes, local regulations and the requirements of the plans and specifications at the time of the performance of the work. Where the requirements are contradictory or different, the more stringent requirements will take precedence.

The electrical contractor must include in its bid all taxes involved in the work.

7.4 Inspection and testing

Before powering on any part of the electrical system, provide and pay for measurement devices as part of the contract for the usual electrical tests (voltage and amperage measurements) on all feeders and branch circuits, and verify that the results comply with the electrical code and are to the consultant's satisfaction.

7.5 Shop drawings – provide pdf

All shop drawings will feature original manufacturer information and data sheets. No copies, screen captures, empty catalogue pages, or poor-quality reproductions will be accepted.

Shop drawings must bear the name of the manufacturer or a representative thereof.

Include only information related to the equipment for which the shop drawing is submitted. When there is a choice of materials on the drawing, indicate the equipment proposed with arrows or a marker. Provide a list of equipment submitted.

Submit shop drawings to the consultant and the PSPC representative.

All shop drawings submitted must have contractor approval. The work cannot begin until the consultant and the PSPC representative have issued their comments and the revised shop drawings have been completed.

- The review by the consultant and the PSPC representative serves only to determine compliance with the general design. It does not indicate approval of the detailed design set out in the shop drawings. Responsibility for details, errors and omissions in the shop drawings remains with the electrical contractor and its subcontractors.
- The electrical contractor is responsible for the dimensions and coordination associated with manufacturing or construction techniques, in accordance with the electrical code and in coordination with all subcontractors.

Shop drawings must include a description of equipment identification plates.

7.6 Grounding and bonding

Ground the networks using the rods in the ground in accordance with the Quebec Construction Code, Chapter V – Electricity, Section 10.

Maximum earth resistance must be 10 ohms.

Buried grounding conductors must be #2/0 AWG, bare copper, in accordance with paragraph 36-302 of the Quebec Construction Code, Chapter V. Use an approved connection method; refer to the requirements of the inspection bureau and public utilities.

Grounding conductors must be sized in accordance with the electrical code.
Bond all equipment using appropriate connectors.

Green wire sized in accordance with the electrical code is required in all conduits.

Bond all sections of cable trays as required by the electrical code, section 12-2208.

Bond all wall mounts and stand-alone structures using a #6 insulated green conductor.

7.7 Conduits and junction boxes

Conduits used will be rigid steel, thin-wall conduits (EMT), rigid PVC, flexible conduits and flexible liquid-tight conduits.

Conduits for direct burial will be rigid PVC only.

Conduits installed in a concrete slab will be rigid PVC or approved core-flex tubes. Conduits that are buried or in concrete must adapt to rigid PVC, EMT or rigid steel when they come out of the ground or the concrete slab.

Provide liquid-tight fittings, conduits and junction boxes for wash bays, exterior facilities and wet areas.

All straps, fittings and connectors for EMT conduits will be stainless steel, unless otherwise indicated by the PSPC consultant.

All underground conduits must be free of dirt, rocks and debris before conductors are installed. Pipes for future use must be correctly drifted and plugged. Clearly identify underground conduits in the final plans.

All conduits and junction boxes must be concealed. Confirm locations authorized for surface mounting with the consultant and the operator. The electrical contractor must coordinate with the general contractor and provide the labour required during the construction of concrete slabs and masonry. Use only boxes and fittings approved for this purpose.

All interior junction boxes will be cast metal, rigid PVC, aluminum or steel.

All conduits must be installed parallel to construction lines unless otherwise indicated.

7.8 Conductors and cables

Materials

- Conductors will be #14 gauge minimum. All conductors will be copper; aluminum conductors are authorized for feeders of 200 A or more.
- The gauges of cables and conductors will be indicated in American wire gauge (AWG).
- All conductors #8 gauge or more will be stranded copper.

- All conductors #10 gauge or less will be solid copper.
- Supply conductors must be rw90 x-link, insulated for 600 V for voltages of less than 600 V and for 1000 V for voltages of more than 600 V.
- Shielded cables (bx): compliant with CSA c22.2 No. 51. Used in dry, concealed locations.
- Non-metallic sheathed cables: compliant with CSA c22.2 No. 48 - m90, copper, PVC NMD-90.
- Flexible cords: copper conductors, unless otherwise indicated.

All materials used to terminate, connect or splice conductors must be approved for that purpose, and must be of an appropriate size for that specific application and type of conductor. They must be installed in strict compliance with the manufacturer's recommendations, using tools recommended by the manufacturer.

Common neutrals are not authorized unless otherwise indicated.

When several circuits are combined in the same conduit, and the number of conductors is greater than four (any combination of phases and neutrals), the following restrictions apply, in addition to those set out in the electrical code.

Normal, non-essential circuit

- Maximum of 16 conductors per conduit. Minimum size is ¾ in for up to eight conductors in one conduit. For more than eight conductors, the minimum size is 1 in. Do not install different types of circuits in one conduit.
- Minimum gauge for all conductors in the conduit: 10 AWG.
- Only 15 A and 20 A circuits can be combined in a conduit.

Ground fault circuit interrupter

- Do not use multiconductor cables with a shared neutral for a circuit with a GFI breaker or GFI receptacle.

Emergency power circuit

- Maximum of eight conductors per conduit.
- Minimum conduit size is ¾ in.
- Do not install different types of circuits in one conduit.
- Only 15 A and 20 A circuits can be combined in a conduit.

For branch circuits supplied by GFCI breakers, limit length to 100 feet between the panel and the furthest receptacle or load on the GFCI circuit.

Provide a grounding conductor or bonding jumper, as appropriate, for all feeders and circuits of a gauge compliant with the electrical code.

Use of shielded cables (BX)

- For final connection of lighting fixtures in the suspended ceiling (attached to the building structure). Maximum length is 5 feet (1.5 m).
- For vertical drops in drywall.
- Instead of EMT, only for 15 A and 20 A circuits (up to four conductors, excluding the grounding conductor) and only in dry, concealed, aboveground locations, unless specifically prohibited by the electrical code.

Shielded cables (BX) should not be used for purposes not listed above, including but not limited to:

- Distribution panel feeders;
- Locations exposed to sight;
- Locations exposed to damage;
- Hazardous locations;
- Wet locations;
- Where otherwise limited;
- Where expressly prohibited by the owner;
- Circuits supplied by an emergency power source.

7.9 Motors and motor controls

Low-voltage control conductors are the responsibility of the mechanical contractor. Wiring with a voltage of 120 V or more is the responsibility of the electrical contractor. They will coordinate for the provision and installation of conduits, fittings, cables, supports, etc. for a complete installation.

Confirm the load, voltage and phase of all equipment with the mechanical contractor before ordering and installing materials.

Control equipment, time switches, gas detection systems and other equipment provided by the mechanical contractor will be installed and connected by the electrical contractor. Confirm interlocks and wiring for motorized shutters, flow switches, etc.

7.10 Wiring devices

Outlet boxes

- Install all outlet boxes flush with the surface.
- When installing boxes in an exterior ceiling or wall, the electrical contractor must install a device to maintain the integrity of the vapour barrier.

Outlets

- White, commercial grade. Shock-resistant thermoplastic.
- GFCI outlets must be of the specified quality.
- All outlets must come from the same manufacturer and have the same finish.
- Refer to the plans for outlet specifications.

Switches

- 15 amperes, 120 V, white, commercial grade, decorative style. Shock-resistant thermoplastic.
- All outlets must come from the same manufacturer and have the same finish.
- Refer to the plans for switch specifications.

Cover plates

- Surface-mounted devices must be equipped with galvanized steel plates with rolled edges in service rooms.
- Use a common plate for grouped devices.
- All flush-mounted devices must be equipped with a stainless steel plate. Plates must fit perfectly with the surface and the device.

8.0 Guidelines

The federal government must comply with acts, regulations, codes and decisions of authorities having jurisdiction. The contractor must perform the work in accordance with the applicable federal, provincial or municipal acts, regulations, codes, guides and standards, including but not limited to:

- Canadian Environmental Protection Act
- Canadian Drinking Water Guidelines (Health Canada)
- Environment Quality Act
- Regulation Respecting the Quality of Drinking Water
- Canada Occupational Health and Safety Regulations, Parts X and XIV
- An Act Respecting Occupational Health and Safety, R.S.Q., c. S-2.1
- Regulation Respecting Occupational Health and Safety, c. S-2.1, r. 19.01
- Safety Code for the Construction Industry (S-2.1, r. 6)
- CAN/CSA B483.1 – Drinking Water Treatment Systems
- NSF/ANSI 55 – Ultraviolet Microbiological Water Treatment Systems
- NSF/ANSI 58 – Reverse osmosis drinking water treatment systems
- NSF/ANSI 61 – Drinking Water system components – Health Effects
- National Plumbing Code – Canada 2010
- Régie du bâtiment du Québec – article 2.2.10.17, Construction Code[1]

For the employees who install or connect water treatment devices, the contractor must produce evidence of a subcategory 15.5 – Plumbing Contractor licence (Régie du bâtiment du Québec). A resource holding a subcategory 15.5 – Plumbing Contractor licence must be available until the contract has been completed.

[1] For more details, visit 2.2.10.17 – Dispositifs de traitement de l'eau potable

As required by standard CAN/CSA-B483.1-07, "Drinking water treatment systems and components shall comply with the requirements specified in this Standard and the structural integrity and materials extraction requirements specified in NSF/ANSI 42, NSF/ANSI 44, NSF/ANSI 53, NSF/ANSI 55, NSF/ANSI 58, NSF/ANSI 61, or NSF/ANSI 62, as applicable."

Use of PEX (cross-linked polyethylene) pipe is allowed and if used, the contractor must demonstrate that for the material used, the flame-spread rating does not exceed 25 and the smoke developed rating does not exceed 50 (cf: Quebec Construction Code).

9.0 Health and safety

Public Services and Procurement Canada (PSPC) recognizes that it is required to safeguard the health and safety of all persons working on government construction projects. It also recognizes that federal government employees and private sector employees are entitled to receive the full protection afforded by occupational health and safety regulations.

To meet this requirement and improve protection of the health and safety of all persons on federal construction sites, PSPC agrees to comply with the occupational health and safety regulations of the provinces and territories, as well as with the Canada Occupational Safety and Health Regulations and Part II of the Canada Labour Code.

In accepting this mandate, the contractor operating in the workplace must do the following:

- Mark off and control access to the work area;
- Ensure that workers have received necessary training and information to carry out the work safely and that all required protective devices and equipment are available and used in accordance with standards, acts and regulations;
- Comply at all times with the provisions of the Act Respecting Occupational Health and Safety and the Safety Code for the construction industry;
- Inform workers that they have the right to refuse any work that poses a hazard to their safety and health;
- Depending on the workplace environment, workers must wear required personal protective equipment (PPE) in accordance with standards and acts and regulations in effect. The purchase and maintenance of PPE are the contractor's responsibility;
- Workers must have a means of communication in their possession in order to respond in an emergency;
- Implement safety measures, where necessary, to protect users and workers on the site, such as signage, tape or fences, to identify and isolate risks to users' health during the work.

Furthermore, in light of the COVID-19 situation, the contractor must provide a prevention plan for health and safety measures for site visits to control the risk of COVID-19 transmission. The plan must be reviewed and approved by PSPC prior to any contractor travel.

In the event of an unexpected incident, the contractor must take all necessary measures, including work stoppage, to protect the health and safety of workers, occupants, and the public, and must contact the technical official.

10.0 Documents provided

- Appendix 1: MP-01 Plan (location and illustration diagram of conduit positions)
- Appendix 2: MP-02 Plan (operation diagram and installation environment for reverse osmoses)
- Appendix 3: Results for physicochemical quality of St-Armand wells

11.0 Information ownership

Any information received and documents produced in connection with this mandate remain the sole property of PSPC and CBSA. The contractor may not disclose, reproduce or make reference to any documents consulted or produced in connection with this mandate without the explicit prior written consent of PSPC or CBSA. This measure applies to all document formats, including electronic versions. PSPC and CBSA reserve the right to use the documents produced by the contractor.

APPENDIX A

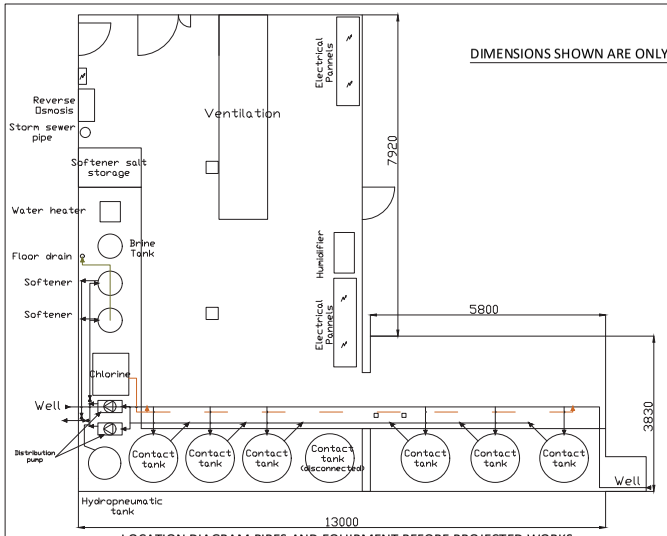
RAW WATER ANALYTICAL RESULTS, JULY 23RD 2020

Parameters	Units	Guidelines	"Commercial" well	"Des frères" well
Physico-chemistry				
Hardness	mg CaCO3/L	80-100 (OG)	372	320
Turbidity	NTU	1 (OG)	0.1	0.1
Total dissolved solids	mg/l	500 (AO)	831	477
pH		7.0 – 10.5 (OG)	7.97	7.98
Tannins and lignins	mg/l	0.1 (OG)	<0.2	<0.2
Alkalinity	mg CaCO3/L		334	300
Chloride	mg/l	250 (AO)	248	59
Conductivity	µS/cm		1630	850
Colour	TCU	15 (AO)	<3	<3
Fluoride	mg/l	1.5 (MAC)	<0.1	<0.1
Ammoniacal nitrogen	mg N/L		0.05	<0.05
Nitrite	mg N/L	1 (MAC)	<0.02	<0.02
Nitrate	mg N/L	10 (MAC)	0.15	0.36
Total Kjedahl nitrogen	mg N/L		<0.8	<0.8
Sulfide	mg/l	0.05 (AO)	<0.2	<0.2
Sulfate	mg/l	500 (AO)	45	19
Absorbance			0.030	0.033
Transmittance	%		93	93
Total organic carbon	mg/L		1.6	1.4
Bacteriology				
E. coli count	CFU/100 ml	DN (MAC)	0	0
Total coliforms count	CFU/100 ml	DN (MAC)	0	1
Atypical bacteria count	CFU/100 ml	200 (OG)	0	0
Total metals				
Iron	mg/l	0.3 (AO)	<0.1	<0.1
Lead	mg/l	0.005 (MAC)	0.010	0.010
Manganese	mg/l	0.02 (AO) / 0.12 (MAC)	0.010	<0.003
Selenium	mg/l	0.05 (MAC)	<0.001	0.001
Sodium	mg/l	200 (AO)	151	24.7

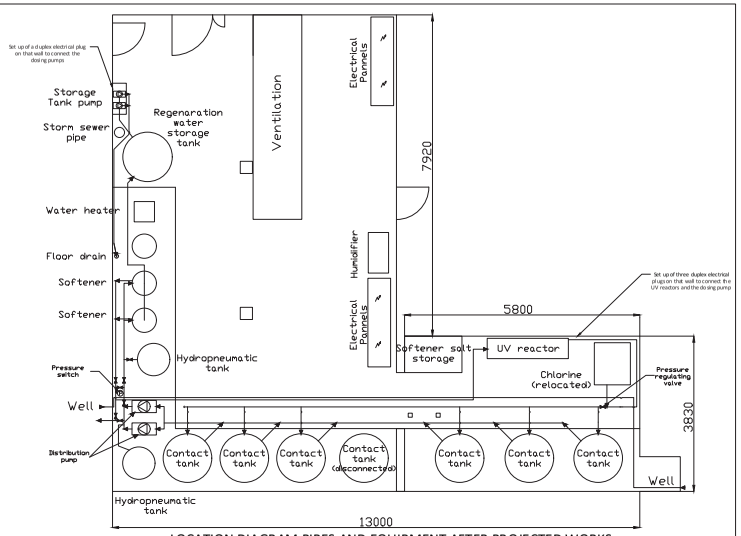
DO : operational guideline
OE : aesthetic objective

CMA : maximum acceptable concentration

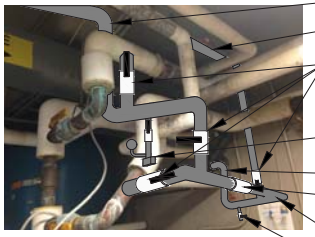
DIMENSIONS SHOWN ARE ONLY INDICATIVE



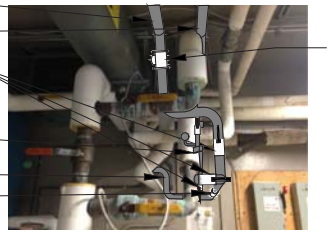
LOCATION DIAGRAM PIPES AND EQUIPMENT BEFORE PROJECTED WORKS



LOCATION DIAGRAM PIPES AND EQUIPMENT AFTER PROJECTED WORKS

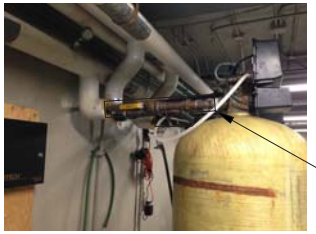


DETAIL PROJECTED CONNECTION OF THE WELL TO THE SOFTENER PIPES

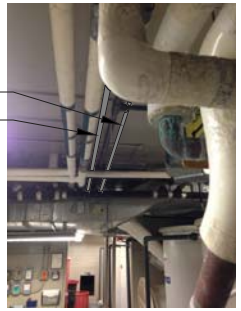


DETAIL PROJECTED CONNECTION OF THE WELL TO THE SOFTENER PIPES

REVERSE OSMMOSIS AND PIPES TO BE DISMANTLED



MODIFICATION OF THE WATER INLET AND OUTLET OF THE SOFTENER



LOCATION OF THE PIPES ON THE CEILING

LOCATION OF THE PIPES ON THE CEILING

LÉGEND :

M1 : Discharge pipe of well les frères - pvc sch 80. 1/2 po dia
M2 : Discharge pipe of well Commercial - PVC sch 80, 1 1/2 po dia
M3 : Common discharge pipe of the wells - PVC sch 80, 2 po dia
M4 : Isolation valve for the connection of the wells to the softener pipes, 1 1/2 po dia (qty. 1) and 2 po dia (qty. 3)
M5 : Sampling tap to be dismantled and relocated
M6 : Check valve, 2 po
M7 : Softened water pipe 2 po dia, toward UV reactors
M8 : Existing reverse osmosis system to be dismantled (from the water heater valves) and disposed of
M9 : Existing 1 1/2 po dia. water inlet and outlet pipes to be replaced by 2 po dia. including the isolation valve (connections to be done on the insulated copper pipe 2 1/2 po dia. and the control heads 1 1/2 po)
M10 : Plug from which two new plugs will be installed to connect the UV reactors and the dosing pumps on the wall in front of the tanks
M11 : Pressure switch of the wells pumps including isolation valve and glycerin-filled pressure gauge
M12 : Pressure regulating valve

THESE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSE

Drawing

PRELIMINARY PLAN IF NOT SCEALED

REV.no.	Date	Description	Designed by	Verified by
A	2020-09-03	Preliminary	S.H.	J.F.R.

Client

Canada

PUBLIC WORKS AND GOVERNMENT SERVICES OF CANADA

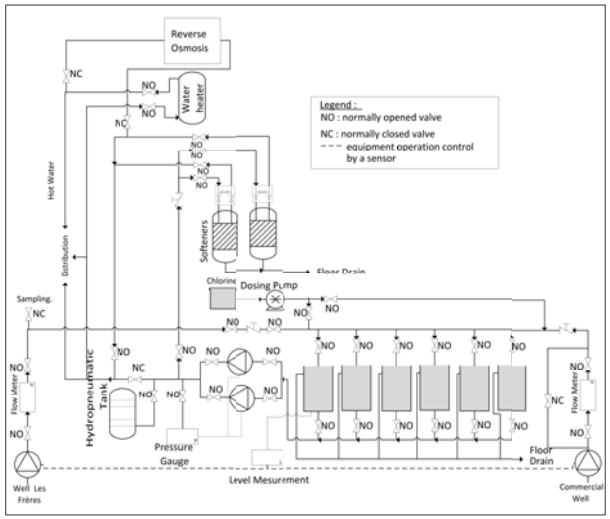
Asisto

2099, boulevard Fernand-Lafontaine, Longueuil (Québec) J4G 2J4
www.asisto.ca/

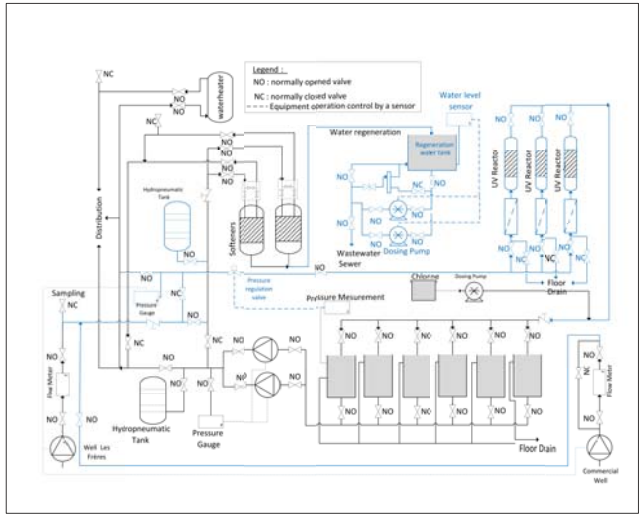
MODIFICATION OF THE DRINKING WATER TREATMENT SYSTEM OF ST-ARMAND BORDER CROSSING

LOCATION DIAGRAM - PIPE AND EQUIPMENT BEFORE AND AFTER PROJECTED WORKS

S. Hervieux Ing. Prepared by	Scale: N/S	Contract no.: 0400828
S. Hervieux, Ing. Drawn by	Date: 2019-01-03	Drawing no.: 1
J.F. Richard Ing. Verified by	File: 0400828-MP-01	Of: 3



PROCESS FLOW DIAGRAM OF THE WATER TREATMENT PLANT BEFORE PROJECTED WORKS



PROCESS FLOW DIAGRAM OF THE WATER TREATMENT PLANT AFTER PROJECTED WORKS

INTERIOR VIEW OF THE COMMERCIAL BUILDING AND ROOM AVAILABLE UNDER THE SINK TO SET THE RO SYSTEM

INTERIOR VIEW OF THE INTERNATIONAL BUILDING AND ROOM AVAILABLE UNDER THE SINK TO SET THE RO SYSTEM

THESE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSE

Drawing

PRELIMINARY PLAN IF NOT SCEALED

REV.no.	Date	Description	Designed by	Verified by
A	2019-01-03	Preliminary	S.H.	J.F.R.

Client

Canada

PUBLIC WORKS AND GOVERNMENT SERVICES OF CANADA

Asisto
2099, boulevard Fernand-Lafontaine, Longueuil (Québec) J4G 2J4
www.Asisto.ca/

Project:

MODIFICATION OF THE DRINKING WATER TREATMENT SYSTEM OF ST-ARMAND BORDER CROSSING

Drawing:

PROCESS FLOW DIAGRAM AND PROJECTED LOCATION OF THE RO SYSTEMS

Prepared by: S. Hervieux Ing.	Scale: N/S	Contract no.: 0400828
Drawn by: S. Hervieux, Ing.	Date: 2019-01-03	Drawing no.: 2 of 3
Verified by: J.F. Richard Ing.	File: 0400828-MP-01	