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Regional Manager/Real Property  
Contracting/PWGSC  
Ontario Region, Tendering Office  
12th Floor, 4900 Yonge Street  
Toronto, Ontario  
M2N 6A6  
Ontario

**SOLICITATION AMENDMENT  
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

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

Issuing Office - Bureau de distribution  
Regional Manager/Real Property Contracting/PWGSC  
Ontario Region, Tendering Office  
12th Floor, 4900 Yonge Street  
Toronto, Ontario  
M2N 6A6  
Ontario

Title - Sujet Warkworth Potable Water Elevat Tank	
Solicitation No. - N° de l'invitation EQ734-182412/A	Amendment No. - N° modif. 004
Client Reference No. - N° de référence du client R.068488.001	Date 2018-07-27
GETS Reference No. - N° de référence de SEAG	
File No. - N° de dossier PWL-8-41022 (003)	CCC No./N° CCC - FMS No./N° VME
<b>Solicitation Closes - L'invitation prend fin</b> at - à <b>02:00 PM</b> on - le <b>2018-08-14</b>	
Time Zone Fuseau horaire Eastern Daylight Saving Time EDT	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Dhanna, Sheila	Buyer Id - Id de l'acheteur pw1003
Telephone No. - N° de téléphone (416) 512-5855 ( )	FAX No. - N° de FAX (416) 512-5862
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Correctional Services Canada Warkworth Institution County Road 29 Campbellford, ON K0L 1L0 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	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

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### Questions and Answers:

Q1: Section 22 12 16 – Page 13 – Item 2.3.3.2 specifies a minimum wall thickness of 300mm. The 300 mm minimum thickness exceeds our design requirements. Typically, the wall thickness is determined by our design engineer and if a minimum is required it is typically 200 mm. Please advise.

A1: The specification will remain as written.

Q2: Section 22 12 16 – Page 1 – Item 1.2.4 System Description. An upper “reverse cone” is mention twice in this paragraph, however it is not described with the specification or shown/dimensioned on the drawings. This upper reverse cone is an architectural treatment and is at the Owner's option. Is one required? If required we suggest the following industry standard dimensions of 0.45m H / 0.76m V.

A2: The suggested reverse cone ratios are acceptable.

Q3: Section 22 12 16 – Page 1 – Item 1.2.4 System Description. In the last sentence we believe it is your intention to reference “lower” cone and not the upper “reverse” cone. Please confirm.

A3: No. The intention of the sentence is to clarify that the upper reverse cone is not part of the 200mm freeboard but is above the freeboard. The reference to the connection at the bottom of the reverse cone is correct.

Q4: Drawing S02 Mezzanine Plan shows (2) Floor Drains (FD). These are not described in Section 22 12 16 nor shown on the Mechanical Drawing, and typically not a requirement. Please confirm there is no requirements for floor drains at the mezzanine level.

A4: Floor drains are required in the mezzanine to capture any condensation from the piping/tank above the mezzanine. We will add this to the drawing M03

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Q5: Drawing M01 Process Note 1 specifies all interior above grade stainless steel pipe to have a polished finish. Please confirm this only applies to the exposed stainless-steel piping within the valve room and does not apply to the vertical riser piping that is insulated and cladded and therefore not exposed to view.

A5: Confirmed. Polished stainless steel finish is only required on exposed stainless steel piping

Q6: Drawing M02 – Is the Sodium Hypochlorite Feed System part of our scope of works or it by others (future). The equipment is shown on the drawings but there is no specification on the Chemical Feed System, the Chemical pumps or the Chemical Tank.

If required we will need to know:

- The size of the pumps or the flow rate and back pressure rate so we can size the pumps

A: Duplex solenoid pumping system – flow rate 0.2 – 1.6L/hr @1000kpa

The size of the chemical tank (capacity/volume)

A: 550L.

- Is the flow meter with signal output or just a remote/VA meter? Please advise.

A6: Remote VA meter. The only signals tied to PLC are pump run and pump fault

See attached spec

Q7: Section 40 90 01 – Magnetic Flow Meter – will the ABB WaterMaster Flowmeter be an approved acceptable alternate?

A7: There are four manufacturers currently listed. Please use one of them.

Q8: Drawing M03 – Section View shows the Bottom Capacity Level as 172.52m. Should this read 172.7 to reflect Drawing M02 and Section 22 12 16?

A8: Yes the BCL should read 172.7m

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Q9: Drawing M03 Ground Floor Level Plan shows a 750 x 750 hatch at the mezzanine level, however Drawing S02 shows a 1000 x 1000 hatch at the same location. Please clarify.

A9: Please use a 1000mm x 1000mm hatch

Q10: Is there a logo or lettering requirement for the tank exterior? If required, details and quantity will be required.

A10: No logos required

Q11: Section 22 12 16 Item 2.3.17.1 – page 27 specifies footholds on the tank floor. This is not a requirement with a flat tank floor. Please confirm foothold bars are not required.

A11: The specification will remain as written, the bottom of the tank is convex.

Q12: Section 09 97 13.23 Exterior Coatings – Page 10 - Item 1.5.15.2 describes the requirements for a full shrouding (full containment) if abrasive blasting is required on exterior surfaces of the steel tank. Full containment is a requirement on tank rehabilitation projects where full removal of the existing coating system is required. For new tank construction, the new steel plate is delivered to site with the specified surface preparation and painted with a pre-construction primer. Minimal sandblasting is required to prepare the surfaces for application of the Zinc Rich Primer. We recommend eliminating the requirement for full containment.

A12: Specification to remain as written due to close proximity of the jail to the location of the tank.

Q13: Section 22 12 16 Item 2.3.19.3 – page 29 specifies the carbon steel pipe within the tank to be fusion bonded epoxy coated "painted at time of tank painting". Fusion bonded epoxy coating is a shop applied coating, overflow piping is only painted at the time of tank painting when the interior tank paint system is being applied to the overflow pipe. Please confirm shop applied fusion bonded epoxy is acceptable.

A13

: The specification remains as written. The interior is fusion bonded in the shop, the exterior is coated in place.

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Q14: Section 22 12 16 Item 3.4 specifies the construction of the support structure to be in accordance with Division 3. Division 3 contains specification requirements (particularly with respect to forming and forming removals) that are uncharacteristic and not industry standard for constructing the support structure of an elevated water storage tank. We suggest the following industry standard language to replace item 3.4 of the specification to remedy the specification.

#### 1. Architectural Concrete Construction

The exposed exterior surface of the concrete support wall is designated architectural concrete. The concrete and formwork requirements of this section shall be strictly enforced to ensure concrete of the highest practicable architectural standard. Formwork design, installation and removal shall comply with the minimum requirements of ACI 318, ACI 117 and the applicable requirements of ACI 347, except as modified by this Section.

Attention shall be given to ensure the same concrete design mix is used throughout the support wall. The proportion, type and source of cement and aggregates shall not be changed. Uniform moisture content and placing consistency shall be maintained.

Support wall concreting shall incorporate segmented placement procedures. Temporary vertical bulkheads shall divide the wall pour into segments corresponding to a single truckload of concrete. The bulkheads shall be located at rustications, braced rigid and tight to maintain vertical alignment under concrete load. Wall segment concrete shall be placed vertically and continuously to full form height from a single truck load of concrete. Vertical pour rate shall be a minimum of 15 feet per hour. Placement from multiple loads is not permitted. Temporary bulkheads shall not be removed until adjacent concrete is placed.

The forming system for the pedestal wall shall be fully engineered and detailed with procedures to meet the increased demands of architectural concrete. The support wall shall be constructed with a jump form process using form segments prefabricated to match the wall curvature. Concrete pour height shall be a minimum of 6 ft. and a maximum of 10 ft. Form panels shall be designed for lateral pressures associated with full height plastic concrete head and eccentric loads resulting from the segmented wall pour procedure.

Wall forms shall not be disturbed or removed until the concrete has attained sufficient strength to prevent forming operations or environmental loads from causing surface damage or excessive stress. Support wall concreting operations shall occur a maximum of once per day. Forms are to be removed and the concrete finish inspected prior to the subsequent placement of the next wall pour. Multiple form movements and concrete placements within a day are not permitted. Form removal shall be based on early age concrete strength testing. The minimum concrete strength shall be established by the

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Contractor, based on an analysis of stress at critical stages throughout the forming and concrete operations. Early age concrete testing shall be in accordance with ACI 228.1R-95. Pull Out testing in accordance with ASTM C 900-99, Maturity Method testing in accordance with ASTM C 1074-93, or field cured cylinders compressive strength tested in accordance with ASTM C 172 are the acceptable methods to determine early concrete strength.

2. Finish

Provide a smooth form finish without rub for the interior and exterior support wall. Tie holes shall be plugged using grout on the interior and manufactured plugs on the exterior which match the color of the cured concrete as closely as possible. Provide a light sandblast to the exposed exterior concrete support wall surface.

3. Dimensional Tolerances

Support structure concrete construction shall conform to the following:

Variation in thickness:

Wall..... -3.0% to +5.0%

Dome..... -6.0% to +10%

Flat slab .....-3.0% to +5.0%

Support wall variation from plumb:

in any 3 m of height..... 10 mm

in any 15 m of height..... 38 mm

maximum in total height..... 76 mm

Support wall diameter variation..... 0.4%

not to exceed.....76 mm

Dome floor radius variation..... 1.0%

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Level alignment variation:

from specified elevation..... 25 mm

from horizontal plane.....12 mm

Offset between adjacent pieces of formwork:

exterior exposed surfaces..... 3 mm

interior exposed surfaces..... 6 mm

A14: The specification will remain as written. For requirements for form panel layout and rustications, dimensional tolerances, finish etc see section 22 12 16 part 2.3.3 and part 3.4. For timing of removal of jump forms and concrete mix and testing see specification 03 10 00 sections 3.2.1.5, and specification 03 30 00.

Q15: Section 26 05 36 Cable Trays – I do not see any cable trays on the elevated tank drawings. Is a cable tray to be installed beside the ladder from the mezzanine level to the upper platform level?

Please clarify.

A15: Yes the cable tray is to be installed beside the ladder.

Q16: Chemical Feed:

Under drawings M02 & E08 they show a sodium hypochlorite duplex metering pump panel.

Please confirm panel is required.

If this panel is required please let us know the following:

1. Chemical feed pumps flow rate & back pressure – so we can size the pumps
2. Chemical Feed Tank required capacity/volume
3. Chemical flow meter requirements...is it a flowmeter with signal output or just a rotameter/VA meter?

A16: See response at A6

Q17: Instrumentation:

Under drawing M01 they show Chlorine Residual Analyzer AIT002 and Flow Transmitter FIT001 (200mm)

Section 40 90 01 – Magnetic Flow Meters – ABB is not specified – can we get approved with ABB WaterMaster Flowmeter?

A17: See response A7

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Q18: Where will the lay down area be accommodated for the contractor's use during the entire construction period?

A18: Please use the area just east of the site. There is a ton of room so a 50m x 50m should be fine.

See attached file for location. (Buyandsell attachment ATT9)

PART 1 - GENERAL

- 1.1 Article .1 **Intent**
- .1 This section covers the work associated with the sodium hypochlorite chemical dosing system for the potable water elevated tank at the Warkworth Institute. The scope includes:
    - .1 Dosing equipment
    - .2 Chemical Storage
  - .2 **Shop Drawings**
    - .1 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures
  - .3 **Installation**
    - .1 Install all equipment in accordance with manufacturer's instructions
    - .2 Engage services of the Supplier's qualified representative for approval of the installation, commissioning and plant start-up
    - .3 Have the supplier issue a Certificate or Letter of Acceptance of the installation
  - .4 **Related Sections**
    - .1 Related Sections are:
      - .1 01 91 00 Commissioning General Requirements
      - .2 22 12 16 Facility Elevated Potable Water Storage Tank
      - .3 Division 40 Process Integration
      - .4 Division 26 Electrical

PART 2 - PRODUCTS

- 2.1 Article .1 **Pump Systems**
- .1 Provide and install chemical metering systems as indicated on the Drawings
  - .2 Each Sodium Hypochlorite (12%) metering pumps package for primary chlorination system shall be constructed from materials compatible with the transferred liquid and in accordance with the following:
-

- 2.1 Article                    .1    (Cont'd)
- (Cont'd)                    .2    (Cont'd)
- .1    Two (2) solenoid driven diaphragm pumps - one (1) duty, one (1) standby, required minimum capacity 0.2L/h - 1.6L/h at minimum backpressure 1000 kPa
- .2    One (1) high density polyethylene piping panel, pre-mounted, pre-piped, pre-wired and 24-hours pressure tested with one chemical injection point, with local control
- .3    Acceptable manufacturer: Prominent as supplied by Metcon Sales and Engineering or Approved equal
- .4    Refer to P&ID for required configuration details
- .2    **Sodium Hypochlorite Storage Tank**
- .1    Provide one (1) open top storage tank with lid suitable for 12% Sodium Hypochlorite liquid
- .2    Chemical Storage Tank shall be designed in accordance to ASME D638 Specifications
- .3    The tank shall apply to NSF/ANSI Standard 61, AWWA - Drinking Water System Components
- .1    Design requirements
- .1    Open top tank with a capacity of 550L with approximate dimensions of 800mm diameter and 1200mm tall
- .2    An outer tank must provide 110% secondary containment and fit inside concrete containment curb
- .3    Tank material: high-density crosslinked polyethylene
- .4    Tank is vertical flat bottom and dished head cover
- .5    See Process Drawing for all accessories sizes, location and orientation

PART 3 - EXECUTION

- 3.1 Article                    .1    **Installation**
-

3.1 Article  
(Cont'd)

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- .1 (Cont'd)
  - .1 Co-ordinate with various sub-trades, suppliers and manufacturers to ensure complete installation of all equipment. Take special care to co-ordinate with Division 26 (Electrical)
  - .2 No claim for extra will be entertained for lack of co-ordination and conflicts between various items of equipment not installed properly
  - .3 Cooperate with Owner and Department Representative providing assistance during start-up, and preparation of maintenance manuals and procedures for equipment specified in this Section
  
- .2 **Tank Testing**
  - .1 Hydrostatic test: Following installation, the bottom tank shall be hydraulically tested with water by filling to the top sidewall for a minimum of 24 hour and inspected for leaks
  
- .3 **Training**
  - .1 Comply with Section 01 79 00  
Demonstration and Training
  
- .4 **Equipment Startup, Performance Testing and Commissioning**
  - .1 Commissioning of the process system which includes the equipment specified in this section is required to ensure the equipment functions as intended in the process system
  - .2 Comply with Sections 01 91 00  
Commissioning - General Requirements