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TPSGC
11 Laurier St. / 11, rue Laurier
Place du Portage, Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

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
Vehicles & Industrial Products Division
11 Laurier St./11, rue Laurier
7A2, Place du Portage, Phase III
Gatineau, Québec K1A 0S5

Title - Sujet Pre-purchase Cooling Towers	
Solicitation No. - N° de l'invitation EP119-132112/A	Amendment No. - N° modif. 001
Client Reference No. - N° de référence du client 20132112	Date 2012-11-15
GETS Reference No. - N° de référence de SEAG PW-\$\$HP-912-61480	
File No. - N° de dossier hp912.EP119-132112	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-11-23	
Time Zone Fuseau horaire Eastern Standard Time EST	
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: Pearson, Neil	Buyer Id - Id de l'acheteur hp912
Telephone No. - N° de téléphone (819) 956-3976 ()	FAX No. - N° de FAX (819) 953-2953
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

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

This solicitation amendment 001 is raised to answer questions from bidders, amend Annex "B" Purchase Description and to amend solicitation.

1. Questions from Bidders;

Question 1

1.3 Delivery Due to the size of towers, they will be required to ship in sections that the mechanical contractor hoist and join together on site. This is typically only two sections.

We suggest that sectionalized units be acceptable but manufacture provide all material required to field connect sections.

Answer:

Section 1.3 was revised, see updated Purchase Description.

Question 2.

Warranty item .1.1 Change Fifteen (15) year basin and tower casing warranty to the industry standard Five (5) years

Answer:

Section 1.4 was revised, see updated Purchase Description.

Question 3.

1.7 Design Loading Wind loading of 241 km/h is available but an additional cost for this equipment. Since this is extremely unrealistic for Ottawa, is the added cost a real requirement?

Answer:

Section 1.7 was revised, see updated Purchase Description

Question 4.

1.8.2.1 &.2 Perimeter basin Towertech is the only manufacture that builds towers meeting paragraph .1, also the tower has been specified to be able to operate at half the water flow also, therefore the statement Saying to maintain a minimum of 5-7 fps water velocity in the drain pan is order for sediment not to accumulate will not apply even with Towertech.

Paragraph .2 specifies standard design towers to provide the addition Of basin sweeping nozzles and remotely installed sediment separators. Since the specified tower will operate with reduced flow, sediment will also collect in its basin so it will also need sweeper piping and nozzle To move the sediment out of the drain pan.

In addition , all cooling towers will create sediment in the water which is collected from the air moving through the tower . the sediment separator is a requirement on all condenser water

systems using open cooling towers in order to protect the entire system from this collected sediment. If not removed, this sediment will reduce the efficiency of the chillers. Therefore we are requesting that the specified basin sweepers and remote sediment separator be a requirement for all cooling towers submitted as part of this tender.

Answer:

If min water velocity of 5-7 fps cannot be maintained (and proven) sweepers are required.

Question 5.

1.8.3.2 Ultrasonic level sensor probe is only one of many top quality basin level control and alarm devices. Evapco has available a 5 probe electronic level sensor that provides all the same functions and reliability of a ultrasonic sensor.

Answer:

Section 1.8.3.2 was revised, see updated Purchase Description

Question 6.

1.8.5.1 Water distribution system. The specified tower has it's water distribution system only accessible from the top of the unit. therefore it should also have a ladder with safety cage and full perimeter tower handrail 1 round the top In order to safely access the water distribution system.

Answer:

Section 1.8.5.2 was revised, see updated Purchase Description

Question 7:

1.8.6.1 Water Collection system this entire paragraph only applies to the Towertech layout of cooling tower in which they use a series of narrow water collection channels to try and minimize water from dripping down onto the fan motors below these channels.

Evapco uses fixed air inlet louvers to eliminate splashing of water from tower and prevent airborne debris from entering tower. The fan motors are up above the spraying water so that there is no possibility of water dripping onto them in the event of a water collection failure or drain pan overflow.

Therefore we suggest noting that it information in this paragraph only applies to towers with fans below the water section of the tower.

Answer 7:

Section 1.8.6.1 was revised, see updated Purchase Description

Question 8:

1.8.8.1 Fans: Again, this entire paragraph only applies to the type and location of fan that TowerTech uses. Most manufactures use belt drive induced draft fans with Power-Band high strength belts for long lasting drives systems.

We suggest allowing belt drive induced draft fans be acceptable with motors not directly in the moist fan airflow. Tower to have a service access platform with ladder to access motor and drive.

Answer 8:

Direct Drive Fans are mandatory

2. At Annex "B" Purchase Description;

DELETE: Annex "B" Purchase Description

INSERT: Annex "B" Purchase Description Revision 1.

3. At PART 2 - BIDDER INSTRUCTIONS, 1. Standard Instructions, Clauses and Conditions**Delete: The following;**

The 2003 **(2012-07-11)** Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 4 of Section 01 - Code of Conduct and Certifications of 2003 (2012-07-11) Standard Instructions is amended as follows:

Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to provide such a list within the required time frame will render the bid non-responsive. Bidders must always submit the list of directors before contract award.

Canada may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

The text under Subsection 5 of Section 01 - Code of Conduct and Certifications of 2003 referenced above is replaced by:

The Bidder must diligently maintain the list up-to-date by informing Canada in writing of any change occurring during the validity period of the bid, and must also provide Canada, when requested, with the corresponding Consent Forms. The Bidder will also be required to diligently maintain the list and when requested, provide Consent Forms during the period of any contract arising from this bid solicitation.

Subsection **5.4 of 2003**, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days

Insert: ninety (90) days

Insert: The following;

The 2003 (2012-11-09) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days

Insert: ninety (90) days

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME

ANNEX B

PURCHASE DESCRIPTION

Revision 1

Condensers, Coolers and Cooling Towers

ANNEX B

PURCHASE DESCRIPTION

1.1 References

- .1 American Society of Mechanical Engineers (ASME).
 - .1 ASME B16.1-2010, Cast Iron Pipe Flanges and Flanged Fittings.
- .2 American National Standards Institute (ANSI)/ American Water Works Association (AWWA).
 - .1 ANSI/AWWA C111/A21.11-2007, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- .3 Cooling Technology Institute (CTI)
 - .1 CTI 105-ATC (00) Tower Standard Specifications for Acceptance Test Code for Water Cooling Towers.
 - .2 CTI STD-201 (11) Standard for Thermal Performance Certification of Evaporative Heat Rejection Equipment.
 - .3 CTI ESG-152 (10) Structural Design of FRP Components.
 - .4 CTI STD-203 (05) Industrial Cooling Tower Standard
- .4 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .5 If requested furnish documents proofing that equipment conforms to applicable standards. If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

1.2 Deliverables

- .1 Deliverables must be submitted in duplicates and be job specific and include the following:
 - .1 Tower Performance Analysis showing Flow L/S, Tower Inlet/Outlet Temperatures (°C), Wet Bulb Temperature (°C), required Motor Horsepower, and Kw/Ton at the two design flow rates (320 l/s 4 towers) and 112 l/s 2 towers)
 - .2 All Data to be job specific.
 - .3 Delete information not applicable to project.
 - .4 Drawings showing plan and elevation views with all critical dimensions, tower weight (dry & operating), design operating conditions, and motor data.
 - .5 Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided to illustrate details of equipment and accessories.
 - .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated.
 - .6 Dimensioned fabrication drawings of tower support structure accompanied by all manufacturers engineering load calculations confirming design.

ANNEX B

PURCHASE DESCRIPTION

- .7 Drawing of tower "Lift Rigging" recommendations showing proper sizing of spreader bar, locations of pre-installed lifting brackets, and final leveling instructions.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Supplier.
 - .2 Manufacturer.
 - .4 Identification of submission by specific element of Work.
 - .5 Stamp or signature by authorized representative certifying compliance with Documents.
 - .6 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 All necessary wiring diagrams showing internal tower wiring and all required field connections by others.
 - .1 Wiring diagrams and Installation drawings shall also be provided for all optional equipment (Tower Control Panel, Basin Heaters, Ultra Sonic Level Control, VFD) when applicable.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .11 Copy of manufacturers' written warranty regarding materials and labour, along with the conditions under which warranty is subject.
- .9 Operation and Maintenance Manual.
- .10 Maintain blank area 75 mm x 75 mm for review stamp and comments.
- .11 Ensure submissions are capable of being copied or faxed without loss of legibility or detail
- .12 Present shop drawings, product data in SI Metric units.
- .13 Where items or information is not produced in SI Metric units converted values are acceptable.

1.3 Delivery assembled and Storage and Handling

- .1 Cooling Tower modules for each tower must arrive as a maximum of two fully assembled and wired components on a flatbed trailer. The Sub-Structure legs, aux. trim, sump hardware, VFD motor control panel and basin heater with control panel must be shipped on a separate pallet on the same trailer.

ANNEX B

PURCHASE DESCRIPTION

.2 Upon arrival of Cooling Tower module(s) (prior to any lifting operation), the tower must be inspected on the truck for general acceptance. Any items of concern related to damage or lifting operations must be documented and reported (in writing) to the manufacturer's representative.

.3 Prior to lifting and off-loading Cooling Tower(s), all excess water must be removed from basin.

1.4 Warranty

.1 Cooling Tower manufacturer must provide material and labour warranty, in accordance with conditions specified within written warranty, as follows:

- .1 Cold water basin and tower casing must be covered by a Ten (10) years parts and labour warranty from date of shipment from factory. Excludes cosmetic or superficial damage/wear.
- .2 Internal Components: (Fill and drift eliminators, Water distribution system, Water collection system) must be covered by a Five (5) year warranty from date of shipment from factory.
- .3 Mechanical and Electrical Components (Fans, VFD and Motors) must be covered by a Five (5) year warranty from date of shipment from factory
- .4 Labour - Two (2) year from date of shipment from factory.

1.5 General Requirements

.1 Furnish 4 only factory-assembled, forced draft, counter-flow, modular cooling Towers. Towers will be located in two mechanical wells (South and North) as shown on supplementary drawings SK-1 and 2. Each Tower overall dimensions must not exceed 5.8m long by 3.6m wide by 5.2m overall height. The Tower must be capable of operating independently or in combination with the others Towers. The Tower's principal construction must be as follows:

- .1 Pultruded Fiberglass Reinforced Polyester (FRP) and must have a flame spread rating less than 25 or a flammability coefficient of 94-V0, or
- .2 Full metal construction of 304 Stainless Steel.

1.6 Thermal Performance

.1 Any Submitted proposal must meet all construction and all Thermal Performance details listed within this specification.

.2 Cooling Tower must be capable of handling variable flow rates maintaining 3 to 1 turndown and flow handling assembly being self cleaning, and made of PVC or other non corrosive material. The manufacturer must guarantee the tower(s) supplied will meet the specified performance conditions when the tower(s) is (are) installed according to plan and per the guidelines established in the tower manufacturers current Installation, Operation and Maintenance Manual.

- .1 The Cooling Towers must perform as follows:
 - .1 Ambient air conditions: 21.7C WB and 60% RH
 - .2 Condenser water delta T: 11.2C

ANNEX B

PURCHASE DESCRIPTION

- .3 Condenser water temp out: 29.4C
 - .4 Condenser water temp in: 40.6C
 - .5 Condenser water flow total: 454 l/s (4 towers)
 - .6 Minimum Summer condenser water flow total: 151 l/s (4 towers)
 - .7 Minimum Winter condenser water flow total: 302 l/s (4 towers).
 - .8 Using the following conditions: HWT = 40.6C CWT = 29.4C WB = 21.7C the Cooling towers must use no more than 70.8BHP at 320 l/s (Four towers, full design flow) and 9.6BHP at 112 l/s (Two Towers, Minimum Design flow)
 - .9 Cooling Towers must be design to operate and deliver the specified performance when located as per drawings (SK-1 and 2) with 2 Towers in each of the North and South roof well locations.
- .3 Cooling tower must be Cooling Technology Institute (CTI) Certified as set forth in the CTI Certification Standard STD-201(02). Towers claiming to be CTI "listed" or "designed" to CTI specifications will not be acceptable.
- .4 Tower(s) intended in location in North well must be furnished with heater and all accessories ready for future winter operation.

1.7 Design Loading

- .1 Tower shell and substructure (support legs) must be designed to withstand a wind load equivalent to 142 km/h and be able to resist seismic forces classified under Zones 1-4.
- .1 Tower design must not require vibration insulators for tower operation.

1.8 Construction

- .1 The cold water basin and the tower casing must be constructed of pultruded Fiberglass Reinforced Polyester (FRP) with UV inhibitors. FRP must have a minimum thickness of 6mm and a minimum density of 1.9 G/cm³ Specially placed reinforcement and a UV veil layer will ensure the structural strength and longevity or 304 Stainless Steel.
- .2 PERIMETER BASIN
- .1 Tower shell or casing must have an integral perimeter basin. Its elevated location must reduce operational pump head requirements. Its high velocity (5-7 feet per second) water flow during operation must minimize accumulation of sediment. Perimeter basin must be equipped with one inspection port, at each corner support member, on the front and rear surfaces. Basin must be equipped with a pair of 2" NPT Stainless Steel "Winter Drain" connections located on opposite sides of the tower perimeter basin base, and "Mid-Basin" inspection ports located in base of the tower perimeter basin, between each pair of fans.
 - .2 Towers with conventional basin designs must provide an all 304 stainless steel, heavy gauge basin with depressed center section, adequate drain (removable standpipe) for flushing, and a "Sweeper" piping system to prevent sediment

ANNEX B

PURCHASE DESCRIPTION

buildup and/or stagnant water areas that permit algae and other biological growth. Sweeper piping system must include all necessary "Eductor" nozzles, piping, pump, sediment separator, and electronic controllers for a completely automatic system.

.3 SUMP

- .1 Tower must be equipped with a terminally mounted (end wall) outlet flanged discharge connection for simplified piping.
- .2 A manufacturer supplied, field installed Ultra-Sonic Level Sensor Probe or 5 probe electronic level sensor and a NEMA 4X, Non-Metallic Enclosure containing a Water Level Controller capable of operating a water make-up valve (Supplied and Installed by others). The sensor must be located in the Overflow connection on the cooling tower return line piping. The water make-up valve must be located on the cooling tower condenser water return line prior to roof penetration (Indoors). The enclosure must have a Low Level Audible Alarm and Indicating Light as well as a make-up valve "Activate" pilot light mounted on the door. The Water Level Controller must have a 4-20mA Signal Meter for customer verification of the Level Sensor Probe signal.

.4 FILL AND DRIFT ELIMINATORS

- .1 Fill must be Polyvinyl Chloride (PVC) of cross-fluted design, 10 mil (after forming), impervious to decay, fungus and biological attack. Fill sheets must be self-spacing, supported on maximum spans of 300mm. Each fill sheet must have a microstructure to improve heat transfer. Fill sheets must be bonded together to give a cross-corrugated pattern by application of glue only to dedicated glue joints. Fill packs made from random application of glue must not be acceptable. Fill packs or blocks must be placed in the tower so as to provide the tightest fit possible without damage to the fill.
- .2 Drift eliminators must be minimum three-pass Polyvinyl Chloride (PVC) material of cellular design impervious to decay, fungus and biological attack. Drift losses must not exceed 0.005% of the design circulating flow rate.

.5 WATER DISTRIBUTION SYSTEM

- .1 Water must enter the tower through a low pressure, non-corrosive Polyvinyl Chloride (PVC) Schedule 40 piping system. Water must be evenly sprayed over the fill media by evenly spaced and sized nozzles. Water delivery must be capable of a variable flow of 6.3 l/s to 19 l/s per nozzle while maintaining full fill media coverage without overlap.
- .2 Towers must include a ladder equipped with safety cage and a fan deck handrail system (meeting applicable codes) where necessary to provide access for service and maintenance.

.6 WATER COLLECTION SYSTEM

- .1 The tower must utilize a water collection system positioned beneath the fill media and above the air inlet. The water collection system must collect cold water as it falls from the fill media and channel the cooled water into the tower's basin. The water collectors must be made of extruded flame retardant Acrylonitrile Butadiene Styrene copolymer (ABS) or 304 Stainless Steel

ANNEX B

PURCHASE DESCRIPTION

material. The air inlet system must prevent entry of airborne debris when the fans are off.

.7 MOTORS

- .1 The tower must contain Totally Enclosed Air Over (TEAO) motors with a service factor of 1.15 and must be suitable for 575 Volt, 3-phase, 60-Hz service. Motors must operate at 860-900 RPM synchronous speed and be rated for inverter duty. All motors must be factory pre-wired to individual rotary disconnects using Double Shielded Cable, oil resistant, VFD compatible, allowing service to be performed while remaining fans continue to operate. Each cell must be operated by a VFD connected to all fans. Fans must be modulated equally.

.8 FANS

- .1 Fans must be of an axial, airfoil design positioned within an aerodynamic streamlined fiberglass shroud and installed with a minimum of tip clearance for maximum efficiency. Fan blades must be manufactured of Fiberglass-Reinforced Polypropylene and be pitch-adjustable. Fan hubs must be manufactured of high strength, low weight aluminum alloy to minimize stress and wear on motor bearings. The tower must have 1 direct drive fans per cell. The fan assembly and motor must both be located outside the hot moist exiting air stream.

.9 CONTROL PANEL

- .1 All control for Cooling Tower must be design for stand alone operation and third party BAS Interface.
Compatible with BACnet IP
- .2 Furnish a NEMA 1 rated motor control panel completely wired with a fused control power transformer, cover mounted lockable main disconnect, individual HAND-OFF-AUTO switches, green fan "On" and red fan "Trip" indicating lights for each fan motor. Panel will be shipped loose, for field installation by others.
- .3 Each internally mounted combination motor starter/adjustable overload protector must have an integral lockable circuit breaker to enable individual motor isolation.
- .4 Terminal blocks must be provided for main power feed, individual fan motor connections, and any externally mounted control input and outputs. All final wiring from Tower mounted disconnects to terminal strips located in motor control panel, and the main power feed to motor control panel, must be completed in the field by others.
- .5 Panel must include a pre-programmed, door mounted, PID Loop controller capable of cold water temperature monitoring, and cooling tower fan motor control. If the VFD Fails or enters bypass mode, the control panel will begin staging (energizing) fan motors (at full 870 RPM speed), beginning from the front of the tower, until the correct numbers of fans are operational to maintain the desired cold water setpoint temperature. For 6-fan towers, this is done in pairs of two. Subsequently, fan motors must be de-staged, beginning from the back of the tower, in similar fashion as described for staging.
- .6 A separate (0-100 ohm) temperature RTD probe must be supplied loose, for field install in the cooling tower return piping.
- .7 A Variable Frequency Drive (VFD) must be used in conjunction with tower fan

ANNEX B

PURCHASE DESCRIPTION

motors. The PID Loop Controller must be equipped with a (0-10 VDC, 0-100% Range) fan motor "Speed" output. This feature must modify fan motor speeds to maintain desired cold water temperature and maximize energy savings. All fans in each tower cell must be wired to a single VFD, operating all fans in unison, providing airflow across entire tower fill media. When the VFD Bypass is engaged, or drive failure occurs, the PID Loop Controller must de-energize all fan motors starters, and begin a "Fan Staging" sequence of operation with fan motors operating a full speed (870 RPM).

- .8 All Variable Frequency Drives (VFD's) must be sized according to Total Connected Amps (including all applicable service factors required by governing Electrical Codes), not total connected horsepower. All VFD's must be equipped with the following options as a minimum:
 - .1 Input fused disconnect with through door handle
 - .2 3% Line Impedance Reactor
 - .3 Automatic Bypass Contactors
 - .4 Drive run, Bypass run, Motor overload, Power "on", and Enable lights
 - .5 Local control and programming keypad
- .9 Motor control panel must have a Variable Frequency Drive (VFD) factory mounted and wired within enclosure.

1.9 Installation Options

- .1 Provide representative of manufacturer for installation supervision and start up. Allow for 4(four)@ 8hr visit
- .2 Provide representative of manufacturer for Owner training. Train Owner's maintenance personnel to operate and maintain cooling tower(s) and controls including:
 - .1 Starting and Stopping of Fan Motors
 - .2 Sequence of Operation
 - .3 Troubleshooting & Servicing
 - .4 Routine Maintenance
 - .5 Schedule training with Owner, allow for 2(two)@ 4hr visit

END