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**Travaux publics et Services gouvernementaux Canada**
**Place Bonaventure, portail Sud-Est**
**800, rue de La Gauchetière Ouest**
**7 ième étage**
**Montréal**
**Québec**
**H5A 1L6**

# 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**

Travaux publics et Services gouvernementaux Canada
Place Bonaventure, portail Sud-Est
800, rue de La Gauchetière Ouest
7 ième étage
Montréal
Québec
H5A 1L6

| | |
|---|---|
| **Title - Sujet**<br>Reno.chauffage refroid. Lennoxville | |
| **Solicitation No. - N° de l'invitation**<br>EF944-170110/A | **Amendment No. - N° modif.**<br>003 |
| **Client Reference No. - N° de référence du client**<br>R.078727.001 | **Date**<br>2016-06-22 |
| **GETS Reference No. - N° de référence de SEAG**<br>PW-$MTC-255-13864 | |
| **File No. - N° de dossier**<br>MTC-6-39029 (255) | **CCC No./N° CCC - FMS No./N° VME** |
| **Solicitation Closes - L'invitation prend fin**<br>**at - à 02:00 PM**<br>**on - le 2016-06-30** | **Time Zone**<br>**Fuseau horaire**<br>Heure Avancée de l'Est HAE |
| **F.O.B. - F.A.B.**<br>**Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐ | |
| **Address Enquiries to: - Adresser toutes questions à:**<br>Desforges, Julie | **Buyer Id - Id de l'acheteur**<br>mtc255 |
| **Telephone No. - N° de téléphone**<br>(514) 496-3413 ( ) | **FAX No. - N° de FAX**<br>(514) 496-3822 |
| **Destination - of Goods, Services, and Construction:**<br>**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**

Canada

| Solicitation No. - N° de l'invitation | Amd. No. - N° de la modif. | Buyer ID - Id de l'acheteur |
|---|---|---|
| EF944-170110/A | 003 | mtc255 |
| Client Ref. No. - N° de réf. du client | File No. - N° du dossier | CCC No./N° CCC - FMS No./N° VME |
| R.078727.001 | MTC-6-39029 | |

**THE INVITATION TO TENDER IS MODIFIED AS MENTIONED BELOW:**

Addendum 3

Please find enclosed herewith the above-mentioned addendum which forms part of the tender documents.

Questions and answers related to this invitation to tender:

Question 1:
Please give elevations levels for: A, 1, 2, shed and roof. We are able to arbitrarily determine the elevation of the new chimney of the steam boiler (CVAP-1) but it is difficult to assess the length of the new vertical chimney 400mm for CEC-1 boilers / CEC-2 / CEC-3.

Answer 1:
See the original drawing included in the attachment (CRDS – Architecture 005.tif).

Question 2:
Please provide us with the project specifications of the buffer tank in title. We believe it is numbered RES-1.

Answer 2:
See addendum M-1

Question 3:
According to the philosophy of mechanical specifications, is pipe insulation part of the mandate of the plumbing contractor or general contractor? Do coolers and condensers are provided, set up and connect with the plumbing contractor? Does the cooling towers are delivered, set up and connect with the plumbing contractor?

Answer 3:
By heating and cooling, see section 23 05 00, item 1.3.2.13.

Question 4:
Please, confirm that the coil, the heat wheel and humidifiers are provided and implemented by the contractor in ventilation, but connected by the plumbing contractor?

Answer 4:
Yes, see the ventilation scope of work and the special connection paragraph in the heating – cooling scope of work.

Question 5:
Please provide us with the project specifications of the buffer tank in title. Is it to provide and install new or existing? If we provide new specifications that are not shown the plans and specifications. We believe it is numbered RES-1, see the attached documents.

Answer 5:
See addendum M-1

Question 6:
Please, clarify the difference of the sections: 23 05 00, 1.3.3.2.18, page 5 (Electromechanical: " The supply and installation of a new thermal wheel ... ") Vs 23 05 00 1.4.3.2 .3 page 10 (ventilation: " the complete replacement of the heat wheel of the ventilation unit No. URC-1)

Answer 6:
See addendum M-1

Question 7:
Section 23 05 00, Article 1.4.2.10 It was noted that Section 23 51 00 - Chimneys, flues and chimneys is the responsibility of the ventilation contractor. However, these are jobs done under the responsibility of the plumber contractor who supplies and installs equipment requiring fireplaces (including boilers). Please confirm by addenda that flue ventilation is part of our scope of work or if they are transferred to the plumber?

Answer 7:
See addendum M-1

Question 8:
We want to offer equity method for Section 23 52 00:
- 2.2 Steam boiler (we would propose the FLX model Cleaver-Brooks);
- 2.3 Condensing boiler (we would propose the CFC model Cleaver-Brooks.

Answer 8:
FLX model refused since its weight in operation is significantly higher than the specified model and structural reinforcements may be required, CFC model approved.

Question 9:
Mechanic section 23 05 00:
- article 1.2.3 : Phase 2.1 -Summer 2016 (May to September 2016) should be reviewed and include temporary heating plans for new boilers because it takes between 6 and 8 weeks of delivery which brings to early September;
- article 1.3.29.18 : The coil section is found in the scope of word of the heating contractor and also in the one of the ventilation contractor;
- article 1.4.2.11 please kindly remove the section to the heating contractor;
- article 1.3.3.18 " supply and installation of a new thermal wheel " : it is ventilation work the heating contractor can't perform the installation of this device please kindly give work in section concerned " ventilation ".

Answer 9:
- Considering the delivery of the boilers at the beginning of September and the majority of all other work completed, the existing schedule is kept as is for a completion no later than the beginning of October;
- See addendum M-1;

Question 10:
Can you specify if the chiller and condenser will be supplied and installed by refrigeration? This equipment is usually found supplied by refrigeration. Who will be responsible for startup and warranty?

Answer 10:
Yes, see section 23 05 00, item 1.3.2.27, and also 1.3.3.1.2.10 & 11. Heating & cooling contractor.

Question 11:
Equivalence request to humidification products (section 23 84 13) by Drysteem products DS- 5-60 and DS-8-80 models.

Answer 11:
See addendum M-2

Question 12:
Is BMK series of AERCO a approved equivalent to the condensing boiler specified in Section 23 52 00

Answer 12:
See addendum M-2

Question 13:
Buffer tank on drawing M15 / 20 at the axis 9 and J, there is no description of the component in the specifications.

Answer 13:
See addendum M-1.

Question 14:
On drawing M13 / 20 at the axis K and 8 we must install a temporary pump but there isn't any specifications for this pump ... could you give more information. In the drawing M07 / M20 some domestic water intakes for different networks have water meters. THe specifications of these meters are missing. Could you specify. On drawing M08/20, there is this equipment:  . It is not defined.

Answer 14:
See section 23 05 00, item 1.2.4.2. Meters will be adressed in addendum M-2. Water supply valve included with drain cooler, see 23 52 00, item 2.2.15.16.

Question 15:
You canceled Section 23 51 00 (fireplace) in the Addendum M-1 but kept the art. 5 " supply and install flue vents on the boilers." Please specify

Answer 15:
Will be modified in addendum M-2, to be in the scope of work of the heating-cooling contractor.

Question 16:
In the specifications, section23 05 93, art. 1.20.2, you ask to calibrate 87 units along with th recovery unit and U1-2-3-4 and 5 ? Will there be floor plans of these units to calibrate?

Answer 16:
The balancing of the 87 terminal units is for the adjustment & the support with the Command contractor because the pneumatic controls will be replace by DDC controllers. Diffusers will not be balanced. Systems URC/U-1/U-2/U-3/U-4 are installed in the mechanical room. System U-5 is installed in the boiler room. Original drawings could be supplied to the contractor following the contract award.

Question 17:
In addendum M1, Section 23 05 00 chimney section was removed from the sections included in our specialty (ventilation) (1.4.2.11 canceled), but the description has remained in our scope of work. In addendum M1, we have to dismantle and install electric motors U -1A fans, U -1R and U- 2A. Out supplier tells us that the description of the engines is incomplete for us to ask for prices. Manufacturers accepted? Closed or open motors? Efficiency? Etc.

Answer 17:
Will be modified in addendum M-2, to be in the scope of work of the heating-cooling contractor. Baldor, Canadian General Electric, Canadian Westinghouse, Leeson, Marathon, Reliance. ODP motor. High efficiency type, as per CSAC390M1985 or IEEE-112B or CEI-34.2 or JEC-37. T-Type frame. When VFD are uses to control the motor speed rotation, motor must be ‘inverter-duty’ type, class F insulation, complying with NEMA MG1-1993, section 31.

Question 18:
It is unclear in addendum M-1. The specifications: Section 23 05 00 article 1.3.2.23, the point is canceled. The article 3.2.12 indicates the supply and filling of refrigerant required for cooling. In addition, there are three devices that with no specification: preheating tank, drain tank and condensate cooler.

Answer 18:
Will be modified in addendum M-2, to be in the scope of work of the Ventilation contractor. See section 23 52 00, item 2.2.15.13. See section 23 52 00, item 2.2.15.15. See section 23 52 00, item 2.2.15.16.

Question 19:
Please provide us the chemical supplier contact information. (23 25 00 2.15 reagents)

Answer 19:
1271 Rue Ampère, Boucherville, QC J4B 5Z5.

**All other terms, clauses and conditions remain unchanged.**

# ADDENDUM NO. M-2

Project: Sherbrooke Research and Development Center – Major renovation of the hydraulic heating and cooling network
Phase 2 - Generality and mechanical sections
PWGSC : R.078727.001

Description: Addition and clarification of work

Project no.: 2012-186-103-1

Division: 23 - Mechanical

By: Benoit Rivard, eng. Date: 2016-06-20

1. This addendum shall be part of original drawings and specifications and shall form part of the contractual documents. Bidders shall make sure that the cost of this addendum is included in the bid amount.

2. Documents:

   2.1 Included documents:

      2.1.1 Specifications:

      - Section 23 05 00, pages 3, 4, 5, 9 and 10.
      - Section 23 21 14, page 3.
      - Section 23 52 00, pages 5 and 7.
      - Section 23 84 13, pages 3 and 3a.

3. Description of work:

   3.1 Clarification and upgraded scope of work in the "Cooling and Heating" mandate.

   3.2 Clarification and upgraded scope of work in the "Ventilation" mandate.

   3.3 Addition of the specification of the water meter.

.18 23 21 13.02 – Hydronic systems : Steel.

.19 23 21 14 – Hydronic Specialties.

.20 23 21 23 – Hydronic Pumps.

.21 23 22 13 – Steam and Condensate Heating Piping.

.22 23 22 14 – Steam Specialties.

① .23 Cancelled.

.24 23 25 00 – HVAC Water Treatment Systems.

.25 23 52 00 – Heating Boilers

.26 23 57 00 – Heat Exchangers for HVAC

.27 23 64 26 – Water Chillers.

.28 23 65 10 – Cooling Towers.

① .29 Cancelled.

① .30 23 51 00 – Breeching, Chimneys and Stacks

② .31 23 51 00 – Breeching, Chimneys and Stacks

.3 Heating and chilled water – Scope of the work:

.1 Included work:

.1 The work includes, in general, the labor, the delivery, and the installation of all materials and equipment necessary for the heating – chilled water work indicated on the drawings and specifications.

.2 This work includes, but is not limited to:

① .1 All demolition shown on the drawings and necessary for the completion of the project, including pot-feeders, accessories of the dismantled pumps, chemical treatment for the four cooling towers, etc.

.2 All new domestic water piping (hot and cold) for existing and new equipment.

.3 The backflow preventers on the domestic cold water pipe supplying the soft water system.

.4 All new gas piping for the new equipment.

.5 The complete chilled water system with forced supply and return circulation.

.6 The complete hot water system with forced supply and return circulation.

.7 The complete close circuit cooling tower water system with forced supply and return circulation.

.8 All temporary work required for proper equipment operation, including test, balancing and insulation.

.9 The supply and installation of all required pumps, on concrete foundation.

① Addendum no. M-1, entire section issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.10 The supply and installation of the water chillers REF-1 and REF-2 with air-cooled condensers, chillers installed on new concrete foundation in mechanical room, condenser installed on the steel structure on the roof, under the supervision of the chillers' manufacturer, ready to be assembled, connected, and turned on.

.11 The supply and installation of the water chillers REF-3, with heat recovery, chillers installed on new concrete foundation in mechanical room, under the supervision of the chillers' manufacturer, ready to be assembled, connected, and turned on.

② .12 Cancelled.

.13 The supply and installation of hot water boilers CEC-1, CEC-2 and CEC-3, installed on modified concrete foundation in boiler room, under the supervision of the chillers' manufacturer, ready to be assembled, connected, and turned on.

.14 The supply and installation of a steam boiler CVAP-1, installed on new concrete foundation in mechanical room, under the supervision of the chillers' manufacturer, ready to be assembled, connected, and turned on.

.15 The complete hot propylene glycol force flow heating system, supply and return with hot water – glycol exchanger for the preheating coil of the ventilation unit U-2.

.16 The supply and installation of a close circuit cooling tower no T-4, installed on structural support in mechanical room, under the supervision of the chillers' manufacturer, ready to be assembled, connected, and turned on.

.17 The supply and installation of the heat exchangers, installed on new concrete foundations in mechanical room, ready to be assembled, connected, and turned on.

① .18 Cancelled.

① .19 The complete chemical treatment system for the following systems: chilled water, hot water, steam and cooling towers.

.20 The complete glycol pressurisation systems for the chilled water, hot water and cooling tower network.

.21 The complete make-up water system for the chilled water, hot water and cooling towers water networks.

.22 The steam network for the humidifiers, including all required accessories.

.23 The pressure reducing stations on the steam system with safety valves and vents to the outside to supply the low pressure steam systems.

.24 The low pressure steam systems with gravity condensate systems and low pressure supply for the steam heating coils, the humidifiers, and the other devices indicated in the drawings.

① Addendum no. M-1, entire section issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.25 All special connections described in the specification and/or shown in the drawings.

.26 Provide the capping of the underground piping following the excavation and dismantling by Civil. Piping must be caped inside of the boiler room and outside the building. Provide welded cap or combination flange-blank flange.

.27 The supply, the storage, and the installation of springs, anti-vibration mounting pads, flexible hoses, and other noise dampening devices required for devices and systems supplied by heating – chilled water.

.28 The supports and structural steel components required to support the pipework, the fittings, and the equipment.

.29 The supply in sufficient quantity of all required propylene glycol necessary for the filling of all network.

.30 Tests, start-up and commissioning.

.31 Even with the commissioning planned on the chillers REF-1, REF-2 and REF-3 at the end of winter 2017, plan for a second commissioning on each chiller during the peak summer period, in order to validate proper operation. Plan for sufficient time to proceed with every verification as requested in sections 01.

.32 All special connections.

.33 Sealing of sleaves and openings.

.34 The coordination of erection drawings from sections from the Divisions 23, 25, and 26, in accordance with the requirements of the Division 01 - General Instructions.

.35 The insulation as described in sections 23 07 14 – Thermal Insulation for Equipment and 23 07 15 – Thermal Insulation for Piping.

.36 The complete identification of all devices and accessories, in accordance with section 23 05 53.01 Mechanical Identification.

.37 The seismic measures concerning heating – chilled water work, in accordance with Section 23 05 48 – Vibration and Seismic Controls for HVAC Piping and Equipment.

① .38 Balancing of all control valve to obtain required flow at every equipment.

② .39 The supply and installation of all new chimney for the boilers exhaust. Provide fire proof sealant between the combined chimney and the existing floor openings.

.3 Instrumentation openings:

.1 In the pipes and/or ducts, create the openings necessary for measuring instruments and temperature, pressure, flow, etc. control instruments, where required by the Division 25.

.2 Install wells in the piping for the thermometers and the temperature readings.

.3 Install access doors to the ventilation controls.

① Addendum no. M-1, entire section issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.2 The following sections are included in the scope of the ventilation work and complement each other to form a whole.

.1 23 05 00 – Common Work Results for HVAC.
.2 23 05 29 – Hangers and Supports for HVAC Piping and Equipment
.3 23 05 48 – Vibration and Seismic Controls for HVAC Piping and Equipment.
.4 23 05 53.01 – Mechanical Identification
.5 23 05 93 – Testing, Adjusting and Balancing for HVAC
.6 23 05 94 – Pressure testing of air duct system
.7 23 07 13 – Duct Insulation
① .8 23 23 00 – Refrigerant Piping.
.9 23 31 13.01 – Metal Ducts - Low Pressure to 500 Pa
.10 23 33 00 – Air Duct Accessories.
① .11 Cancelled.
.12 23 73 12 – Coils.
.13 23 84 13 – Humidifiers.

.3 Scope of work:

.1 Work included:

.1 The work includes, in general, labor, supply, and installation of all materials and equipment necessary for ventilation – air conditioning work indicated on the drawings and in the specification.

.2 This work includes, but is not limited to:

.1 All demolition shown on the drawings and necessary for the completion of the project.

.2 The supply and installation of a propylene glycol preheating coil in the ventilation unit U-2.

① .3 The complete replacement of the energy recovery wheel in the ventilation unit no URC-1. The supply and installation of a new energy recovery wheel, including the on-site support from the manufacturer for the measurement survey prior to the order, and the on-site support from the manufacturer for the installation of the new equipment by the contractor.

.4 The supply and installation of all new humidifier, complete with accessories.

② .5 Cancelled.

.6 The insulation as described in sections 23 07 13 – Duct Insulation.

.7 All special connections and ducts.

.8 All supports and structural steel components required to support the ducts and the equipment.

.9 All access doors.

① Addendum no. M-1, entire section issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.10 The supply and the installation of springs, anti-vibration bases, acoustic plenums, silencers, and other equipment required for this section.

.11 The vandal-proof grates at the locations shown in the drawings.

.12 All demolition, relocation, and recalibration work for ducts, terminal units, and diffuser grilles, as shown in the drawings.

.13 Identification of the systems' ventilation ducts, the devices, and the other accessories, in accordance with section 23 05 53.01 - Mechanical Identification.

.14 Tests, start-up and commissioning.

.15 All work for the balancing and the adjustments of the air quantities.

.16 Paraseismic measures for ventilation – air conditioning work, according to section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment.

① .17 The motor replacement of the ventilation units no U-1A, U-1R and U-2A, including the furniture of the belts and pulleys with variable pitch.

① .18 The dismantling of the inlets vanes of the fans no U-1A, U-1R and U-2A, including all accessories.

② .19 The supply and network filling of all necessary refrigerant for the proper operation of the chillers REF-1, REF-2 and REF-3.

.2 Work excluded:

.1 In general, the following work is excluded:

.1 The controls: the supply and the installation.

.4 Special connections and related work:

.1 See Divisions 01 and 23.

.2 Part of this section's work:

.1 The complete ventilation connections of the various devices indicated on the drawings and/or specifications, whether these devices are part of this section or not. The dimensions of the ventilation ducts to the devices shown in the drawings are approximate and should be verified with the other involved sections before the pipes are manufactured.

.2 The directives, the supervision, and the responsibility for the installation of the various devices provided by this section, but installed by another section.

.3 The welded or screwed connections for the ventilation devices and ducts prepared to receive the drain pipes.

.4 The openings and the access doors required for the control devices and the other instruments. The sealing of the pipes passing through the ventilation units.

.5 Documents to provide

.1 Provide the following documents:

.1 The certificates of approval from the concerned authorities.

① Addendum no. M-1, entire section issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.4 Double check valve assembly with discharge valve for reduced pressure assembly type.

.5 Low risk: supply water for glycol pressurisation system.

.1 Such as Watts model no 007.

.6 High risk: closed circuit network, make-up water for steam boiler, condensate cooler.

.1 Such as Watts model no 009.

.7 Installed as per CSA-B64 standard.

**2.4 PIPE LINE STRAINER**

.1 NPS 1/2 to 2: bronze body to ASTM B62, screwed connections, Y pattern.

.2 NPS 2 1/2 to 12: cast iron body to ASTM A278/A278M, Class 30, flanged connections.

.3 Blowdown connection: NPS 1.

.4 Screen: stainless steel with:

.1 Steam: 0.8 mm perforations.

.2 Water: 1.19 mm perforations.

.5 Working pressure: 860 kPa.

**2.5 SUCTION DIFFUSER**

.1 Body: cast iron with flanged connections.

.2 With no built-in strainer.

.3 Full length straightening vanes.

.4 Pressure gauge tappings.

① **2.6 DIAPHRAGM TYPE EXPANSION TANK**

.1 Vertical steel buffer tank, with internal baffle, as per ASME section VIII, Division I standards.

.2 Capacity: 760 L.

.3 Size: 1584 mm high x 762 mm diameter.

.4 Working pressure: 860 kPa.

.5 In-line flanged connection.

.6 Base mount for vertical installation.

.7 Buffer tank such as Amtrol model CWBT200-6 or a replacement product approved by addendum as per tenderers instruction.

② **2.7 WATER METER**

.1 Such as Jerman model DLJ Multi-Jet.

① Addendum no. M-1, issued on June 7, 2016
② Addendum no. M-2, issued on June 20, 2016

.15 Blowdown tank in mechanical room no. 301, such as GF-2439, complete with temperature regulator and solenoid valve, maximum water outlet temperature at 65°C, distributed by Service Énergétique RL.

.16 Condensate cooler in boiler room, local A-3, such as Armstrong model CC-5, preset temperature at 57°C.

.17 Chemical injection, see section 23 25 00 – HVAC water treatment system.

.18 Water softener, see section 23 25 00 – HVAC water treatment system.

.19 Metering pump, see section 23 25 00 – HVAC water treatment system.

.16 Performance:

.1 In accordance with ANSI Z21.13/CSA 4.9 (gas burning) testing procedures.

.2 Steam: 449 kg/h. Design steam pressure: 860 kPa. Operating pressure: 83 kPa, 82°C water supply.

.3 Natural gas, gas pressure of 14 kPa.

.4 Boiler efficiency: 80% minimum at 30% to 100% firing rates.

.5 Input: 352 kW, Output : 281 kW.

.6 Dimensions: 978 mm x 2160 mm x 1962 mm.

.7 Weight: 3050 lb (shipping), 3550 lb (operating).

.17 Identification: CVAP-1:

① .1 Steam boiler such as Bryan LLC model AB-120-S-150-30 or replacement product approved by addendum in accordance with the tenderers instructions such as :

.1 Cleaver-Brooks model M5700-1500-15#ST including all equipment and/or accessories listed above.

**2.3 MODULAR HOT WATER BOILER, NATURAL GAS PULSE FIRED, CONDENSING TYPE**

.1 Boilers must be part of the Gaz Metro grant for the energy efficiency program. Contractor is responsible for the management of the grant for the Owner.

.2 Heating boiler seasonal efficiency rating: 95%. Flue gas exhaust temperature of 75°C, when operating in condensing mode.

.3 Flue gas: individually direct vented. Combustion air: individually drawn from boiler room as indicated and as recommended by manufacturer.

.4 Provide gas regulator to lower inlet pressure from 35 kPa to 10 kPa, body 38 mm x 38 mm, orifice 19 mm, green/black spring, such as Rockwell 243-8-6.

.5 Each boiler/burner group must be supplied as a prefabricated unit, assembled and wired in plant and ready to receive mechanical and electrical connection on site. Installed on a base with eyebolts and anchors for seismic measure.

.6 Single point electric connection.

.7 Smooth surface without fins, allowing auto-clean of the surface by condensate flow.

.8 In respect with Quebec provincial codes, ACNOR B-51 and ASME section I and IV (1100 kPa at 121°C).

.9 Motorized damper for common evacuation.

① Addendum no. M-2, issued on June 20, 2016

.2 Operating temperature:
.1 Supply: 49ºC
.2 Return: 38ºC

.4 CEC-3:
.1 Hot water flow of 4.75 l/s. max operating pressure: 517 kPa.
.2 Operating temperature:
.1 Supply: 85ºC
.2 Return: 63ºC

.5 Input: 423 kW, Output: 402 kW.

.6 Dimensions: 1078 mm x 2273 mm x 1428 mm

.7 Weight: 1495 lb shipping), 2000 lb (operating).

.15 Identification: CEC-1 to CEC-3:

① .1 Condensing boiler such as Viessmann CM2-400 or replacement product approved by addendum in accordance with the tenderers instructions such as:
.1 Aerco model BMK-1500 including all equipment and/or accessories listed above.
.2 Cleaver-Brooks model CFC-500 including all equipment and/or accessories listed above.

**2.4 AUXILIARIES**

.1 Provide auxiliaries for each boiler and to meet ASME requirements.

.2 Hot water boilers:
.1 Relief valves: ASME rated, set at 517 kPa, to release entire boiler capacity.
.2 Pressure gauge: 90 mm diameter complete with shut-off cock.
.3 Thermometer: 127 mm diameter range 10 to 125°C.
.4 Low water cut-off: with visual and audible alarms.
.5 Isolating gate valves: on supply and return connections.
.6 One set of cleaning tools.

.3 Steam boilers:
.1 Safety valves: ASME rated, set at 103kPa, complete with drip pan elbow and vent pipe.
.2 Pressure gauge: 130 mm diameter range 0 to 200 kPa, complete with syphon and cock.
.3 Water column assembly: with tri-cocks, gauge glass, protective rods, blowdown valves operated from firing floor.
.4 High water level: audible alarm.
.5 Low water level: fuel cut-off with visual and audible alarms and feedwater pump control switch.
.6 Feedwater regulator on 3-valve bypass with drain valve, stop valve and check valve.
.7 Continuous blow-down stop valve.
.8 Auxiliary low water cut-off with separate cold water connection to boiler.
.9 Steam stop valve.
.10 Quick-opening blowdown valve and shut-off valve.

① Addendum no. M-2, issued on June 20, 2016

.11 The distribution tube will provide a uniform jet of steam along its entire length and will be jacketed by a chamber filled with line pressure steam in order to provide the driest possible steam to the duct. It will also have an internal wire mesh in stainless steel to provide additional sound attenuation.

.12 The humidifier will come equipped with a temperature switch to ensure proper drainage of the cold condensate before start-up.

.13 Capacities, dimensions and selection as per indication below:

① .1 HUM-1 (Unit U-1): 70 kg/h, pressure of 70 kPa, orifice of 13 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 92-M8. Equipment such as Armstrong BLEM-92 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-8-80.

.2 Nortec.

① .2 HUM-2 (Unit U-2): 130 kg/h, pressure of 70 kPa, orifice of 16 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 93-M8. Equipment such as Armstrong BLEM-93 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-8-80.

.2 Nortec.

① .3 HUM-3 (Unit U-3): 14 kg/h, pressure of 70 kPa, orifice of 5 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 91-M2. Equipment such as Armstrong BLEM-91 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-5-60.

.2 Nortec.

① .4 HUM-4 (Unit U-4): 14 kg/h, pressure of 70 kPa, orifice of 5 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 91-M2. Equipment such as Armstrong BLEM-91 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-5-60.

.2 Nortec.

① .5 HUM-5 (Unit U-1-Librairy): 25 kg/h, pressure of 70 kPa, orifice of 6 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 91-M1.5. Equipment such as Armstrong BLEM-91 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-5-60.

.2 Nortec.

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① .6 HUM-6 (Unit U-1-Librairy): 25 kg/h, pressure of 70 kPa, orifice of 6 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 91-M1.5. Equipment such as Armstrong BLEM-91 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-5-60.

.2 Nortec.

① .7 HUM-7 (Computer room): 9.5 kg/h, pressure of 70 kPa, orifice of 4 mm, complete with steam trap and strainer, 24 V Belimo electric actuator, 4-20 mA and electric temperature switch. Distributor: 1 x 91-M1. Equipment such as Armstrong BLEM-91 or a replacement product approved by addendum as per tenderers instruction such as:

.1 DriSteem model DS-5-60.

.2 Nortec.