1. PART 1 – GENERAL

1.1 Product Data

.1 Submit shop drawings and product data in accordance the requirements of section 230500E.
.2 Design detailed control systems for specific operations. Refer to operation sequences in accordance with drawings and this section.
.3 Shop drawings, product data for all control equipment and complete control diagrams must indicate rest position of equipment, model numbers, connection lines, operation sequences, set points, and adjusting ranges.

1.2 Automatic control works

.1 Scope of work
  .1 Automatic control contractor shall be a subcontractor of the HVAC contractor.
  .2 Provide materials and manpower as well as training and programming required for control works.
.2 Dismantling
  .1 Remove existing useless control accessories.
.3 New setup
  .1 Provide, install and connect all new electronic and electro-pneumatic accessories to operate equipment according the sequence described on drawings (see diagram and details on drawings). Include all local controllers, I/O cards, relay, thermostats, probes, 120/24 VAC transformers, conduits and wiring cables required for complete work including interlocks and remote commands of motors at 120 volts.
.4 Materials
  .1 All products from Schneider Electric from Procetech to be compatible with existing management network TAC # MNB-1000 BacNet I/P at CSA or equivalent by Trane Quebec.
  .2 See details for some control diagram items not be interpreted as connection diagram.
  .3 All wiring to Quebec Electrical Code and NBC-2005. All wiring in visible locations to be installed in EMT conduits, and in Greenfield conduct in partitions and for the last 600 mm connection to a motor or a mobile equipment.
  .4 Pneumatic signal will be 0 to 15 psig for direct action, and of 10 to 15 psig for reverse action of a DD box, when it applies.

2. PART 2 – PRODUCTS

2.1 General

.1 Include all equipment and accessories required for operations and respect operation sequences.
.2 Control to be of electric-electronic type, or/and electro-pneumatic type.
.3 In general, concealed tubing in walls to be in PVC, but in copper in ceiling spaces, control wiring to be installed in conduit in accordance with Division 26.
.4 Control equipment from same manufacturer-installer, unless otherwise indicated in drawings or in specifications.

2.2 Control valves

.1 See control valve schedule hereafter:

Tableau des vannes de contrôles / Control valve schedule

No/Nb	Type	Débit	Corps/Body	Fonction/Service	Operation	CV	Diametre	Notes
5-082-VC-001	2W 2 voies	2.3 gpm (0.15 l/s)	Laiton chromé Chromed brass	Eau ref./Chilled W.	Modulante Modulating	1.9	DN-1/2	1, 2, 3, 4, 5, 6

Notes:
1- Bille en acier inoxydable / Stainless steel ball
2- Actuateur série MFT / MFT series actuator
3- Signal de contrôle 2-10 vdc / 2-10 vdc control signal
4- Contact auxiliaire / Auxiliary switch
5- Activation manuelle d'urgence / Manual overside
6- Ressort de rappel / Spring return
7- Sans ressort de rappel / Non spring return
8- Flottan / Floating type

.2 Quality required: Belimo or equivalent form Siemens or Honeywell, of characterized equal percentage (modulation) and complete with its factory mounted actuator.

3. PART 3 – EXECUTION

3.1 Installation

.1 Install all required control components in accordance with manufacturer's recommendations.
.2 After installation, use, adjust and set all control elements and equipment installed in accordance with this section, to operate systems in accordance with operation sequences.

3.2 Control sequences and building management

.1 See mechanical drawings for control diagrams and HVAC system sequences.
.2 The monitoring of the actions and functions to be displayed on the screen of the building management central controller as indicated on the diagrams on plans and as follows:
  .1 Start / stop of supply fans.
  .2 Operation of control valves on chilled water cooling coils.
  .3 All stop on emergency (alarm low temperature, manual shut off, etc.).
  .4 Temperature of the elevator machine room.
  .5 High level alarm of the elevator shaft sump pit, indicating a pumping defect.