1. **PART 1 – GENERAL**
   1. **References**
      1. All work shall be in conformance to the latest revision of « Quebec Building Code – Chapter I», unless otherwise indicated.
      2. All work shall conform to the latest revised codes and standards that having jurisdiction, including but not limited to:
         1. ANSI / ASME B40.2, Thermometers, Direct reading and Remote Reading;
         2. CAN / CGSB-14.4, Thermometers, Liquid-in-Glass, Self-Indicating, Commercial / Industrial Type;
         3. CAN / CGSB-14.5, Thermometers, Bimetallic, Self-Indicating, Commercial/Industrial Type.
   2. **Submittals**
      1. Product Data:
         1. Submit shop drawings and technical data in conformance with client’s instructions.
      2. Identify the features listed on the manufacturer's documentation:
         1. Thermometer;
         2. Thermowell.
   3. **Instruction and Maintenance Manual**
      1. Submit manufacturer’s installation and start-up instructions.
      2. The maintenance manual will comprise of or indicate the following:
         1. A description of the major components; the manufacturer, series or model reference number;
         2. All details relating to the operation, care and maintenance of component;
         3. A list of equivalent component replacements.
2. **PART 2 – PRODUCT**
   1. **Digital Thermometer**
      1. Digital industrial glass thermometer conforming to CAN / CGSB-14.4.
         1. 4-1/2” x 2-3/8” Hi-impact ABS case, adjustable angle, self-powered (no battery) 3/8" LCD digits display, dual °F & °C switchable temperature reading.
         2. Temperature range -40 to 150°C (-40 to 302°F), accuracy +/-1% of reading or 1° whichever is greater, internal calibration.
         3. Scaling range are as follows:
            1. Chilled water: -40 to 150°C (-40 to 302°F);
            2. Domestic water: -40 to 150°C (-40 to 302°F);
            3. Heating at low temperature: -40 to 150°C (-40 to 302°F);
            4. Heating at normal temperature: -40 to 150°C (-40 to 302°F).
         4. Acceptable component: Flo Fab series DVU35.
   2. **Direct Reading Thermometer**
      1. Direct reading industrial thermometer conforming to CAN / CGSB-14.4.
         1. 9” (22 mm) high rectangular type with rigid aluminum frame and unbreakable plexiglass window.
         2. Capillary tube contains highly visible red mercury, adjustable stem allowing temperature reading to be visible at a distance, combined °F and °C scale.
         3. Scaling range are as follows:
            1. Chilled water: 0 to 59°C (32 to 138°F);
            2. Domestic water: 15 to 88°C (59 to 190°F);
            3. Heating at low temperature: 15 to 88°C (59 to 190°F);
            4. Heating at normal temperature: 15 to 117°C (59 to 243°F).
         4. Acceptable component: Flo Fab series L9VU.
   3. **Thermowell**
      1. Install copper or bronze thermowells in copper piping.
      2. Install stainless steel or brass thermowells in steel piping.
3. **PART 3 – EXECUTION**
   1. **Installation**
      1. Install thermometers at indicated locations and at the entrance and exit of these components:
         1. Heat exchangers;
         2. Heating and cooling coils;
         3. Boilers;
         4. Refrigeration;
         5. Cooling towers;
         6. Domestic hot water.
      2. Use extension piping when the thermometers are mounted on insulated piping.
      3. A thermowell should be used on all pressurized applications, to protect the stem of the thermometer from corrosion and physical damage, and to facilitate removal of the thermometer without disturbing the process.
      4. Supply and pre-install fittings for thermometers where proper system balancing will require temperature measurements.

**End of Section**