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 Section VIII, Boiler and Pressure Vessel Code.
         2. ANSI / ASME B16.1, Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.
         3. ANSI / ASME B16.3, Malleable-Iron Threaded Fittings, Classes 150 and 300.
         4. ANSI / ASME B16.5, Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.
         5. ANSI / ASME B16.9, Factory-Made Wrought Steel Buttwelding Fittings.
         6. ANSI / ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
         7. ANSI / ASME B16.22, Wrought Copper and Copper Alloy Solder‑Joint Pressure Fittings.
         8. ANSI / ASME B18.2.2, Square and Hex Nuts.
         9. ANSI / ASME B16.25, Butt Welding Ends.
         10. ANSI / AWWA C111 / A21.11, Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
         11. ANSI B18.2.1, Square and Hex Bolts and Screws.
         12. ASTM A47M, Specification for Ferritic Malleable Iron Castings.
         13. ASTM A53, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
         14. ASTM A126, Specification for Grey Iron Castings for Valves, Flanges and Pipe Fittings.
         15. ASTM A278, Specification for Grey Iron Castings for Pressure - Containing Parts for Temperatures up to 345°C.
         16. ASTM A167, Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet and Strip.
         17. ASTM A216 / A 216M, Specification for Steel Castings, Carbon, Suitable for Fusion Welding for High-Temperature Service.
         18. ASTM A276, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
         19. ASTM A351 / A351M, Specification for Steel Castings, Austenitic, for High-Temperature Service.
         20. ASTM A564 / A564M, Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless and Heat-Resisting Steel Bars, Wire and Shapes.
         21. ASTM B32, Specification for Solder Metal.
         22. ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
         23. ASTM B75, Specification for Seamless Copper Tube.
         24. ASTM E202, Test Method for Analysis of Ethylene Glycols and Propylene Glycols.
         25. CSA W47.1, Certification of Companies for Fusion Welding of Steel.
         26. CSA W47.1S1, Supplement No 1, Steel Fixed Offshore Structures, to W47.1.
         27. CSA B51, Boiler, pressure vessel, and pressure piping code.
         28. MSS-SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.
         29. MSS-SP-71, Cast Iron Swing Check Valves, Flanged and Threaded Ends.
         30. MSS-SP-80, Bronze Gate, Globe, Angle and Check Valves.
   2. **Submittals**
      1. Submit dimensional drawings and technical data in conformance with client’s instructions.
   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’s series or model reference number, rating, flow and pressure;
         2. All details relating to the operation, care and maintenance of component;
         3. A list of equivalent component replacements.
2. **PART 2 – PRODUCT**
   1. **Shell And Tube**
      1. General:
         1. [Steam-Water] [Water-Water] [Glycol-Water]. Heating medium circulates within the shell and outside the tube bundle and transfers heat to medium circulating within the tubes bundle.
         2. The heat exchanger is designed, constructed and tested in accordance with the requirements of the reference standards listed above.
         3. The heat exchanger will carry the ASME seal of approval.
      2. Shell: steel construction and pressure tested to 1 MPa (145 psi), threaded inlet and outlet connections for sizes up to \_\_” and flanged connections for larger sizes, threaded taken for receiving an expansion valve, pressure gauge, fitting and disposal vacuum breaker.
      3. Head: Steel construction with threaded inlet and outlet connection for receiving vacuum breaker.
      4. Pressure of 1034 kPa (150 psi).
      5. Maximum temperature up to: 190°C (375°F).
      6. Tubes: Outside diameter DN 3/4, stainless steel 304, with Teflon support.
      7. Steel tubesheet
      8. Fouling factor: steam side 0.0005 and water side 0.001.
      9. Capacity: follow heat exchanger board indications.
      10. Mounting bracket: steel or cast metal saddles.
      11. Suitable product : Flo Fab series S et W.
3. **PART 3 – EXECUTION**
   1. **Installation**
      1. Follow directions to install safely to stands.
      2. Tube exchangers casing: Place piping so that the beam removal needs only the dismantling of the flange or of the two pipe union adjacent to the head of the exchanger and ensure that it doesn’t block any device or system’s performance and capacity.
      3. Plate exchanger: follow manufacturer directions for installation.
   2. **Accessories**
      1. Install relief valve threaded via piping to connection ventilation, vacuum breaker and outlet connection with threaded tap.
      2. On water side, inlet and outlet; install thermometer housed in thermowell and pressure gouge.
      3. Place pressure gauge on steam inlet piping.

**End of Section**