PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

A. Extent of heat exchangers work required by this section is indicated on drawings and schedules, and by requirements of this section.

B. Types of heat exchangers specified in this section include the following:
   1. Water-to-Water Plate and Frame Heat Exchanger.

C. Refer to other Division 23 sections for insulation of heat exchangers; piping, valves, specialties, and controls required in conjunction with heat exchangers; not work of this section.

1.2 QUALITY ASSURANCE:

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of heat exchangers, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Codes and Standards:
   1. ASME Compliance: Construct heat exchangers in accordance with ASME Boiler and Pressure Vessel Code, Section VIII "Pressure Vessels", Division 1.
   2. NEMA Compliance: Construct and install heat exchangers in accordance with "Standards of the Tubular Exchanger Manufacturers Association".

1.3 SUBMITTALS:

A. Product Data: Submit manufacturer's technical product data for heat exchangers including performance data, materials, dimensions, weights, and installation data. Submit Manufacturer's Data Report for Pressure Vessels, Form U-1, as required by provisions of ASME code rules.

B. Shop Drawings: Submit manufacturer's assembly-type shop drawings indicating dimensions, weight loadings, required clearances, and methods of assembly of components.

C. Record Drawings: At project closeout, submit record drawings of installed systems products in accordance with requirements of Division 23.

D. Maintenance Data: Submit maintenance data and parts list for each heat exchanger including "trouble-shooting" maintenance guide. Include this data and product data in maintenance manual; in accordance with requirements of Division 23.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING:

A. Handle heat exchangers carefully to prevent damage, breaking, denting, and scoring. Do not install damaged units or components; replace with new.

B. Store heat exchangers in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.
C. Comply with manufacturer's rigging and installation instructions for unloading heat exchangers, and moving them to final location.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:

1. Water-to-Water Plate and Frame Heat Exchangers:

   a. Bell & Gossett
   b. Alfa Laval
   c. Paul Mueller Co.
   d. Tranter, Inc.
   e. APV
   f. Plate Concepts, Inc.

2.2 PLATE AND FRAME HEAT EXCHANGER:

A. This Contractor shall provide plate and frame heat exchanger of capacity as scheduled and where shown on the drawings with embossed heat transfer plates, perimeter gaskets, guide rails, and frames and compression bolts.

B. Units shall be ASME rated for 125 psig operating pressure, 300 deg. F. (149 deg. C) maximum temperature, have a heat transfer area to be produce the conditions scheduled on the drawing.

C. Frame shall be carbon steel with baked epoxy enamel paint, zinc or cadmium plated side bolts and aluminum shroud. Plates shall be Type 304 stainless steel.

D. Gaskets shall be peroxide cured nitrile rubber or NBR. Gaskets shall be secured by a removable adhesive or other means to facilitate future disassembly.

E. Nozzles shall be studded port or grooved mechanical coupling, of the size called for on the drawings.

F. Frame shall be sized to accommodate additional plates to provide [ ]% additional flow at the same pressure drop scheduled on the drawings. Show future expansion ability on submittals.

G. Provide a protective insulated shroud where any surface could reach a temperature of 140° F or higher.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Examine areas and conditions under which heat exchangers are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION OF PLATE AND FRAME HEAT EXCHANGERS:

A. General: Comply with plate and frame heat exchanger manufacturer's instructions for installation.

B. Install plate and frame heat exchangers, piping and accessories in accordance with manufacturer's instructions.
C. Piping: Provide piping as indicated, including shutoff valves (butterfly valve with infinite memory stop where required for balancing), thermometers and pressure gauges at each inlet and outlet, and hose-end drain valve at lowest connectors, or unit side of valves. Arrange isolation valves and flanges/mechanical couplings to allow removal of a section of piping to facilitate cleaning.

D. Insulate areas of heat exchanger which would exceed 120°F.

3.3 ADJUSTING AND CLEANING:

A. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.4 SPARE PARTS:

A. General: Furnish to Owner, with receipt, one spare gasket for each flanged connection for each heat exchanger.

END OF SECTION 23 57 00