# GENERAL

## SECTION INCLUDES

## [Note to A/E: Edit to remove unused HTX types]

### Shell and tube type heat exchangers, accessories, and trim.

### Gasketed plate and frame heat exchangers, accessories, and trim.

## REFERENCE SECTION 23 05 00 FOR THE FOLLOWING:

### Quality assurance.

### References.

### Submittals.

### Operation and maintenance manuals.

### Project record documents.

### Delivery, storage, and handling.

## REGULATORY REQUIREMENTS

### Conform to Section 8D of the ANSI/ASME Boilers and Pressure Vessels Code for manufacture of tubular heat exchangers and heat exchanger shells.

### ASME Section II – Material Specification

### ASME Section V – Non-Destructive Testing

### ASME Section IX – Welding and Brazing qualifications

### ASME Section VIII – Pressure Vessel Code

# PRODUCTS

## PERFORMANCE REQUIREMENTS

### Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic restraints for heat exchangers.

## SHELL AND TUBE TYPE HEAT EXCHANGERS

### Description: Packaged assembly of tank, heat-exchanger coils, and specialties.

### Construction:

### Fabricate and label heat exchangers to comply with ASME Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels," Division 1.

#### TEMA registration is an added quality assurance that the products comply with TEMA engineering and manufacturing criteria. Not all manufacturers listed are TEMA members. Contact TEMA for a current member listing.

#### Fabricate and label shell-and-tube heat exchangers to comply with "TEMA Standards" and AHRI certification.

### Tubes: U‑tube type with ¾ inch OD and minimum 0.035” thick wall seamless copper tubes suitable for 150 psig Working pressure at 375°F.

### Baffles: Steel

### Shell: Steel with flanged piping connections and necessary taps, steel saddle and attaching U‑bolts, prime coated.

### Heads: Cast iron or fabricated steel with steel tube sheets, flanged for piping connections.

### Water Chamber and Tube Bundle: Removable for inspection and cleaning.

### Design: Steam in shell and heated fluid in tubes.

### Support Saddles:

#### Fabricated of material similar to shell.

#### Fabricate foot mount with provision for anchoring to support.

#### Fabricate attachment of saddle supports to pressure vessel with reinforcement strong enough to resist heat-exchanger movement during seismic event when heat-exchanger saddles are anchored to building structure.

### See mechanical schedules for capacity criteria.

## GASKETED PLATE AND FRAME HEAT EXCHANGERS

## [Note to A/E: Edit to suit any special process water needs]

### Configuration:

### Freestanding assembly consisting of frame support, top and bottom carrying and guide bars, fixed and movable end plates, tie rods, individually removable plates, and one-piece gaskets.

#### Fabricate and label plate and frame heat exchangers to comply with AHRI certification.

### Construction:

### Fabricate and label heat exchangers to comply with ASME Boiler and Pressure Vessel Code, Section VIII, "Pressure Vessels," Division 1.

### Frame:

### Capacity to accommodate 20 percent additional plates.

### Painted carbon steel with provisions for anchoring to support.

### Top and Bottom Carrying and Guide Bars: Painted carbon steel, aluminum, or stainless steel.

### Fabricate attachment of heat-exchanger carrying and guide bars with reinforcement strong enough to resist heat-exchanger movement during seismic event when heat-exchanger carrying and guide bars are anchored to building structure.

### End-Plate Material: Painted carbon steel.

### Tie Rods and Nuts: Steel or stainless steel.

### Plate Material: 0.024 inch thick before stamping; Type 304 stainless steel.

### Gasket Materials: Glued

### Glue: Chlorine free.

### Enclose plates in solid aluminum removable shroud

# EXECUTION

## INSTALLATION

### Install Work in accordance with manufacturer’s recommendations.

### Shell and tube heat exchanger installation:

#### Install with clearance to permit removal of tube bundle with minimum disturbance to installed equipment and piping.

#### The shell and tube heat exchanger shall have adequate condensate return line equipped with proper trap for steam system. Exchanger shall be equipped with proper vacuum breaker and/or vent as required.

#### Support shell and tube heat exchanger from floor with manufacturer-provided stand. Stand height shall be coordinated to ensure gravity drainage of steam condensate to mechanical room condensate receiver.

#### Pitch shell to completely drain condensate.

#### Provide steam to water heat exchanger with trim as shown and scheduled on the drawings.

### Gasketed plate and frame heat exchanger installation:

#### Install with clearance to permit removal of plates with minimum disturbance to installed equipment and piping.

#### Install gasketed plate and frame heat exchanger on supports anchored to structure.

#### Install metal shroud over installed heat exchanger according to manufacturer’s written instructions.

#### Provide heat exchanger with trim as shown and scheduled on the drawings.

### After completing system installation, including outlet fitting and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes.

END OF SECTION 23 57 00

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