BY AMANDA McKEW

AIR COOLED Condensing Unit

DRAWING CHECKLIST:	Done	N/A
• Designate equipment on drawing.	❑	❑
• Schedule and specify equipment in construction documents	❑	❑
• Coordinate electric data (motor control) locations with electrical engineer.	❑	❑
• Coordinate structural data (weights, housekeeping pad, inertia pads) with structural engineer.	❑	❑
• Show associated ATC and DDC panels on drawing(s).	❑	❑
• Coordinate location with project on-line diagram.	❑	❑
• Check access around equipment (recommended clearances).	❑	❑
• Position access away from edge of building for safety.	❑	❑
• Indicate direction of flow (arrow).	❑	❑
• Indicate reference to applicable detail on drawing.	❑	❑
• Indicate control devices on detail.	❑	❑

ELECTRICAL INSTALLATION (PER CONTRACT DRAWINGS AND SPECIFICATION):	Done	N/A
• Write sequence of operation for all sequences of use (job specific):	❑	❑
– Off (valve[s], fans status, temperature sensors, flow sensors);	❑	❑
– Summer mode (minimum to maximum cooling) – staging;	❑	❑
– Winter mode (head pressure control); and	❑	❑
– Alarm modes (visual/building management system).	❑	❑
• When selecting condenser, consider maximum air temperature entering the coil.	❑	❑
• For low temperature food refrigeration applications, consider low-pressure, drop thermostatic expansion valves.	❑	❑
• To prevent low head pressure, consider adding receiver and larger charge of refrigerant or split condenser design.	❑	❑
• Prevailing winds should blow towards the air intake for outdoor installations of vertical face condensers.	❑	❑
• Consider propeller fans, which are suited for low-static operations.	❑	❑
• Centrifugal fans perform best at higher static pressures.	❑	❑
• Commonly used values range from 600 to 1,200 cfm/ton at 400 to 800 fpm.	❑	❑
• Fan power requirements generally range from 0.1 to 0.2 hp/ton.	❑	❑
• Fan (blade) speed selections should be in the range of 515 to 1,750 rpm (sound requirements per job).	❑	❑
• Check if construction is designed to prevent refrigerant leaks (refer to applicable codes).	❑	❑
• Coordinate sequence of operation with flow diagram.	❑	❑
• Include equipment cut and information in job folder.	❑	❑
• Include static pressure/head pressure calculations in job folder.	❑	❑
• Coordinate electric data with electrical engineer (hp, kW, emergency use requirements).	❑	❑

• Coordinate structural data with structural engineer.	❑	❑
• Complete design intent document.	❑	❑
• Complete system readiness (startup) sheet(s).	❑	❑

VALUE ENGINEERING TIPS	Done	N/A
• System selection analysis based on *ASHRAE 2000 Systems Handbook*, Chapter 1.	❑	❑
• Premium efficiency motors specified with ROI.	❑	❑
• If condensing temperatures are relatively high, consider subcooling the liquid refrigerant after condensing (by water or air).	❑	❑
• Perform periodic inspection and lubrication of fan motor, fan bearings, and adjust belt tension as necessary.	❑	❑

REFERENCES:

- For weather data refer to 2001 *ASHRAE Handbook — Fundamentals*.
- For heat transfer coefficients, refer to *2001 ASHRAE Handbook — Fundamentals*, Chatpers 3 and 4.
- For pipe sizing, refer to *2001 ASHRAE Handbook — Fundamentals*, Chapter 35.
- For receive piping/valving requirements refer to ASHRAE Standard 15.

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If you have any comments, suggestions, or questions regarding this designer check list, contact Amanda McKew at **amckew@rdkimball.com**. *This column is meant to provide some basic guidelines for good design. Always consult all necessary codes and resources relevant to each particular project.*

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