BY AMANDA McKEW

DESIGN REVIEW & EQUIPMENT STARTUP

Checklist For AHU Replacement / Retrofit

Equipment type: Type of AHU
Equipment designation: AHU-1
Bar code designation: 111111
Area served: Base building
Equipment location: First floor equipment room

REPLACEMENT PHASING CONSIDERATIONS	YES	NO
• Is AHU outside air louver size adequate for retrofit application (e.g., air intake velocity)?	❑	❑
• Can the AHU work be done during off hours or during a particular season or does phasing need to be set up?	❑	❑
• Are there isolation valves in place in the hot water/chiller water system to allow for shutdown, or will a special shutdown and drain down be required to add them?	❑	❑
• Are there issues to be addressed for temporary cooling, heating, or ventilation before AHU can be removed and replaced?	❑	❑

ELECTRICAL INSPECTION/REQUIREMENTS	YES	NO
• What are the new electrical requirements to accommodate the new equipment (fan motor, VFD)?	❑	❑
• Is there adequate space for AHU replacement and electrical equipment service clearances?	❑	❑
• Is there adequate electrical power to meet the AHU replacement requirements?	❑	❑
• Has the electrical scope of work required to disconnect the old AHU and connect the new AHU been identified?	❑	❑
• Will emergency power be a requirement for AHU?	❑	❑
• What electrical system components (existing conduits, light fixtures, panels, etc.) will require removal, reinstallation, and/or relocation to accommodate the new AHU installation?	❑	❑
• Are there existing electrical code issues that should be addressed at this time (code required space in front of drives)?	❑	❑

HVAC INSPECTION/REQUIREMENTS	YES	NO
• Select AHU and obtain building owner agreement.	❑	❑
• Update existing air flow diagrams to reflect new system design intent and design criteria.	❑	❑
• Update existing water flow diagrams to reflect new system design intent and design criteria.	❑	❑
• Complete AHU building management system in an automatic control-functional performance action/reaction matrix.	❑	❑
• Test existing equipment associated with the AHU system for existing capacities.	❑	❑
• Can existing AHU be removed without disassembly?	❑	❑
• Can the new AHU be installed without disassembly?	❑	❑
• Can the new AHU be installed without removing exterior doors, and walls and/or removing interior door and walls?	❑	❑
• Can the new AHU be installed without removing other equipment?	❑	❑
• Determine pressure testing of pipe distribution.	❑	❑
• Determine pressure testing of ductwork distribution.	❑	❑
• Give consideration to the manufacturer's recommended clearance around equipment for service and coil removal.	❑	❑

PLUMBING REQUIREMENTS	YES	NO
• Is there a floor drain in vicinity of coil piping?	❑	❑
• Is there drain boos and piping at air intake louver?	❑	❑
• Is there gas piping required (add gas-burner)?	❑	❑

GENERAL CONTRACTOR CONSIDERATIONS/ REQUIREMENTS	YES	NO
• Include housekeeping removal and new housekeeping pad cost in scope of work (if necessary).	❑	❑
• Include building demolition and disposal of material cost in scope of work.	❑	❑
• Can existing overhead structure accommodate the rigging and removal of the AHU (if disassembly is needed)?	❑	❑
• Can existing floor structure accommodate the rigging out of the existing AHU, ductwork and piping and rigging in of the new AHU, ductwork, and piping?	❑	❑

GENERAL CONTRACTOR CONSIDERATIONS/ REQUIREMENTS	YES	NO
• Are there any permits required?	❑	❑
• Submit insurance certificates to building owner.	❑	❑
• Include AHU O&M website info along with electronic copy or O&M manual and two paper copies of manual.	❑	❑
• Laminate flow diagrams drawings with chilled water and hot water / system management matrix on reverse side, and post them in mechanical room.	❑	❑

REFERENCE

• *2004 ASHRAE Handbook – Systems & Equipment:* Chapter 1– "HVAC System Analysis & Selection" and Chapter 2 – "Building Air Distribution."
• *2003 ASHRAE Handbook – Applications:* Chapter 3 for additional information relative to AHUs.
• *2005 ASHRAE Handbook – Fundamentals:* Chapter 34 – "Duct Design" and Chapter 35 – "Pipe Sizing."

NOTE

• Refer to equipment manufacturers' literature for additional data and requirements.
• Refer to "HVACR Designer Tips" from January July, and November 2005 and October 206for more information on design review and equipment start up for other AHU systems.
• Refer to October, November, and December issues of "Back to Basics" for more information on AHU replacement. **ES**

If you have any comments, suggestions, or questions regarding this designer checklist, contact Amanda McKew at **amckew@rdkengineers.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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