



DESIGN REVIEW AND EQUIPMENT STARTUP CHECKLIST FOR CHILLER REPLACEMENT/RETROFIT

Equipment type: Type of chiller **Equipment designation:** CH-1
Bar code designation: 111111 **Area served:** Base building
Equipment location: Chiller room 1-110

REPLACEMENT PHASING CONSIDERATIONS

- | | YES | NO |
|--|--------------------------|--------------------------|
| • Is the chiller equipment room up to current code relative to refrigerant ventilation compliance? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can replacement occur when CHW plant is shutdown? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are there isolation valves in place or will a special shutdown and drain down be required to add them? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will isolation valves need to be installed in heating season, chiller plant shutdown if project schedule calls for A/C season chiller removal? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are there HazMat (asbestos, refrigerant, lithium bromide, etc.) issues to be completed prior to chiller removal? | <input type="checkbox"/> | <input type="checkbox"/> |

ELECTRICAL INSTALLATION / REQUIREMENTS

- | | YES | NO |
|--|--------------------------|--------------------------|
| • What are the new electrical requirements? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is there adequate electrical power to meet new chiller size requirement? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is there adequate electrical power from the street? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Identify electrical scope of work required. | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will emergency power be a requirement? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will electrical harmonics be an issue? | <input type="checkbox"/> | <input type="checkbox"/> |
| • What electrical system components will require removal, reinstallation, and/or relocation to accommodate chiller removal and new chiller installation? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will a utility rebate initiative be submitted? | <input type="checkbox"/> | <input type="checkbox"/> |

HVAC INSPECTION / REQUIREMENTS

- | | YES | NO |
|--|--------------------------|--------------------------|
| • Has optimum chiller selection been completed and agreed upon by building owner? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has existing CHW system flow been updated to reflect new system design intent and design criteria? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has an automatic control-functional performance matrix been completed for the CHW management system? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have gpm pressure drop/velocity been noted on distribution points of the CHW piping flow diagrams? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have existing pump curves been assessed for optimum performance under the new CHW management conditions? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can existing chiller be removed without disassembling? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can the chiller be installed without disassembling or removing exterior or interior doors and walls? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can the new chiller be installed without removing other HVAC, electrical, plumbing, communication, and/or fire protection distribution or equipment? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has consideration been given to future replacements? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has pressure testing of pipe distribution been determined in scope of work (e.g., only new installation piping)? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has system flushing been determined in scope of work (e.g., flush only new installation piping)? | <input type="checkbox"/> | <input type="checkbox"/> |

- Will building owner's contractor be responsible for system flush and recharging of the chemical treatment system?
- Has consideration be given to the manufacturer's recommended clearance around equipment for service?
- Has consideration been given to routine maintenance that can be achieved without shutting down the second chiller?

PLUMBING REQUIREMENTS

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Are there existing backflow preventors for the CHW? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is there an existing eyewash station adjacent to chemical treatment workstation as well as a floor drain? | <input type="checkbox"/> | <input type="checkbox"/> |

GENERAL CONTRACTOR CONSIDERATIONS / REQUIREMENTS

- | | YES | NO |
|--|--------------------------|--------------------------|
| • Has housekeeping removal and new housekeeping pad cost been included in scope of work? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has building demolition and disposal of material cost been included in scope of work? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Can the existing overhead and floor structure accommodate the rigging, removal, and installation of the old and new chiller? | <input type="checkbox"/> | <input type="checkbox"/> |

GENERAL CONDITIONS CONSIDERATIONS / REQUIREMENTS

- | | YES | NO |
|---|--------------------------|--------------------------|
| • Are any permits required? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have insurance certificates been submitted to owner? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Has the monthly payment been documented? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have daily cleanup costs been included in fee? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have building facility support costs been included? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Have fire watch, police/traffic detail, and security costs been included in the fee? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will there be an extended warranty on the chiller? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will there be a service contract submitted for the existing chiller, as well as the new chiller? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will system flow diagrams drawings with CHW/condenser water system management matrix on reverse side be laminated and posted in chiller room? | <input type="checkbox"/> | <input type="checkbox"/> |

REFERENCE

- 2004 ASHRAE Handbook – Systems & Equipment: "HVAC System Analysis & Selection," Chapter 1; "Central Cooling & Heating," Chapter 4; "Electric Chillers," Chapter 38; and "Absorption Chillers," Chapter 41.
- Refer to April, May, and June 2006 "Back to Basics" and "HVACR Designer Tips" for additional information associated with chiller replacement design. **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.

