



DESIGN REVIEW/ STARTUP CHECKLIST — COOLING TOWER REPLACEMENT/ RETROFIT

Job number: _____ **Equipment designation:** _____
Area served: _____ **Barcode designation:** _____
Equipment type: _____ **Equipment location:** _____

REPLACEMENT PHASING CONSIDERATIONS

- Is cooling tower installation safe and in compliance with OSHA?
- Can cooling tower be removed during heating season?
- Are there isolation valves in place, or will a special shutdown and drain down be required to add them?
- Can the new cooling tower be installed without disassembling the unit or removing other HVAC, electrical, plumbing, communication, and/or fire protection distribution or equipment?
- Has consideration been given to future replacement, such as a second or additional cooling tower?
- Has pressure testing of pipe distribution been determined in scope of work (e.g., only new installation piping)?
- Has system flushing been determined in scope of work (e.g., flush only new installation piping)?
- Will the building owner's chemical treatment service contractor be responsible for system flush and re-charging of the chemical treatment system?
- Will a sand filter or other means to chemical-free treatment of the condenser water (CW) system be considered?
- Has consideration been given to the manufacturer's recommended clearance around equipment for airflow and servicing?
- Has consideration been given to routine maintenance that can be achieved without shutting down the CW system?
- Is a waterside economizer being considered?

PLUMBING REQUIREMENTS

- Is there an existing backflow preventer for the CW system?
- Is there a separate water meter to record water makeup for utility company sewer charge credit?
- Is there an automatic water bleed-off to code-compliant drain?

GENERAL CONTRACTOR CONSIDERATIONS/REQUIREMENTS

- Has structural steel removal and new steel framing cost been included in scope of work?
- Has roof alteration and repair costs been included in scope of work?
- Can existing structure accommodate the new tower configuration?

GENERAL CONDITIONS CONSIDERATIONS/REQUIREMENTS

- Are there any permits required?
- Have insurance certificates been submitted to building owner?
- Has the monthly payment/cash flow been documented?
- Have fire watch and daily cleanup costs been included in fee?
- Have building facility support costs been included in the fee?
- Have daily security costs (access to the roof) been included in the fee?
- Have police/traffic detail costs been included in the fee?
- Will isolation valves need to be installed in heating season for a chiller plant shutdown if project schedule calls for A/C season

tower removal?

- Are there HazMat considerations (asbestos, etc.) issues?
- Has ambient sound level testing been completed?
- Will moisture/vapor carryover be a problem in staining adjacent surfaces or short-circuiting adjacent air intakes or operable windows?

ELECTRICAL INSPECTION/REQUIREMENTS

- What are the new cooling tower's electrical requirements?
- Are there lockout/tag out procedures in place and localized disconnect at tower?
- Is there adequate electrical power to meet cooling tower size?
- Identify electrical scope of work
- Will emergency power be required for new chiller replacement unit?
- Will electrical harmonics be an issue for new VSD tower fans and/or associated CW pumps motors?
- Will electrical system components (existing conduits, lightning protection, etc.) require removal, reinstallation, and/or relocation to accommodate tower removal and new tower installation?
- Are there existing electrical code issues that should be addressed?
- Will a utility rebate initiative be submitted?

HVAC INSPECTION/REQUIREMENTS

- Has the optimum cooling tower type/configuration selection been completed and agreed upon by building owner?
- Has the existing CW system flow been updated to reflect new system design intent and design criteria?
- Has the CHW/CW management system been completed in an automatic control-functional performance action/reaction matrix?
- Have the existing pump curves been assessed for optimum performance under the new CW management conditions?
- Have the existing cooling towers been tested for existing and new heat rejection capacities?
- Can the rig be set for removal of existing cooling tower or is airlift needed?
- Will there be an extended warranty on the cooling tower?
- Will there be a service contract submitted for the new tower installation?
- Will chiller O&M website be included along with electronic copy or O&M manual and two paper copies of manual?
- Will system flow diagrams drawings with CW system management matrix on reverse side be laminated and posted in chiller room? **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.

