

# FACILITIES STANDARD

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NAME : Water Cooled Centrifugal Chillers  
NUMBER : 15680

ORIGINAL DATE : 05-05-99  
REVISION DATE: 04-12-00

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## **PURPOSE:**

1. The general purpose of each Facilities Standard is to provide minimal criteria for construction materials at University facilities regarding code compliance, warranty, approved products, execution and uniformity.
2. To protect the health and safety of patients, visitors, students, faculty and staff, in addition to protecting non-project UAB property, all construction must be in accordance with: NFPA 241 safeguarding construction, alteration and demolition operations; Standard Building Code, Chapter 33, regarding site work, demolition and construction; NFPA 101 Life Safety Code.
3. Construction safety is the responsibility of the contractor in accordance with the regulations and codes of the agency having jurisdiction, and according to the guidelines adapted by OSHA.
4. The **Water Cooled Centrifugal Chillers Facilities Standard** establishes a series of guidelines for specifying this particular item on any construction project at the University. ***This Facilities Standard is not to be regarded as a specification.***

## **GENERAL:**

1. When tie-in to existing central chilled water has been determined not to be feasible (by consensus between the Design Consultant and the University), selection of a new chiller shall be reviewed with the University Project Manager at the conceptual design stage.
2. When there is a need for the installation or replacement of a chiller in the central plant, selection of a new chiller shall be reviewed by the University's Resident Mechanical Engineer and the central plant director at the conceptual design or retrofit stage. All isolation valves to the existing chiller shall be replaced.
3. The Life Cycle Cost Analysis model provided by the University's Energy Department shall be used as the basis of the selection.
4. Refrigerant selection shall be discussed with the University Project Manager prior to equipment selection. In order to comply with the Environmental Protection Agency (EPA) requirements and guidelines of Title VI, the refrigerant R-134a shall be used.

5. Sufficient clearance shall be provided around new chillers to allow for tube pull clearance. Clearance should equal the length and width of the new chiller.
6. A beam with a minimum 4-ft clearance shall be provided above the chiller. If this is not possible, the sufficient clear space shall be allowed above and around the machine for using a gantry design for pulling compressors.
7. The manufacturer shall provide motor inrush current and voltage drop allowed for starting the chiller.
8. The acceptability of across-the-line starters shall be reviewed case by case.
9. The chiller control package shall control run-around and injection pumps, and shall be interfaced with the UAB DDC system for remote start/stop and chilled water setpoints.
10. All chiller installations shall include a refrigerant gas monitor that meets ASHRAE 15, 1994 guidelines and shall be tied into UAB's security system. The Contractor shall include a breathing apparatus that is NIOSH/MSHA approved system.
11. If the chiller or any of its associated equipment is controlled by a software program, UAB should receive a copy of any and all software programs.
12. The chiller manufacturer is required to have a local factory-trained service technician living in the Birmingham area. Response time for local factory-trained service technician shall be two (2) hours for emergency situations (units serving the hospital) and four (4) hours for non-emergency situations.

**EXECUTION:**

1. In order to ensure that all systems are installed and operating as required by the Specifications, the General Contractor shall operate the systems at his expense for the length of time necessary to properly verify their completion. This requires that equipment be successfully operated in all seasonal and emergency modes. A Final Report shall be prepared at the job site by the manufacturer's qualified personnel and the contractor shall correct all deficiencies identified in the report.
2. The General Contractor shall provide and coordinate the services of qualified, responsible subcontractors, suppliers and personnel as required to install the system as designed.
3. The Contract Drawings and Specifications shall indicate chiller capacity, dimensions, location, pipe sizes, pipe configuration, valves, electrical requirements, flow rates, and control schematics. The General Contractor shall

- verify that all requirements indicated in the documents are completed before commissioning begins.
4. If any check or test cannot be accomplished due to building structure or other building system deficiencies outside the scope of the HVAC systems work, these deficiencies shall be resolved by the Project Architect and corrected by the appropriate parties.
  5. A qualified member of the chiller manufacturer or vendor shall have the authority to observe the installation of the chiller on the job site at such times as authorized by UAB.
  6. The General Contractor shall notify the Project Architect/Engineer seven (7) days prior to testing or startup, in writing, of upcoming tests and startup procedures allowing adequate time to communicate those tests and procedures to the specified UAB personnel. This shall include all pressure tests of the HVAC piping.
  7. UAB personnel associated with the operation and maintenance of the facility will have access to the site during construction to observe installation of the chiller. These personnel must be present for all start-up procedures. The General Contractor shall conduct training for these individuals, with the installed equipment and controls, in addition to factory training. This training shall be video taped by the General Contractor.
  8. The Project Schedule shall identify and allow for sufficient time to permit completion of all services prior to the General Contractor's Notification of System Readiness (NOSR). This shall include delivery of all required documentation. Documentation required with the Notification of System Readiness (NOSR) includes:
    - A. Final Test And Balance (TAB) Report
    - B. HVAC Equipment Submittals
    - C. Control Schematics and Wiring Diagrams
    - D. Control Sequence of Operations
    - E. Installation, Operation, Programming and Maintenance Manuals for Controls
    - F. As-Built Drawings
    - G. Training documentation and materials

9. The General Contractor shall notify the Project Manager, Project Architect and Director of Maintenance in writing after successful completion of installation of chiller(s) and all testing. At that time, the Contractor may schedule the Final Inspection. A two-week notice is desired for scheduling a final inspection at UAB.

END OF STANDARD

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