

Building Performance Commissioning Services

Commissioning Experience in Healthcare Facilities

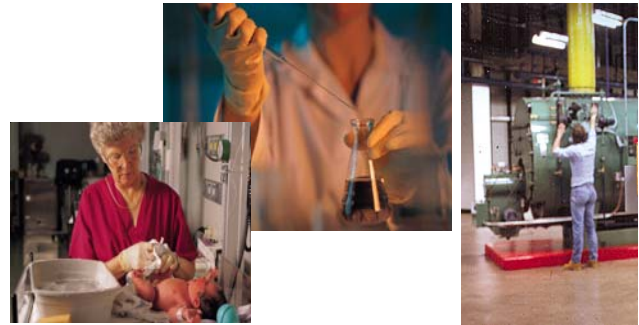
The following are recent examples of Commissioning Services that Halliwell Engineering Associates, Inc. (HEA) has provided for healthcare clients.

St. Jude Children's Research Hospital Memphis, Tennessee

HEA was asked to help identify the true cause of operational and equipment dependability problems experienced in the two years since the new 235,000 square foot hospital building was completed. Earlier attempts by the design engineers, construction manager and equipment manufacturers to reach a successful resolution of the HVAC reliability and performance problems had proven unsuccessful. HEA performed a comprehensive commissioning study of the building, and identified that a significant disconnect had occurred in the design team's understanding of the project requirements. Currently we are in the process of assisting the hospital with resolution of the operating system's design problem and functional performance, by redesigning and recommissioning the affecting systems.

Touro Infirmary New Orleans, Louisiana

A \$5,000,000 energy conservation project was completed at Touro Infirmary in 1996. Four years later, many of the energy project's components were still not working properly, and Touro's electric utility bills had not been reduced as projected. HEA was requested to determine what the problems were with the energy project, and to design corrective measures. Our engineers have completed their initial investigation, have identified the key problems, and are currently working with the Touro Infirmary Energy Project Design Team to facilitate implementation of corrective measures required to get the energy project's components to operate properly.



Packer Hospital Sayre, Pennsylvania

Packer Hospital had struggled through years of deficiencies in cooling and dehumidification capacity in 12 of its operating rooms. HEA was requested to perform an on-site commissioning study and review of the original design to analyze and correct the causes of these deficiencies.

The HEA engineers discovered significant operating deficiencies, but concluded that the major cause of these problems was the inappropriate design criteria used by the architect/engineer for the original HVAC system installation.

Our engineers developed a design for the enhancement of the existing system that would increase the existing cooling/dehumidification capacity by 30%, thereby providing significant improvement in the operating suites.

The hospital has now requested that HEA provide a full commissioning program for the planned design and construction of the new surgical facility in 2002.

Elliot Hospital Manchester, New Hampshire

HEA was requested by Elliot Hospital to perform a peer review of the project design documents and subsequent on-site commissioning of the completed installation. The project was generally comprised of the removal of an existing chiller, cooling tower and related mechanical and electrical equipment. A new 800-ton centrifugal chiller, chilled water and condenser water pumps, piping, controls and associated electrical work were installed in its place.

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Commissioning Experience in Healthcare Facilities (continued)

St. Francis Medical Center Wichita, Kansas

HEA was retained by the Medical Center (through its legal counsel) to conduct commissioning surveys of the installed two years old mechanical and electrical systems.

The Medical Center had been experiencing operational and performance problems during the first two years of occupancy.

Deficiencies identified included:

Excessive operating noise; Excessive air systems air leakage; water damage (condensate flow) from air handling units into occupied spaces; premature failures of AHU dampers; erratic room temperature control; some terminal units installed upside down, resulting in poor automatic control; some air handling unit coils installed upside down and backwards; lack of or absence of appropriate access doors to equipment and dampers, and poor quality duct construction and installation.

The deficiencies were divided into two categories:

1) Those concluded to be caused by improper materials and construction; and 2) those concluded to be caused by engineering problems.

The commissioning survey determined that the vast majority of deficiencies were caused by improper construction, installation and installed materials.

University of New Hampshire Morse Medical Research Building Durham, New Hampshire

HEA provided forensic engineering and commissioning services to resolve design deficiencies in a five year old, 225,000 square foot medical research lab building. HEA designed interim modifications to the existing facility to improve its usefulness, while acting as the owner's commissioning agent during the process of identifying the building's operating intent, and converting the intent to usable design parameters/criteria.

LifeStream Behavioral Center Leesburg, Florida

HEA provided engineering services to evaluate the design and construction of the HVAC systems as they were nearing completion. HEA worked primarily with the owner and architect, since the engineer of record had abandoned the project.

Several notable problems with the HVAC systems were discovered and resolved as part of the design review, construction inspections, and acceptance testing.

These problems were as follows:

Water piping in the ceiling was sweating and dripping condensate on ceiling tiles due to poor installation of the insulation; many of the chilled water valves were failing prematurely because insulation had been installed around the top of the electric actuator, causing condensation to drip into and connect inside the actuator housing; the building was under severe negative pressure due to inadequate outside air being introduced into the building through the make-up air unit, and excessive air being exhausted from the building and the ventilated attic space; relative humidity within the building was high due to negative pressure and inadequate preconditioning of the outside air, resulting in damage to wood finishes caused by mold and mildew; condensate drain lines from the fan coil units in the ceilings were not flowing properly due to inadequate slope; several areas of chilled water piping were found to be uninsulated, causing condensation to leak behind finished walls and ceilings, and causing damage to floors and walls; many installed chilled water balancing valves were too large to properly balance the chilled water flows to the fan coil units; some fan coil units were improperly sized due to errors in the engineer's fan coil unit schedule in the contract documents.

Blue Cross of South Carolina Columbia, South Carolina

HEA provided building commissioning services for the entire mechanical, electrical and architectural renovation of a 14-story office building. HEA assisted the owner in identifying/developing the design criteria and performance requirements in the conceptual design phase, as well as providing design documents and field guidance to the contractors. During construction, testing and training, we provided management assistance to ensure that the renovation work met the owner's requirements.