

Case study



Six 40,000 cfm air handlers custom-designed for Bellevue Hospital have a unique two-tier configuration that allows the units to be situated side-by-side, enabling each unit to discharge air into a common supply air duct.

REPRESENTATIVE FIRM:

Berne and Bob Leventhal, Inc.; Wantagh, New York

CONSTRUCTION MANAGER:

Turner Construction; New York City, New York

ARCHITECTURAL FIRM:

**Pei Cobb Freed & Partners Architects;
New York City, New York**

CONSULTING ENGINEER:

Cosentini Associates; New York City, New York

OWNER:

New York City Health and Hospitals Corporation

Bellevue Hospital Center in Manhattan, the oldest public hospital in the United States, dates back to 1736 when the small colonial city was still known as New Amsterdam. In many respects, the history of Bellevue Hospital is also the history of early American medicine. Many “firsts” occurred at Bellevue, including the introduction of early surgical techniques, the first hospital-based horse and buggy ambulance service, and the first school of nursing in the country.

Today, Bellevue is a modern, full-service facility providing comprehensive medical care, including inpatient, outpatient and world-renowned emergency care. Nearly 10,000 visitors walk through Bellevue’s doors each day. Approximately 26,500 inpatients are admitted annually, with 489,000 ambulatory care visits and 89,000 emergency department visits. Most patient care is centralized in one large high-rise building...a 25-story, multi-million dollar patient care facility.

A member of the New York City Health and Hospitals Corporation, Bellevue is the principal teaching hospital for its affiliate, the New York University School of Medicine.

New Ambulatory Care Facility

Several years ago, hospital officials began planning for the construction of an expanded Ambulatory Care Facility, immediately adjacent to the existing hospital high-rise in a space previously occupied by a multi-level parking garage. The new building will be connected to the existing facility by a glazed atrium, which will serve as the main entrance for the entire hospital complex.

In addition to the ambulatory care areas, the seven story facility will also house patient clinics, renovated medical surgical inpatient and critical care units.

In October, 2001, the Dormitory Authority of the State of New York (DASNY) authorized \$196 million in financing for the construction of the 210,000 square foot building and construction began the following year. Completion of the facility is projected in 2004.

Air Handling System

ClimateCraft was the basis of design, supplying 10 factory-fabricated custom air handling systems delivering 294,000 cfm of supply air.

Six primary custom air handlers, each 40,000 cfm, serve the clinical areas and the atrium. Located in the penthouse atop the fourth floor, they have a unique two-tier configuration that allows the units to be situated side-by-side, enabling each unit to discharge air into a common supply air duct. Each of the six primary units is identical, with chilled water cooling, steam heat and humidification.

A mixed flow return air fan is mounted external to the cabinet on the roof of the air handler. By using mixed flow fans, it was possible to duct return air directly to the fan. The fan is mounted on an isolation base with seismic isolators for easy serviceability, and a cover was installed over the motor to decrease the amount of operational noise emitted into the equipment room.

Return air enters a return/exhaust air plenum where DDC-controlled dampers either exhaust or return the air to the lower level of the unit.

Outside air is mixed with return air and pre-filtered with 30 percent efficient filters before passing through the humidifier and coils. Low temperature cutout controls to prevent freezing were factory-installed.

Two plenum supply fans move the conditioned air through 95 percent efficient final filters before the air is ducted into the space. There are variable frequency drives (VFDs) on each supply and return fan.

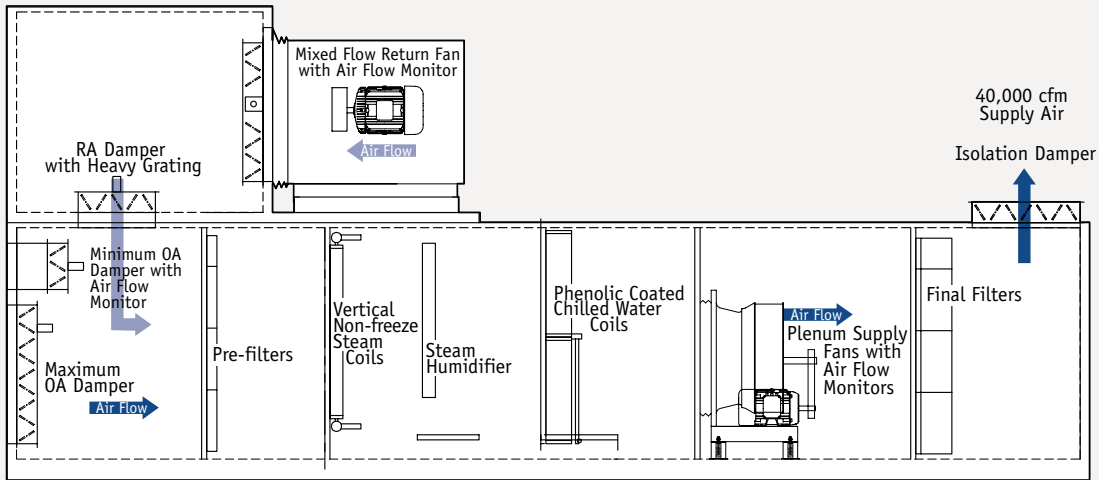
One of the most important factors associated with indoor air quality is the volume of outdoor air being drawn into a building through the ventilation system. Air flow monitoring stations were factory-installed on the return fan, minimum outside air damper and plenum supply fans. By accurately measuring the air flow capacity across the fans and



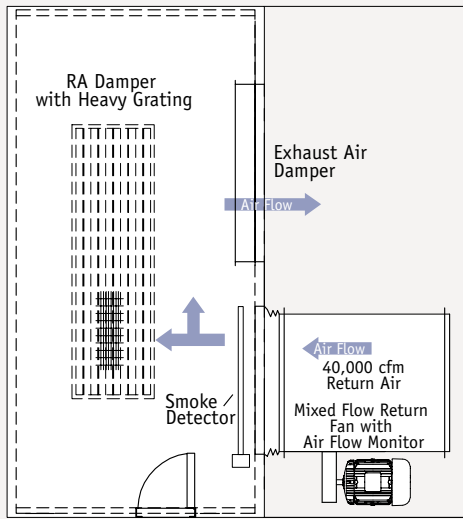
A mixed flow fan was mounted on the second tier of each primary unit, making it possible to duct return air directly to the fan (above).

Return air enters a return/exhaust air plenum where DDC-controlled dampers either exhaust or return the air to the lower level of the unit (right).





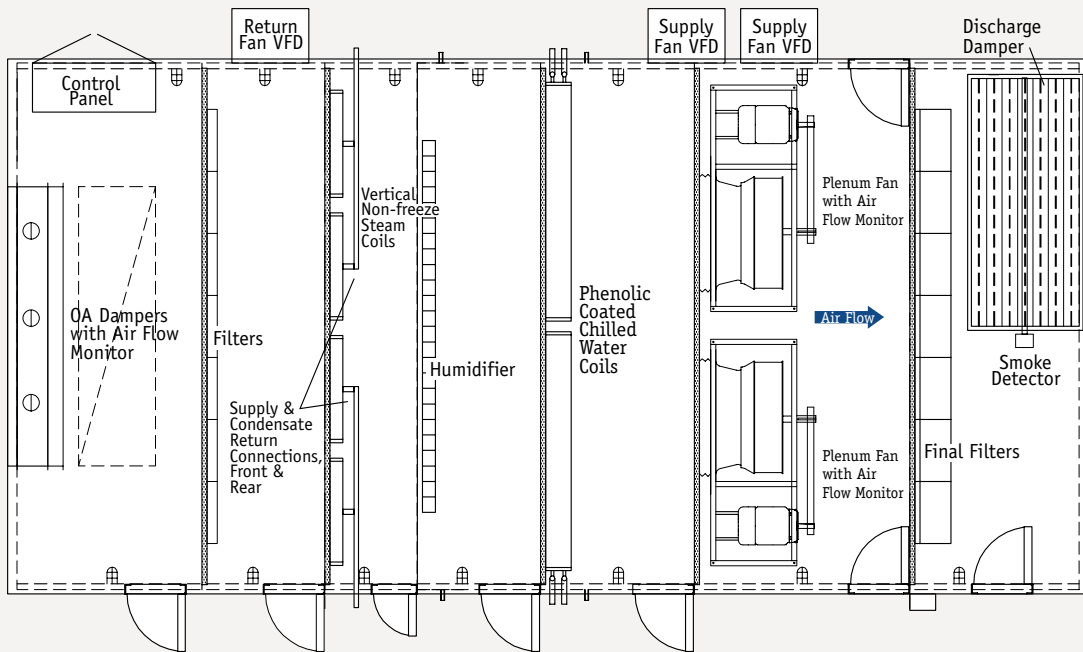
Elevation



Plan View, Upper Level

“ClimateCraft’s unique standing seam double wall panel construction and thermal break design, as well as their ability to provide outstanding custom engineering, have resulted in a better product with improved performance.”

...Michael R. Blazer, Sales Representative,
Berne and Bob Leventhal, Inc.



Plan View, Lower Level

adjusting their speed through the VFDs for preferred air flow, indoor air quality and economy of operation are accurately controlled.

Sound, Serviceability and Longevity

Several options were specified to make maintenance and efficient operation more convenient. Inward and outward opening doors are located in each section with windows for viewing internal components. Fluorescent lights and convenience outlets are provided for ease of service.

Stainless steel interior wall panels and drain pans are installed in the humidifier and cooling coil sections to resist corrosion, and the cooling coils are phenolic coated. Perforated inner liners in the supply fan section absorb sound.



Customer-observed witnessed testing for sound, vibration and leakage rates were conducted prior to shipping to ensure the specified performance. Each of the six primary units shipped in six demount sections. The four smaller air handlers were shipped as a single piece of equipment.

“Because every unit manufactured by Climate-Craft is custom-designed, we can meet the customer’s performance requirements while reducing their total installed costs,” said Michael R. Blazer, sales representative for Berne and Bob Leventhal, Inc. “ClimateCraft’s unique standing seam double wall panel construction and thermal break design, as well as their ability to provide outstanding custom engineering, have resulted in a better product with

improved performance. These units will last longer and are easier to install and service...ideal for the demanding requirements of hospital applications.”

Vertical non-freeze steam heating coils, phenolic-coated cooling coils, stainless steel interior wall panels and sloped stainless steel drain pans are installed in the humidifier and coil sections to resist corrosion and meet IAQ standards.



P.O. Box 1538, 1427 N.W. 3rd, Oklahoma City, OK 73101-1538

Phone: (405) 415-9230 Fax: (405) 415-9231

www.climatecraft.com