

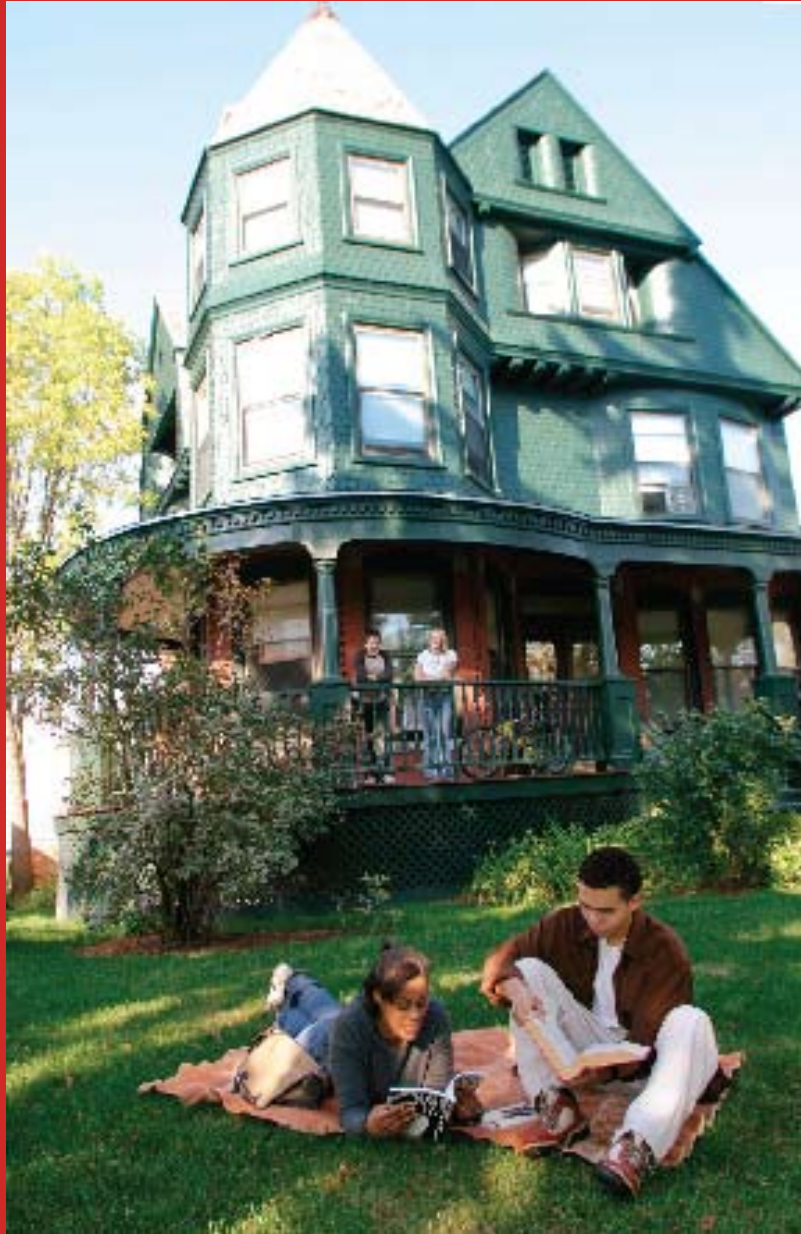


case study

product
CITY MULTI

market
Educational Facility

location
Burlington, Vt.





19th Century Meets the 21st

Project Name:
Hill Hall, Champlain College

Location:
Burlington, Vt.

Completion Date:
August 2004

The Team

Owner
**Champlain College,
Burlington, Vt.**

HVAC Contractor
**Mountain Air Systems,
South Burlington, Vt.**

Consulting Engineer
**Mountain Air Systems,
South Burlington, Vt.**

HVAC Distributor
**The Bell/Simons Co.,
South Burlington, Vt.**

Located at 227 South Willard Street, Burlington, Vt., Hill Hall is one of 16 Victorian-era mansions that are now Champlain College residence halls. Built by A.B. Fisher in 1884 for the Dunham brothers, successful Vermont lumber barons, Hill Hall today is a co-ed dormitory for 40 students (13 rooms for two to four students each on four floors).

First Mansion to be Air-conditioned

The College Board of Trustees has authorized an air-conditioning upgrade every other year. With a first-ever budget approval for air conditioning in an existing dormitory, Holly Mussatti, director of physical plant, challenged her staff to fast-track an installation to be up and running in time for the 2004-2005 academic year. She chose Hill Hall because it was in need of total rehabilitation. Only the newest dorm on campus (2003) had been built with air conditioning, and this would be the first retrofit to be installed in-house by her staff.

Mussatti researched current HVAC systems to accommodate this historic building, including systems with flex ducting and rooftop chillers. No system or technology seemed possible until her contractor Steve Hayden, Mountain Air Systems, South Burlington, Vt., recommended that she look into the CITY MULTI®

Variable Refrigerant Flow Zoning (VRFZ) systems from Mitsubishi Electric HVAC.

21st Century Technology Designed to Fit Comfortably into 19th Century Historic Buildings

A former certified plumber, Mussatti was immediately struck by the design and engineering of the CITY MULTI units. “The heat exchanger in the outdoor unit reminded me of my days installing boiler manifolds,” she said. “The Mitsubishi engineering design is brilliant, simple and amazingly easy to install. I was impressed by the fact that a single outdoor condensing unit requiring only a small bit of real estate was all I needed to run sixteen 8,000 Btu/h wall-mounted indoor air handling units.”

“With no costly ductwork accessories and labor involved and serious interior limitations posed by the 121-year-old structure, all I needed was a 3-inch hole in one wall to bring in the wiring and piping from outdoors. The installation went very smoothly, and we were able to open on time 70 days later.”

“We were also impressed with the ability to use the system as a backup for our gas-fired boilers. Vermont has high electricity rates, and this backup helps us conserve energy costs,” Mussatti said.



Hill Hall was built in 1884 and is the first of 16 Victorian-era mansions on campus to be air conditioned. Perfect for historical retrofits, this is the first CITY MULTI® installation in the state of Vermont.

can mix and match the air handlers to meet any design criteria.

The First CITY MULTI System in the State of Vermont

Hayden, a 27-year HVAC veteran, is responsible for introducing CITY MULTI to Vermont. “When Holly and I first spoke about installing air conditioning in Hill Hall, she told me she was looking for a system that could provide individual temperature controls, was quiet, had minimal outdoor equipment, looked nice, and could be installed in an old building with minimal space,” Hayden said.

“Fortunately (for both of us),” Hayden added, “I had just discovered the CITY MULTI VRFZ system a couple of weeks earlier. This system would provide everything Holly was looking for and more, such as the simultaneous cooling and heating option. Soon after this discovery, we had the system installed and running. The installation and start up went very well.”

Hayden said that CITY MULTI was a perfect find because the City of Burlington has very strict zoning laws forcing builders and developers to maintain the turn-of-the-century look in all building renovations. “CITY MULTI is a perfect solution for providing air conditioning in buildings with no space for ductwork or large fan systems. Thanks to our

The First Modular System in the U.S. that Can Cool and Heat Simultaneously

James (Jeb) Bates, Mitsubishi Electric HVAC area manager, helped design the Champlain College system. He said that the CITY MULTI VRFZ system is just that, a TRUE zoning system! “Buildings, such as Hill Hall, each have unique temperature requirements based on use, age, construction and even exposure to the elements. Some spaces may need heating while others need cooling. The CITY MULTI R2-Series is the first modular system in the U.S. that can simultaneously cool and heat,” Bates said.

The CITY MULTI R2-Series

The CITY MULTI R2-Series is made up of an outdoor unit, a Branch Circuit (BC) Controller, indoor air handlers, and remote or central controllers. To simultaneously cool and heat, the BC Controller acts as the heart of the system, managing refrigerant gas and liquid and directing it to the air handlers calling for cooling or heating. Essentially,

you are recovering heat energy from one space and sending it to another. This innovation results in virtually no energy wasted by being expelled outdoors when 50 percent of indoor units are heating while 50 percent are cooling. This special function results in optimum energy usage.

Mitsubishi Electric’s CITY MULTI R2-Series outdoor unit uses an INVERTER-driven compressor to provide highly-responsive cooling and heating performance. By responding to indoor and outdoor temperature fluctuations, the system varies power consumption by adjusting the compressor speed to optimize energy usage. The variable-capacity indoor units are controlled by electronic expansion valves, which provide only the amount of refrigerant needed to condition the indoor space.

The system offers a variety of ducted and ductless air handlers such as ceiling-recessed, ceiling-concealed, floor-standing, exposed and concealed, and wall-mounted models. For ultimate design flexibility, one

CITY MULTI Equipment Installed:

- (1) PURY-100TMU-A R2-Series Outdoor Unit
- (16) PKFY-08NAMU-A Wall-mounted Air handlers
- (16) PAC-YT51CRA Simple Controllers
- (1) CMB-1016NU-F Branch Circuit (BC) Controller
- (1) G-50A Central Controller
- (1) PAC-SC50KUA Power Pack

Champlain College installation, we now have a contract with the New England Culinary Institute to install a CITY MULTI system in one of their 12,000-square-foot historical office buildings located in Montpelier, Vt. The new system will be air-conditioning approximately 3,500 square feet.”

CITY MULTI Enhances Hill Hall, the New “Admissions Hotel”

Mussatti said the first year of operation has been flawless. “We have not had to call Mountain Air once over the past 12 months. In fact, the Board of Trustees has been so impressed with the performance of CITY MULTI that it has designated Hill Hall the ‘Admissions Hotel’ for visiting high school guidance counselors during the summer months. This has been a very exciting experience, and I can’t wait for our 2006 budget cycle so we can work on our next CITY MULTI system in another historic Champlain mansion.”

Mountain Air Views on Hill Hall Installation

Twenty-seven year HVAC veteran Steve Hayden had these observations:

“I discovered CITY MULTI in the nick of time! The Champlain College Director of Physical Plant

Holly Mussatti came to Mountain Air Systems looking for a high-pressure, ducted air system for Hill Hall. Because of Burlington’s strict zoning laws forcing builders to maintain the turn-of-the-century look for all building renovations, I knew that traditional options—high-pressure ducted systems, cooling towers and chiller systems—were out of the question because of the size, noise generation and the proportion of the outdoor equipment required.

“Until I discovered the CITY MULTI R2-Series, there were no options that would meet the needs for this handsome Victorian renovation. CITY MULTI is the only system in the U.S. with the ability to provide ductless, simultaneous cooling and heating to multiple rooms with so little outdoor equipment. I continue to be impressed with the Mitsubishi Electric HVAC engineering. No one else in our industry even comes close.”

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