



## case study

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products

**CITY MULTI**

market

**Residential**

location

**North Mercer Island, Wash.**





## Covenant Retirement Communities

Project Name

**Covenant Shores  
Retirement Communities,  
Voyager Building**

Location

**North Mercer Island, Wash.**

Completion Date

**March 2005**

### The Team

Owner

**Covenant Retirement  
Communities Inc.,  
Chicago, Ill.**

HVAC Engineer

**Thermal Supply, Inc.,  
Seattle, Wash.**

HVAC Contractor

**Air Motion, Inc., Puyallup,  
Wash. (Mitsubishi Diamond  
Designer™ and Mitsubishi  
Diamond Dealer™)**

HVAC Distributor

**Thermal Supply, Inc.,  
Seattle, Wash.**

From the first community established in Chicago in 1886, Covenant Retirement Communities (CRC) has become one of the nation's largest non-profit senior housing organizations. A ministry of the Evangelical Covenant Church, CRC operates a nationwide network of 14 retirement communities in eight states. Its 12-acre community on suburban Seattle's Mercer Island is located on the shores of scenic Lake Washington.

### Advanced HVAC Technology Search

In late 2004, Covenant Shores Environmental Services Director Dan Hodges was finalizing design plans for a new residential building called Voyager. A four-story building, it would contain 20 one- and two-bedroom apartments ranging in size from 730 to 1,182 square feet. One of his last duties was to find an advanced HVAC technology for the building. He wanted a system that could cool and heat simultaneously, was super quiet and used energy effectively. He was interested in a system that required minimal ducting and offered a centralized control system.

### Encouraging Reports from Around the World

"I am a thorough researcher," Hodges said, "So I posted a search for a system to meet these requirements on an international Internet bulletin board. To my surprise, I received hundreds of emails—many from Europe and the Far East—encouraging me to investigate

CITY MULTI® VRFZ systems from Mitsubishi Electric HVAC Advanced Products Division. The commentaries were all extremely favorable."

### Training Class Makes It Happen

Hodges picked up the phone, called his construction contractor, W.G. Clark Construction Company, Inc., Seattle, Wash., and was soon in touch with Thermal Supply Inc., Seattle, Wash., a Pacific Northwest distributor for CITY MULTI VRFZ systems. Thermal Supply Project Manager, Shaun Vig, invited Hodges to participate in a CITY MULTI VRFZ technology training program the following week in Phoenix, Ariz.

"That training program convinced me that all the positive reports from around the globe were exactly right," Hodges said. He flew back to Seattle and requested a CITY MULTI system design bid from his HVAC contractor, Air Motion, Inc., Puyallup, Wash. Air Motion Partner, Gary Appling, consulted Vig for engineering design assistance and equipment pricing. The CITY MULTI equipment was ordered and installed in March 2005.

### Voyager Design

"The two-pipe CITY MULTI VRFZ R2-Series offers exceptional part-load efficiencies along with a 20-year life expectancy," Vig said. "The four-story Voyager building consists of an applied capacity of 520 MBH. The system design

has the ability to simultaneously cool and heat each of the 20 individual apartments based on its air-conditioning and heating demands. Because CITY MULTI technology provides 71 percent heating capacity at five degrees Fahrenheit, there is no need for expensive supplemental heating. This helps keep equipment costs down and efficiencies up. A key element of the project was the fact the system can be controlled locally by the residents, or centrally from the Johnson Controls Building Management System via LonWorks®.”

#### **Why CITY MULTI VRFZ Technology Was Right for the Job**

Vig said CITY MULTI systems are unique because they can actually cool and heat at the same time. This product has been used extensively around the world for more than 20 years. Each outdoor unit offers unparalleled design flexibility with up to 16 independent indoor zones that, depending upon the requirements, can operate in cooling, heating, or a combination of both at the same time.

The CITY MULTI Controls Network (CMCN) ties all indoor units together and controls up to 2,000 zones. The INVERTER-driven compressor is standard in all CITY MULTI outdoor units and varies the speed to offer the maximum level of capacity control and energy efficiency. In addition, the

CITY MULTI R2-Series can transfer energy within the system from one zone to another, further enhancing energy efficiency.

#### **Impossible Job without CITY MULTI VRFZ Technology**

“Because of the minimal spaces for ductwork provided in the original design, this new building presented us with a huge challenge,” Appling said. “Nothing but CITY MULTI VRFZ technology would have worked here. Because the CITY MULTI product design configuration is a two-pipe system and requires only small pipes and wires to connect outdoor units to ducted indoor units, we were able to install 4-inch ducts instead of the usual 6-inch. Because of the ingenious INVERTER-driven technology, the CITY MULTI system provided us further flexibility and efficiencies by dividing the HVAC requirements to smaller tonnages.”

#### **CITY MULTI Systems Right for Multi-family Dwellings**

“In our expanding universe of multi-family residential developments, building owners are looking for a competitive edge in their building design,” Vig said. “CITY MULTI systems give them this luxury by exceeding HVAC amenities and giving owners more reasons to purchase.”

Vig said that efficient air conditioning and quiet operation have become necessities in most multi-family units today. CITY MULTI systems provide both of these. “For example, the CITY MULTI indoor units have an average sound level of 32.7 dB(A), a mere whisper when compared to other systems available. The outdoor units are extremely quiet as well and we placed the outdoor units directly under the apartment windows because of this.

#### **A CITY MULTI Systems Fan—20 Percent Annual Energy Savings**

Describing the CITY MULTI system benefits for his CRC campus, Hodges said, “I am a huge fan of CITY MULTI systems. The installation in our newest building has provided us with a 20 percent annual energy savings since the units were installed two years ago. The residents of these 20 apartments love the fact that the outdoor units — many located directly under windows — are impossible to hear. If I had my way, we would have CITY MULTI systems installed in every building on our 12-acre campus. At a recent meeting at our corporate headquarters (Chicago), I recommended that, in the future, all 14 Covenant Retirement Communities install only systems from Mitsubishi Electric HVAC Advanced Products Division.”



Each outdoor unit offers unparalleled design flexibility with up to 16 independent indoor zones that, depending on the requirements, can operate in cooling, heating or a combination of both at the same time.

Photos by Nick Garibbo, Photo-Design, Inc.

#### **CITY MULTI Equipment Installed:**

- (2) PURY-100TMU R2-Series Outdoor Units
- (2) PURY-80TMU R2-Series Outdoor Units
- (1) CMB-1013NU-G Branch Circuit (BC) Controller
- (1) CMB-1016NU-G Branch Circuit (BC) Controller
- (9) PDFY-32NMU-E Ceiling-concealed Ducted Cassette Indoor Units
- (7) PDFY-24NMU-E Ceiling-concealed Ducted Cassette Indoor Units
- (4) PDFY-16NMU-E Ceiling-concealed Ducted Cassette Indoor Units
- (20) PAC-YT51CRA Simple MA Remote Controllers
- (1) GB-50A Centralized Controller
- (1) L-MAP LonWorks Adaptor