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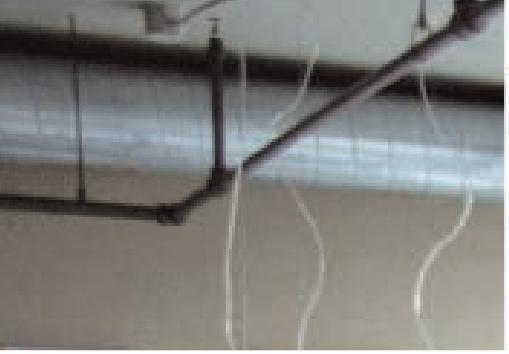

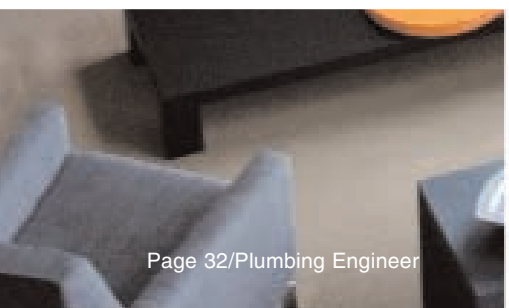

"Alta" Shifts to 410A to Become DC's First LEED Condo Development

By John Vastyan

Washington, D.C., is known for many "firsts," including the first live appearance of the Beatles and for being the home of the first Miss America (Mary Gorman, 1921) and of the first all-black university (Howard, 1867). The Alta at Thomas Circle, located just a few blocks from the White House, recently entered the list when it became the first certified LEED(r) condo/mixed-use development in the District of Columbia. But it didn't start out that way.

The Alta includes 126 residential units, from efficiency to two-bedroom, a few larger penthouse offerings and two retail spaces on the first floor — all packed into an "official" 13 stories, with penthouse roof and deck space at the top and a five-level below-grade parking garage. What sets the Alta development apart from other higher-end condos around the downtown Washington area are its "green" characteristics. Everything, from insulation to paints to the water-source heat pump to the closed-loop heating and cooling system was carefully selected for environmental compatibility and sustainability. These characteristics qualify the building for certification under Leadership in Energy and Environmental Design (LEED) criteria administered by the U.S. Green Building Council.

When the project was first conceived several years ago, the original specifications included equipment that used R-22 refrigerant. It was only very late in the process — during actual construction — that the developer made a strategic decision to switch to water-source units that use EarthPure HFC 410A, a zero ozone depletion refrigerant. This became a key step in achieving the building's LEED certification. ClimateMaster's new Tranquility systems, which are built to accommodate the HCFC-410A refrigerant, got the nod.

"Everyone was pulling in the same direction to get this done. Otherwise, it probably wouldn't have happened," said Al Hedin, senior vice president of development at residential developer PN Hoffman Inc. in Washington. "Initially, we didn't envision this as a LEED certified project. Three or four years ago, when we developed

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the design, people just weren't ready environmentally. Even today, people may be a little more aware of the environmental needs, but their willingness to spend additional dollars to get a LEED certified condominium is limited."

Nonetheless, Hedin and others at PN Hoffman saw benefits in switching midstream to a LEED certifiable multi-family/mixed-use concept using recyclable and sustainable elements on many facets of the building.

"There were associated costs, but in this case we determined they're justifiable because today there's documented economic benefit when you get into the LEED realm," said Hedin. "In an office setting, it's proven that productivity is higher, and that really turns the economics for a long-term cost/benefit analysis. But another thing piqued our interest: A couple of my development managers and I basically came to the conclusion that this is a way to distinguish our product from other competitors in the marketplace."

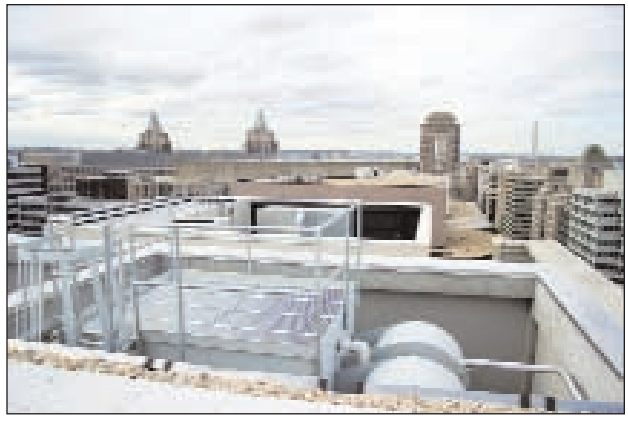
"We definitely feel that a keen environmental awareness helps to set our product apart from others in our core niche of multi-family condo/residential with a little mixed-use included," added Melissa Conrail, LEED AP, Hoffman's development manager.

Still, it didn't figure to be a small issue to begin a project with what might be described as a more "traditional" design concept, then, suddenly — in the middle of the

A technician completes the installation of a TRM vertical stack unit in the Alta at Thomas Circle, Washington, D.C.

construction phase — to go green. A number of parameters had to be changed immediately, including the heating and cooling apparatus.

"The equipment for this project had not only been



From a rooftop perch, the Washington Monument is seen beyond the Alta's cooling towers.

specked; it had been ordered," said DMR Associates sales engineer Mike Benson. "Then PN Hoffman contacted us and said, 'What would it take to change this to 410A? We want to change this building to LEED.' That was unusual because there are costs associated with such a change. The units that use HFC-410a refrigerants, which are more efficient and were brand new at the time, cost more than the initially specked equipment that uses R-22. But the construction team ultimately came to the decision that, if the somewhat higher cost was feasible, and if delivery of the equipment could happen within the set schedule, we'd move forward with it."

Since it was a mid-stream change, a realistic approach was settled on, one that permitted ClimateMaster to split the shipment. "We got the enclosures for the units, so we could frame around them and could complete some of the finishes," said Hedin.

"Then we received the chassis at the last minute and just popped them in place, and made the connections," added Jac Chiang, project manager for Shapiro & Duncan, the mechanical firm tapped to install all of the building's mechanical systems. "And that happened about a month before we occupied. We were crossing our fingers frequently, hoping that everything would arrive in time to occupy the building. The mid-stream change to 410A could have potentially been a real challenge. Fortunately, because of the way the risers and extension couplings are attached to the heat pumps in back and also because the units were arranged in a 'stacked' fashion, from one floor to the next, there were very few changes to deal with."

"The dominoes fell nicely," said Benson. "Naturally, there were a few challenges. But, physically, they didn't have to change anything in the job to do this; the R-22 and HFC-410A cabinets are the same dimension and have the same water flows."

The purchase cost for the condos increased to about $500 per square foot. It was with that in mind that Rodney Simpson, project manager for Arlington, Va.-based GHT Ltd., the mechanical and electrical engineering firm, pushed for effective utilization of interior space. GHT designers came up with creative ways to incorporate mechanical and electrical elements into condo unit "furni-

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ture" — unobtrusively hiding building system components and yet making them readily accessible.

Some of the other interesting aspects as the building went up had to do with the construction site. "The Alta is sandwiched between two other structures," Hedin said. "One of the challenges was that we only had access to one side of the building. Usually, street frontage is a given. But in this case, we had no rear alley access. So, basically, the entire construction operation needed to take place on 14th Street; that added a fair amount of complication."

In addition, all buildings in D.C. are subject to the Heights of Buildings Act of 1899, which was amended in 1910, but which continues to strictly limit the height of every new building that goes up in the District. "That's why you don't see 40-story or 60-story skyscrapers when you look at pictures of D.C.," Hedin said. "What we call a 'high rise' here is nothing more than a 10-story or maybe a 12-story building; it's really a misnomer to call it a high rise. From a code perspective, however, there are other items that qualify it as a high rise, as opposed to what would be considered a mid rise or a low rise building."

The Heights of Buildings Act stipulates that Washington buildings are limited to an actual footage height of roughly 130 feet above what's called the "measuring point" for the building, setting the cap at 12 to 13 stories. "The question becomes: How many floors are actually on the building?" said Hedin. "We do unique and creative things to squeeze an extra story out of a building. At the Alta, we have a penthouse structure on top of the building, providing rooftop access and space for mechanical equipment. The penthouse is up 14 floors, but technically it's a 13-story building — with a penthouse."

Most of the Alta's residential units have a single water-to-water heat pump; each of the penthouse units has two heat pumps. The system is a water-based closed loop, with both the boiler and the cooling tower installed on the roof.

"We used vertical-stack heat pump units because we were trying to conserve floor space," said Hedin. "The residential units are relatively tight, and we needed about six square feet of floor area in each residential unit to house the heat pump; a cabinet-type unit would've required 15 square feet. Many of the smaller systems we used are in closet spaces or may even be built into the kitchen island.

"On the heat pump unit itself — in most of these condos — all of the ductwork comes off the top and then elbows out both ways. And the circular-shaped, spiral ductwork is exposed. It feeds into that 'loft' feel and look," added Hedin. "So the ductwork itself serves as an important element within the overall residential-environment design. We tried to make the heating-and-cooling features a focal point. In most cases, the heat pump units are exposed, and we pushed them to the middle of the building."

Being in the middle of each residential unit lends aesthetic continuity to the heat pump's closed-loop system. "Each unit incorporates risers or the vertical piping," said Benson. "Essentially, the heat pump units come complete with risers, and they can be stacked vertically on top of each other from one story to the next. So they're 'pre-piped.' As you construct the building, it's like putting blocks together vertically. One set of pipes fits inside the other set of pipes; then you go to the next floor, do the next unit, then set the next ones and so on."

Noise abatement was another advantage of the ClimateMaster system. "It's a big issue," Hedin said, "because we have these heat-pump units that are right in the middle of the living/dining areas. We're very pleased with the acoustics of the heat pumps."

"The developer selected the G-panel, which has an acoustical panel on the front of the stack-type heat-pump units," said Benson. "It's architecturally friendly, and it has insulation to help dampen the sound. When you install ductwork, you have to put enough oomph and static in the fan to deliver air around the room, but the shortest path to your ear for noise is actually out through that 'return' panel. The G-panel really helps kill whatever sound there is; our success in noise abatement at the Alta really comes down to a combination of the G-panel and the fact that the heat pumps are quieter and more efficient in the first place."

Residents at the Alta are undoubtedly finding that living in a green environment is a net positive in more ways than one. n

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More greenery at the Alta

The Alta's sustainable design, green building features include:

Green roofing: Incorporation of green roof elements to reduce urban heat and to enhance on-site storm water management;

Eco-friendly materials: Green-Seal certified carpet w/zero CFC/HCFC;

Low VOC paints and adhesives: Used to reduce contaminant off-gassing;

Ultra-efficient mechanical system: ClimateMaster water-to-water heat pumps using R410A (non-CFC/HCFC) refrigerant offer healthier IAQ;

CO_2 detectors: Monitor CO_2 levels in common areas;

High efficiency building envelope: Reduces operational and maintenance costs by 15%;

Alternative transportation: The Alta is near Metro/bus routes and has bicycle racks on site;

Low emitting finishes: These maximize solar gain efficiency and reduce heating and cooling loads; and

Recycled content materials: Over 15% of the materials used have 50% or more recycled content and more than 40% of the materials are manufactured locally.