360 STATE STREET

Inside the journey Becker + Becker Associates took to develop the country's first LEED Platinum-certified neighborhood

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architect/developer
Becker + Becker Associates

location
New Haven, CT

website
360statestreet.com

A new mixed-used development in New Haven is the first project in Connecticut to use a 400-kilowatt fuel cell—a renewable power source that will provide 88 percent of the project's electricity needs and nearly all of its heating and hot water needs. The project, 360 State Street, is the brainchild of Becker + Becker Associates, an architecture and development firm run by Bruce Redman Becker, AIA, AICP.

The firm's direction has evolved with the times, but with green design, it appears that Becker + Becker Associates has found its niche, as 360 State Street will be one of the greenest communities in the country. The project is the nation's first LEED Platinum-certified development under the USGBC's LEED for Neighborhood Development pilot program.

site/
360 State Street is located on a 65,000-square-foot brownfield that formerly housed the Shartenberg department store. In 2007, the City of New Haven, through a competitive RFP process, selected Becker + Becker Associates to redevelop the site, which because of its location immediately earned LEED points. "The LEED-ND program gives points to some of the inherent characteristics of the building," Becker notes, "such as walkability and access to transportation, on top of normal LEED criteria such as energy efficiency and the use of recycled and renewable materials."

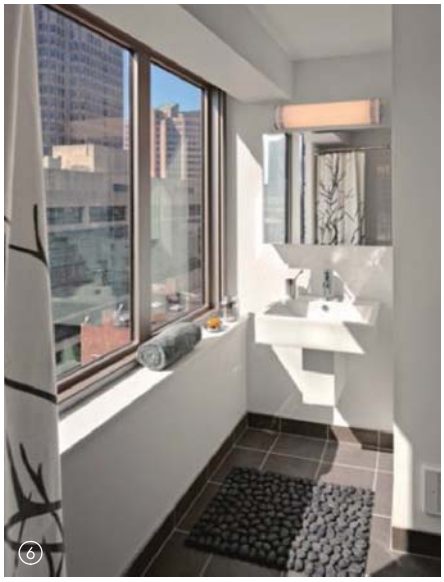
details/
The project consists of 30,000 square feet of ground-floor retail space, a 4-story parking garage, and a 25-story residential tower. The residential portion contains 500 rental apartments as well as 31,000 square feet of amenities, including a fitness center, library, children's playroom, pool, and half-acre green roof with native plants that are irrigated through rainwater harvesting.

1/ View from the State Street corner, former site of the Shartenberg department store.
2/ An aerial view illustrates the walkability and transit orientation of the site.
3/ The tower's design uses staggered trusses instead of flat-plate concrete or conventional steel.
4/ Interior of a bedroom with a view of the city beyond.
5/ 360 State Street's windows are high performance with low-E glazing.
6/ Each apartment features water meters to conserve both water and energy.

design/
Becker says that from the beginning, his goal was to avoid causing any strain on the existing energy, water, and transportation infrastructure of the region. To that end, he carefully planned for the use of renewable technology by testing different energy models to determine the ideal technologies and envelope systems for the site. Ultimately, the building's structural system was designed to use 30 percent less steel than a traditional system through the use of staggered trusses with inlaid precast plank in lieu of flat-plate concrete or conventional steel. "This measure reduced the project's steel requirement by 300 tons," he says.

building process/
Prior to groundbreaking, the City of New Haven and Becker + Becker Associates conducted detailed soil contaminant tests and remediated any problems found. They also deployed a construction-waste-management plan that diverted more than half of all construction waste from landfills; sourced as many construction materials locally as possible; and sought construction with high post-consumer recycled content, low VOCs, and no formaldehyde.

energy/
In addition to the 400-kilowatt fuel cell, 360 State Street includes numerous measures designed to achieve an electricity usage reduction of 50 percent compared to a conventional code-compliant apartment building. Low-E glazed windows and enhanced insulation permit light while blocking heat transfer. Enhanced slab, floor, wall, and roof insulation (of R8, R16, R20, and R40, respectively) prevent air from seeping into the building. Thermal-energy storage tanks store the excess heat from the fuel cell for peak usage times, providing relief to the grid when it needs it most. In addition, Energy Star appliances, occupancy sensors throughout the common spaces and garage, and high-efficiency lighting further decrease consumption.



water efficiency/
The highest-efficiency water-source heat pumps on the market are fitted with variable-volume pumping to conserve electrical energy. Water meters for each 360 State Street apartment conserve both water and energy, and low-flow fixtures throughout the building save 30 percent on overall water usage. Advanced building controls, such as demand-control ventilation, allow systems to operate only when needed and at optimal efficiency levels.

tracking performance/
As impressive as these measures are, Becker understands that a building is only as green as its users' behavior. To that end, the building is sited adjacent to a train station and all of the city's major bus lines and is walkable to all major downtown businesses, restaurants, and parks. The building accommodates storage for 200 bicycles and houses several hybrid Zipcars and electric-car charging stations.

Moreover, each tenant is educated about the technologies present in each apartment, including the ability to remotely track individual usage of electricity, gas, and water in real time via a Web portal. The public also can view the building's performance online and through a display in the lobby. "It's a total green community," Becker says.

—by Julie Schaeffer