Prototype Recovery

by ArchitectureWeek

Prototype sustainable community design, by workshop/apd, for a competition sponsored by Global Green USA.

In August 2006, Global Green USA announced the winner of the Sustainable Design Competition for New Orleans. The project, by Andrew Kotchen, Matthew Berman, and their New York office workshop/apd will be built in the Holy Cross Neighborhood to set an example both for supportive community housing in the beleaguered city and for sustainability in residential design in general.

In making the announcement, Global Green president Matt Petersen declared "These homes, once built, will help improve the lives of families by lowering energy costs and improving the health of the residents." He estimates that if 50,000 houses were built to these standards, residents would save $38 to 56 million per year in energy costs, and carbon and greenhouse gas emissions would be reduced by about 11 tons (10 metric tons) per household per year.

Single-family houses mix with apartment buildings.

Residents of the Holy Cross Neighborhood participated in the design selection. Construction is expected to begin there early in 2007. The model development will include a 12-unit multifamily apartment building, six single-family houses, and a community center.

The workshop/apd project was carefully thought out and documented to respond to energy conservation and other "green" measures and to make the neighborhood socially sustainable as well. They describe their design as "infiltrating all scales of production and consumption, from the macro-scale of global distribution networks and community rezoning, to the micro-scale of site strategies, individual building systems, and social interaction."

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To emphasize the breadth of their approach, the designers dubbed their winning entry: "GreeN.O.LA: Permaculture and the Rebuilding of Life and Verdancy in Holy Cross." Environmental engineering was provided by Raj Parikh, P.E. and the staff of Metropolitan Building Consulting Group. >>>

The neighborhood is connected to the public transit system.

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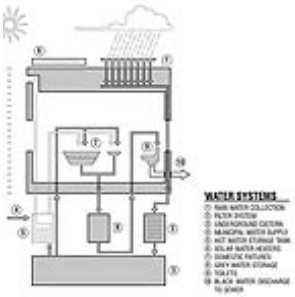
GreeNOLA site plan.

Green for New Orleans

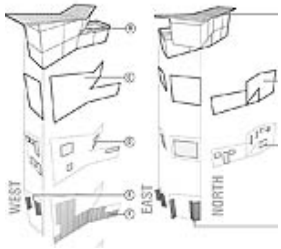
The goal of physical sustainability governed workshop/apd's choice of materials and systems: bamboo flooring, low-consumption toilets, and Energy Star appliances. Conceptual sustainability, harder to define, is expected to manifest in the social atmosphere inherent in the mixed-use site configuration and design of structures.

A shared common green space and vegetable garden will support an active neighborhood life. The development will also include its own recycling center, bus stop, and daycare center. A park will provide a venue for street musicians and cultural performances.



Conservation system diagrams.

The architects adopted a prefabricated modular approach to design to minimize construction costs and improve overall quality. The modular units will be made of lightweight metal framing and structural insulated panels (SIPs) with durable, environmentally friendly finishes.



Cladding systems.

The units will also feature vegetated "green roofs" and facade screens, a graywater recycling system, solar panels, and a rainwater collection system. Durable buildings are more resilient in adverse weather conditions, requiring less repair and upkeep over their lifetime.

Importantly, the prototype will not result in vast numbers of identical units. Residents can design their own house or apartment configuration by choosing from a matrix of options for room layouts, porches, balconies, and so on. With so many permutations possible, Greenola can accommodate single people, small families, large families, or people with special needs. >>>

Community center and apartment floor plans.

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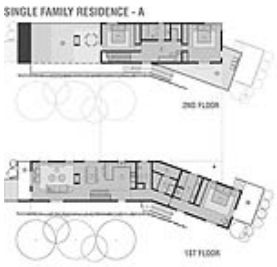

Single-family house floor plans.

Net-Zero Living

The on-site energy consumption in the Greenola development is expected to be 60 percent less than equivalent housing documented in the 2005 U.S. Department of Energy Buildings Energy Data Book.

The buildings will be highly insulated and oriented to exploit natural ventilation and passive heating and cooling. Controlled construction assemblies will reduce air leakage in the structure, resulting in greater climate control of interior spaces and efficient use of mechanical systems.

Inside the daycare center.

Controlled fresh air ventilation systems will reduce the need for mechanical cooling by 30 percent. Heat pipe dehumidification will make room temperatures comfort able at 81 degrees Fahrenheit (27 degrees Centigrade) rather than 78F. (25 C.). And a centralized geothermal system will provide chilled water to the heat pumps for efficient cooling.

Solar panels will both heat domestic hot water and generate a good deal of the electricity consumed on site. But electricity loads will be reduced by 50 to 75 percent of conventional consumption through the use of high-efficiency lighting and appliances.

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Water consumption and wastewater volume will be similarly reduced through water-saving fixtures and appliances, a graywater system for toilet flushing, and a rainwater collection system. These efficiencies are expected to save over $600 per person per year.

All these changes are intended to qualify the development for the highest LEED Certification, "Platinum," thanks to a comprehensive design approach that goes beyond technological to consider effects on the city and region. >>>

Social, as well as technical sustainability is supported by the block's infrastructure.

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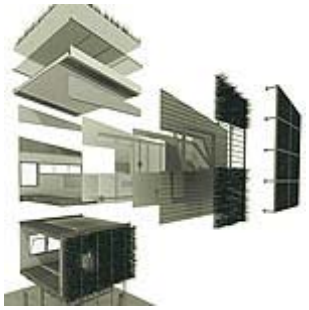
Typical kitchen.

Typical bedroom.

Modular unit.



Components of a construction module.
All images: workshop/apd

Greening the City

The neighborhood will offer site-scale protection from the elements through building orientation and tree placement. It will take advantage of local community resources through the on-site day care center, community center, and public transportation. It will limit demand on the municipal water supply and waste infrastructure.

Locally purchased building materials and labor bolster the economy. The project will develop an industry currently missing in New Orleans. A facility to manufacture the modular housing will place all the construction resources under one roof and take advantage of proximity to the Mississippi River to minimize transportation costs — and associated pollution — for raw materials.

If the project is as successful as is hoped, the city could soon begin exporting affordable and efficient modular homes throughout the hurricane- and flood-ravaged southern United States.

By creating a multipurpose, mixed-use site in Holy Cross, GreeNOLA will not only provide much needed, rapidly deployable, environmentally sustainable housing, it could help to revitalize the Holy Cross neighborhood and put it at the forefront of the "greening" of the Gulf Coast.

The Global Green competition jury was chaired by actor and architecture enthusiast Brad Pitt, who cosponsored and attracted media attention to the event.