Zero Waste—You Make It Happen!

Heroes Elementary School: A CHPS High Performance Demonstration School

Heroes Elementary School in Santa Ana, California, will be a Collaborative for High Performance Schools (CHPS) demonstration school sponsored by the California Integrated Waste Management Board (CIWMB). By sponsoring this project, the CIWMB supports the CHPS vision to create a new, improved generation of energy-efficient, high performance educational environments. The ultimate goal is to create healthy, productive learning environments.

Sustainable Building Strategies

Heroes will be the first high-performance demonstration school with a materials emphasis focusing on recycled-content products and site waste management. It will also set an example for future schools and explore using the school as a teaching tool. In addition to the recycled-content products identified in the next section, half of the wood used on this project will be Forest Stewardship Council (FSC)-certified. FSC is the only third-party accrediting agency for organizations such as Smart Wood and Scientific Certification Systems that oversee the forestry practices and certify the forest management as sustainable.

Use Recycled-Content Products

Project Goal: 50 Percent Recycled Content Rate (Achieve two points for Recycled Content in CHPS Criteria)

Part of the funding the CIWMB awarded to the Santa Ana Unified School District is allocated for research, specification, and procurement of recycled-content products. Setting a goal for a 50 percent recycled-content rate means that the project will achieve two points for use of recycled-content products in the CHPS Criteria.

Heroes design specifications include several products made from waste tires, including tire-derived resilient flooring, playground surfaces, rubberized asphalt concrete, and parking stops. Other products include tile made from recycled windshield glass, formaldehyde-free acoustical ceiling tiles made from newsprint, toilet partitions made from recycled plastic beverage containers, thermal insulation made from recycled glass beverage containers, 50 percent postconsumer recycled-content paint, cabinetry made from recovered wood, and recycled-content carpet with low emissions.

Divert Construction and Demolition Waste From the Landfill

Project Goal: Adopt a 75 Percent Waste Diversion Goal (Achieve two points for Site Waste Management in CHPS Criteria)

Since 28 percent of the solid waste stream is the reported average for construction and demolition (C&D) waste in California, this project adopted a goal to divert 75 percent of the C&D waste generated. This will allow the project to achieve two points for C&D waste management in the CHPS Criteria.

General Information

Location: Santa Ana, California
Type of Building: K–3 School
Size: 46,400 square feet
New Construction Project
Estimated Completion Date: Fall 2006
Cost: $9 million
Owner: Santa Ana Unified School District
Designed By: NTDStichler

Encourage Students and Staff to Reduce Waste

One of the prerequisites of a high-performance school is that it dedicate space for the storage and collection of recyclable materials. This project allocates recycling containers near waste receptacles through the campus and in a centralized collection point to make recycling as convenient as disposal. Signage has also been included to prevent contamination.

Maximize Indoor Environmental Quality

High-performance schools offer enhanced learning environments for children. In fact, they have been shown to increase learning and academic performance, which is directly reflected in higher test scores. A study conducted by the Heschong Mahone Group (Daylighting in Schools) found that students with the most daylighting in their classrooms progressed 20 percent faster on math tests and 26 percent faster on reading tests in one year, compared to students in classrooms with little or no daylight.[1] Proper daylighting design has been incorporated into Heroes Elementary School to improve student performance.

Other measures have been taken to improve acoustical performance so that the teachers and students at Heroes Elementary School can hear one another easily. Temperature and lighting controls have been incorporated into all the classrooms to maximize thermal comfort.

One of the most important elements of a high performance school is that it be healthy. According to the U.S. Environmental Protection Agency, indoor air can be more polluted than outdoor air, sometimes as much as 100 times more polluted. U.S. EPA also states that Americans spend approximately 90 percent of their time indoors and that indoor air pollution is one of the top five environmental risks to public health.[2] In light of these facts, ensuring that building materials contribute to good indoor air quality is important. Heroes Elementary School will use building materials with low emissions to help create a healthy indoor environment.

Achieve Superior Energy Performance

The energy-saving features designed into this school will reduce energy use by 20 percent compared to typical schools. Saving 20 percent in energy costs annually frees up about $1,000 for each classroom to be spent on teaching supplies and education rather than electricity.

Use the School as a Teaching Tool

One way the school will be used as a teaching tool is by developing a case study that will include information useful not only to design professionals, but also to students. For example, since recycled-content materials are a main focus, the case study could include information about how many glass bottles were diverted from the landfill as a result of recycling them into a product used in construction of the building. This type of information is easy for children to grasp.

In addition, an end-of-project report will compare sustainable features of Heroes Elementary School with a baseline school design. In this "design reuse" project, the Heroes building façade and floor plan are the same as in the baseline school. However, the report will show how incorporating energy-efficient design and using products with recycled content and low emissions will enable students to learn about resource conservation.

For information, contact Dana Papke, CIWMB Sustainable Building Program, at (916) 341-6496 or dpapke@ciwmb.ca.gov.

A school should be—

". . . a thought-built good-time place for happy children—with some light overhead, the school building should regard the children as a garden in sun." —Frank Lloyd Wright

Frank Lloyd Wright, *The Natural House*, Horizon Press, 1954, p. 54.

Join Governor Schwarzenegger to Keep California Rolling. Every Californian can help to reduce energy and fuel consumption. For a list of simple ways you can reduce demand and cut your energy and fuel costs, Flex Your Power and visit www.fypower.com.

[1] Executive summary for study report: www.h-m-g.com/Daylighting/summaries%20on%20daylighting.htm#Daylighting%20in%20Schools%20–%20PG&E%201999.

[2] U.S. Environmental Protection Agency, "Targeting Indoor Air Pollution: EPA's Approach and Progress." Document #400-R-92-012. March 1993. www.epa.gov/iaq/pubs/targetng.html.

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