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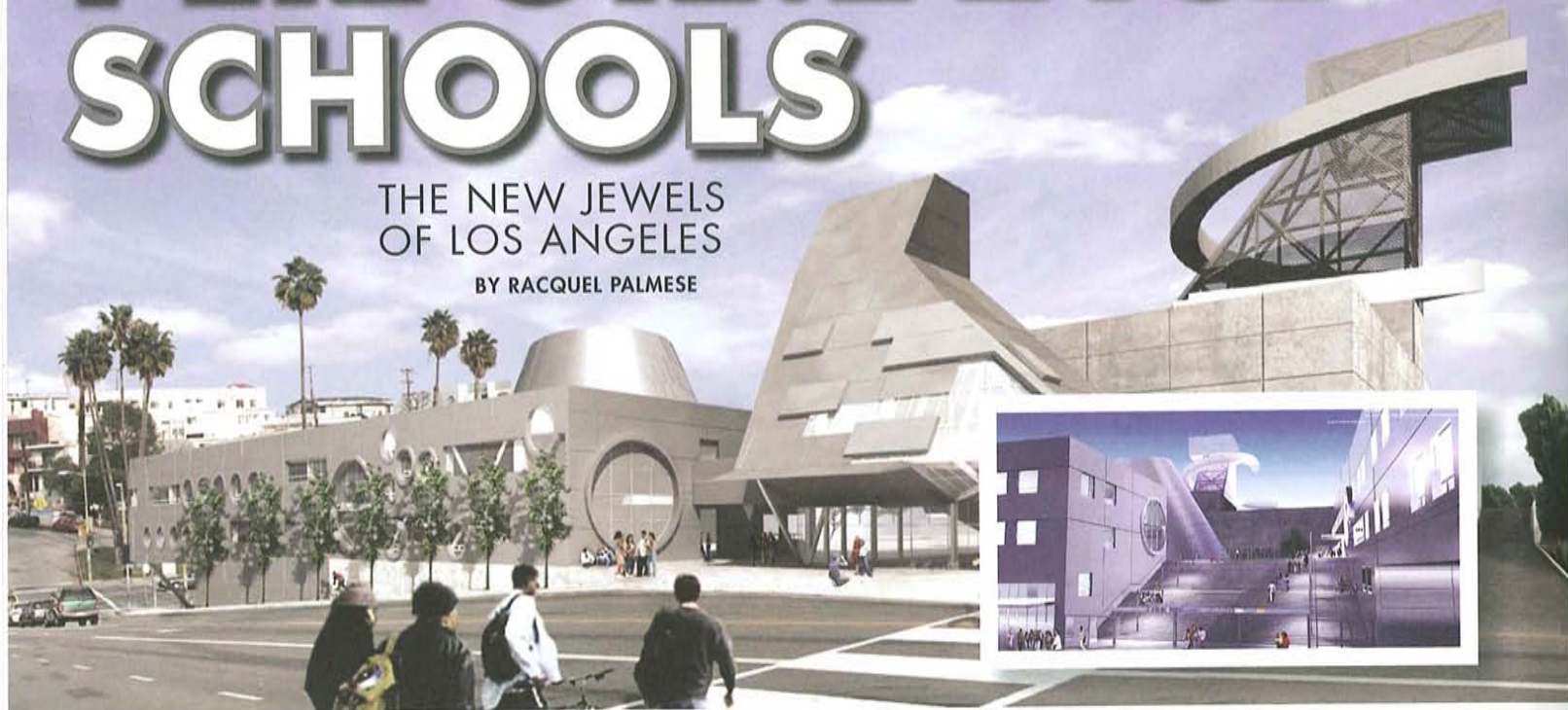
GREENING SCHOOLS IN THE GOLDEN STATE

Toward Healthy,
Sustainable Learning Environments

HIGH PERFORMANCE SCHOOLS

THE NEW JEWELS OF LOS ANGELES

BY RACQUEL PALMESE



The Los Angeles Unified School District spreads across 710 square miles of inner cities, deserts, rolling hills and suburbs. Running from the endless vistas of tract homes to the northern horizon of the San Fernando Valley, then south and east through the ethnic enclaves of East LA, Boyle Heights, Chinatown, Koreatown, Leimert Park Village, Little Tokyo, Filipinotown, Koreatown, Little Armenia, Little Ethiopia, Little Persia, Little India and Thai Town to the Towers of Watts, it finally ends at the canals and harbors of Long Beach, California.

The second largest school district in the United States, it has been called a behemoth, top heavy and inefficient, controversial and downright impossible to manage. Maligned and magnificent, its numbers alone evoke both wonder and disbelief. Of the District's 708,000 students, 73 percent are Hispanic, 11.4 percent are Black, 3.8 percent are Asian and 8.8 percent

are Caucasian. It teaches the English language to almost half - 315,400 students - who speak 88 different languages. Many of its 13,000 buildings (1,059 schools) are in disrepair. Most of them, built over a half century ago, have had little or no renovation.

Almost daily, news stories recount the District's travails, but its achievements are rarely noted. Perhaps the most unanticipated and impactful of its activities - one which only a school district of the size of LAUSD could undertake - is its school construction and renovation program. This multi-year endeavor, valued at almost \$20 billion, is by far the largest ever undertaken by a school district. By 2012 it will deliver approximately 180,000 new seats in 145 new schools. Some 20,000 renovation projects will be completed.

The program came to life in 1997, when voters allocated \$2.4 billion for modernization of facilities and addition of classroom space. New

bond measures were passed in 1998 (\$4 billion), 2002 (\$3.5 billion from the city and a portion of a \$13.05 billion statewide bond), 2004 (\$9.2 billion), 2005 (\$3.985 billion).

Adding to that, in November 2006, a statewide K-12 and university facilities bond act was passed providing an additional \$10.41 billion (see related article on Proposition 1D), which includes \$100 million for high performance (green) school construction statewide.

So far, 186 projects have been completed, including 65 new schools that provide 2,650 classrooms; 64 schools are being designed or in approval processes.

Let Them be Green!

To appreciate what Joseph "Guy" Mehula, LAUSD's chief facilities executive, and the 5,000 people who work at the Facilities Support Division, are trying to accomplish is to not only embrace the enormity of the construction

project, but to grasp that in the midst of this building boom LAUSD decided that all its new schools must be high performance schools. The District mandated that every school designed after the year 2003, about 64 schools, will be designed to meet the tough sustainability standards set forth by the Collaborative for High Performance Schools (CHPS). [See p. 13 for related story.] LAUSD was the first district to make such a declaration, to set such a mandate for its new school construction. Since then a host of others have followed its lead.

At this writing, two CHPS "demonstration" schools have opened in Los Angeles: Charles H. Kim Elementary School in Los Angeles and Maywood Academy High School in Maywood. Most new projects are in the design stages, with about 10 nearing construction. "Every one of these schools," Mehula told an audience at a recent Global Green schools conference, "is built to represent its community, both by its unique design and by creating indoor and outdoor spaces that are open to the community." This includes meeting rooms, theaters, athletic fields, swimming pools.

"We call this joint use," he said, "and it's a central part of our planning for all the new schools. To create such healthy and beautiful schools has had the effect of raising up the neighborhoods they're located in. People take pride in them and know they are special.

"It's funny," he quips, "when you mention the school building program to most people, they can only think of the Belmont Learning Center (whose toxic problems cost taxpayers millions in cost overruns). But even that school, now called Vista Hermosa, will be opening in September of '08.

"The biggest problem we have is getting the word out about all these terrific new schools that are each a jewel in their communities."

Designing a Green School

Ying Wang heads up the high performance schools program at LAUSD, reporting to Mehula. An architect who is passionate about green schools, she helped structure the CHPS point system that leads to school certification. "The best part of CHPS," she says, "is that if you integrate it very early [in the design phase]

it won't necessarily cost extra money."

As an example she cites Central Region Elementary School (CRES) #18, which has been approved by the Division of the State Architect and is going out to bid with completion expected in about 15 months. The design architect was able to meet the school's budget without requiring any additional funding to meet the CHPS requirements. On a typical project, the architect will be able to reach at least 28 CHPS points, which was the minimum required to be certified as a CHPS school since 2002, out of a maximum of 81. A new points system raises the minimum to 32 and maximum to 85. Most projects currently average at least 33 points.

This particular school earned 45 points. Wang explains that this was accomplished not only by complying with all the points the District required, but by adding extras right from the beginning. The building was oriented for optimal sun exposure, achieving energy efficiency that was 37 percent greater than California Energy Commission standards. Recycled materials were used as much as possible and construction waste was recycled – again adding points to the score.

"The building is well located and uses the site," Wang says. "They designed it with an overhang which becomes a covered walkway. With a lot of our buildings that are not built to sustainable standards, the architect will design it the way he or she likes and then we'll have to add on features for energy efficiency or other sustainable things, and those become additional costs."

"These high performance schools provide a great opportunity for the school itself to be an instructional tool," says Kevin Tyrrell, principal of Quatro, the architectural firm that designed CRES #18. "As an example, all the classrooms have cross ventilation; they all have lots of natural light. There are things that are incorporated



into the building that show students how to work with the natural environment to do things that are much more beneficial. These are all things that can be taught for science and other classes."

CRES #18 is a 575 seat neighborhood elementary school that includes 23 classrooms, a library, administration, food services and a multi-purpose room. Says Tyrrell, "Building it green not only didn't cost anything extra, it probably saved money. For example, there are several ways you can handle site drainage. You can have different areas collecting water that are connected to a drain connected to a storm system. That's pretty expensive. We have our site configured so we're using a combination of a natural and created slope, so all water drains to our turf area on our site which is used as a retention area. If there's a major rain event, the water percolates down to the aquifer. We're reducing runoff, and we're not adding to the storm water runoff demand. Gravity is doing the work instead of pipes. So we saved a considerable amount of money by using natural forces to work in our favor."

Overall, use of abundant natural light reduced the energy load for lighting considerably and natural ventilation reduces the amount and size of mechanical equipment needed for air conditioning. In traditional schools, interior hallways have classrooms on each side, limiting air flow and light. CRES #18 has an exterior walkway which eliminates almost all the need for light or ventilation during the day and also reduces the volume (hallway) that needs to be

ventilated. This reduces energy consumption and provides a more healthful air supply. Tyrrell says the building interacts with the environment. Because the design group worked hard to integrate all the sustainable functions into the overall design, "you don't really know that the features are working at all the different levels."

The Visual and Performing Arts Center on Grand Avenue will be a \$100 million high performance high school that contains four small learning academies. Gary Gidcumb, of HMC Architects, is the lead architect on the project. He has been working on green buildings for the past 17 years. Since 2002, he's been designing green schools and says that green building is a "growing emphasis of the firm." "Growing" is the operative word; Gidcumb acknowledges that once you start designing green, "what it comes down to is you can always do more."

At Grand Avenue, Gidcumb and his staff faced enormous challenges when it came to energy efficiency. The theatrical academy, for example, has an 11,000 square foot lobby and a 950 seat theater, plus a black box experimental theater in the round. "These are large, open spaces," he says, "difficult to air condition. There are also a lot of large classroom spaces, like dance studios and the library. But we feel good about meeting the challenges. We succeeded within a difficult arrangement."

As with CRES #18, the architect and the District accomplished the 45 point CHPS score by incorporating many sustainability features directly into the original design plan. The library, for example, with a 50 foot high ceiling, utilizes glazed windows to stop solar heat gain.

The challenges that Gidcumb and his staff faced included working through the many levels of such a large school district. "You're always going to have folks that think the right way to do things is different from the way you want to do it," he says. "What we've been able to do is work with all of those camps to build consensus on what the right approach is." The architect now gives talks to LAUSD design staff so they can communicate with architects and emphasize the importance of initiating green design from the earliest stages.

"For most of the architects we hire, it's their first time encountering a CHPS school," says Ying Wang. "They may have experience with sustainable design, so we join the pre-design meetings and present written documents with our requirements for things like energy, water and sound. We provide the architects with a scorecard that has rating requirements they must meet for these high performance schools."

"Go through the score sheet with the District," Gidcumb advises. "Take the issues seriously, look at each point and ask yourself how can we make this happen in this school? Sometimes it's not cost effective or not possible for an individual school, but if you don't go through the exercise, you're selling the project short."

Gidcumb feels that when it comes to building green schools, architects are not getting up to speed as quickly as they should. "It's extremely important," he says. "There's so much at stake and so much that architects can do to make an impact. And that's on every project, no matter what the budget is. The Visual and Performing Arts Center is on budget. It's not a "showcase" project where grants or special funds have been allocated specifically to get a high CHPS score, and we still managed it. Every project should be a showcase project, and you shouldn't have to sacrifice design quality or break the bank to do it. It's a real challenge to the profession."

He says that the ultimate goal is to build schools that are carbon neutral (emitting no net carbon dioxide into the atmosphere) and net zero (producing as much energy as they consume). "That would be a fantastic step forward for communities to see that. When I see the school as a center of community and the things that happen there and kids who can grow up in that sort of environment and then go home to their families who see that they are part of the solution – that's a terrific thing."

Building a Green School

The process of building a new school can take as much as five years, sometimes more. It begins with LAUSD's Real Estate Department. "The biggest problem we have with LAUSD is we don't have that much land available, so we have to use

eminent domain to buy properties," says Wang. "The nice thing is the newer schools cause real estate values to go up for the local community."

Selecting a location for a new school takes into account district needs including relieving overcrowding in existing schools, eliminating the need for year-around schools and involuntary busing. The Real Estate Department assesses where a new school needs to be situated based on these factors and then acquires the necessary properties. It relocates private and commercial residents when necessary. The more families that need to be relocated, the more time the project can take. Thus far, over 1,200 parcels of land have been acquired, and 2,200 households and businesses have been relocated to make way for school construction.

After a site has been selected, the Community Outreach Department is activated. Visits are made with residents and business owners, and community meetings are held. Site selection also includes an assessment by the Office of Environmental and Health Services (OEHS) and the production of an Environmental Impact Report before the site is claimed. That starts the funding and approval stage.

The California Department of Education decides how much state funding will go to the District. "Not everything can qualify for funds," says Vincent Coffeen, LAUSD director of design management. "The rest is paid for by local bonds. The state, in theory, is supposed to fund 50 percent of construction, but now it's really more like 35 percent because of escalation of construction costs."

Construction costs escalated 20 percent in 2006, causing some projects to trim their budgets. The state is encouraging the building of CHPS schools by the creation of a special unit within the Division of the State Architect to handle high performance schools projects.



"We work with DSA on a plan check," explains Coffeen. "It can take a very long time to work through that. It's always about 12-15 months for architects to finish their drawings before we even get to the DSA, and then we can have a project sitting there for another 10 months. But we have an agreement with them now that is shortening the process. Our goal is a six-month review at DSA."

Since the LAUSD loses \$1 million for each month delay on a \$60 million high school, this new partnership agreement with DSA means significant savings. The accelerated review period saved the LAUSD \$6 million in 2006. The staff shortfall at the DSA created by the explosion of LAUSD building plan approvals is being addressed by a partnership agreement. The PA, as it's called, created a team of mostly outside consultant reviewers for LAUSD projects. LA now issues "look ahead" reports that include project profiles sent to the DSA in advance, so the agency can be ready with review teams waiting for the submissions to arrive. As of January, 2007, a new law allows for "concurrent review," which means that DSA reviewers can work throughout the design process, instead of waiting until plans are drawn up and submitted. This is expected to shorten the process even more, setting an efficient system in place for other districts as well.

"DSA is in major collaborating mode right now," says Mahendra Mehta, transition manager at the DSA. "We are partnering with LAUSD. The key to it is managing the timeline in planning and communications, getting started early in the process and staying in communication all the way through to approval." Wang agrees, "We can save five percent of regular costs for a CHPS school by starting early with the state agencies. That's very exciting, because after about five years of payback, these schools start making money with energy savings."

During the DSA approval process, final drawings are also sent to CDE one last time to verify square footage for a determination of state funding for the project. Then the bidding process begins. Unlike many commercial buildings that utilize design teams made up of architects and construction contractors who work together from the onset of the design process, LAUSD calls for a separation of the design and building processes. The award goes to the contractor who submits the lowest bid.

Right now there are 16 green school projects in the pipeline, all of them almost through the DSA process. In two years, says Wang, there will be 40. What does all this mean for other districts? "It means their standards will change," says Wang. "Other districts can use our experience." The inexhaustible Wang also spends time giving presentations at conferences and districts considering building green schools.

"We have all our information on our [LAUSD] website," she says. "I would say to those districts, 'go grab it as much as you can. You are always welcome to call me. There are a lot of paybacks in building green schools.'" ❁

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