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Executing on the Vision of Green Design

By Mandy Jackson
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Sustainable design does little to help the environment without contractors and suppliers who know how to implement green-building concepts.

Contractors are beginning to take advantage of the training available through the U.S. Green Building Council's Leadership in Energy and Environmental Design programs under which architects have long sought accreditation. And in response to demand from builders and vendors looking to train employees, at least one community college is developing programs to prepare students for careers in green industries.

Joseph Troya, vice president and principal of San Clemente-based Consolidated Contracting Services Inc., said his general contracting company has taken advantage of programs offered by the U.S. Green Building Council because clients want to build LEED-rated projects.

"We haven't been able to find any junior colleges or universities with programs," Troya said. "Last week, we sent 15 employees to a LEED seminar in San Diego. Everybody came out pretty excited and they want to take the test [for certification]."

Consolidated Contracting is building a community clinic for La Maestra, a San Diego nonprofit that provides health care and education services in diverse, low-income neighborhoods. Troya said La Maestra recommended that the contractor attend a course on high-performance hospitals. He sent the project manager and superintendent on the nonprofit's project.

"We have some clients that have said, 'Here's some courses I'd like you guys to attend,' and you really have to make that commitment," Troya said. "Our goal this year is to get six project managers LEED-

accredited and half of our 14 superintendents accredited."

And while a general contractor is usually a jack of all trades but a master of none Troya said his company has had to become a master of green building so that project managers can teach their subcontractors.

"Now, we have a group of subs that we can work with and it's of value of them," he said. "We're not the only general contractor they work with that does LEED projects."

Educating Contractors

The Los Angeles Community College District has 59 active construction projects on its nine campuses with a focus on sustainability.

The community college district made a commitment to build projects that meet LEED certification standards when the construction is at least 50 percent funded by \$2.2 billion in bond financing provided by Propositions A and AA, which voters passed in 2001 and 2003. But like any public agency, LACCD has to comply with state laws for accepting bids on public construction projects.

"We have to take the lowest bid, so we don't always end up with a contractor with experience in green buildings," said Larry Eisenberg, executive director of facilities planning and development for the community college district.

At some point, LACCD may pre-qualify contractors to single out construction companies with experience in sustainable design. So far, the community college district has not done that because it hasn't wanted to limit the number of bidders for its projects.

In the meantime, LACCD is offering classes for builders. The Saturday seminars called "LEED for Contractors" offer training from experts in sustainable design and green-building products.

"The interesting issue we've encountered and the reason we've offered the training is LEED requires

a lot of documentation," Eisenberg said. "We find that while we're doing things correctly, we aren't documenting them properly. We've lost some LEED points for that."

With an eye on future builders and others involved in sustainable design, the community college district also plans to offer degrees and courses in green careers.

Marcy Drummond, vice president of academic affairs at Los Angeles Trade-Technical College, said sustainable concepts have been integrated into some of the school's existing courses, but many more programs are on the way.

Drummond said the new buildings under construction on the college district's campuses will serve as laboratories for students who are interested in careers in green building.

From a report commissioned by the city of Los Angeles to determine which green sectors promised the most growth for local workers, the Trade-Technical College identified several areas to focus its first academic programs on: architecture technology, diesel technology, supply-water technology, waste-water technology, sustainable construction technologies, chemical technology, process technology and solid-waste management.

In some areas, complete degree programs will be offered. In other areas, some classes will be available within another degree program. For many existing classes, instruction in green concepts will be added. For instance, an architecture class titled "Equipment of Building" now includes training in sustainable-design issues and materials.

The Los Angeles Department of Water and Power funded a grant so that the Trade-Technical College could create the Sustainable Development and Training Institute.

As part of the institute, an industry collaborative that includes unions, local trade groups and the city's economic development department, advises the college on the information that should be provided to students looking for green careers.

The institute invited local universities, colleges and kindergarten-through-high-school educators to the Renewable Energy and Green Building Industry and Educator Forum on Oct. 27 and Nov. 16 to look at

what the schools are doing in terms of education on sustainable design and to map out academic priorities.

"We're building the airplane as we're flying it, which happens when you're working with emerging industries," Drummond said.

Bob Noble, chairman and chief executive officer of San Diego-based Envision Solar, said the company is carving its own path in the green-building movement.

It designs and builds solar arrays over parking lots and parking garages.

"We're having to develop new technology and design and construction methodologies around what we're calling solar integrated building systems," Noble said. "It's not that we have to have people who are experts in sustainable design. We need to have people who are familiar with certain parts of our business - solar, electrical, structural engineers for steel and building systems and finance people familiar with structured finance."

He said solar is a fragmented and nascent industry at the beginning of a multiple-decade expansion, so everyone involved is learning as they go.

"We are finding the talent," Noble said. "We are sort of establishing the standards of solar integrated buildings systems. Everyone we work with is quite inventive. They're good at what they do, but quite flexible."

Noble and his partners, which include the solar panel manufacturing division of Kyocera International Inc., launched Envision Solar this year. Noble was previously a partner and chief executive officer of Tucker Sadler Architects, where he helped Kyocera design a grove of solar trees, which hold photovoltaic panels over the technology company's parking lot in San Diego.

"I think if there is a gap [in sustainable design training], it might be in the execution of these things," said Bob Carroll, principal at Salerno/Livingston Architects in San Diego. "The manufacturers can give you a window that meets a certain energy requirement, but in terms of contractors being able to install a window to make it work more efficiently, I'm not sure I'm seeing contractors pushing that as much as the architects."

Labor Innovations

An efficient building doesn't do the environment much good if the project owner doesn't understand the benefits, the contractor isn't equipped to install it and the property manager doesn't know how to maintain it.

That's why, with more architects designing green buildings and developers willing to invest the capital in sustainability, unions and trade associations are beginning to train the construction workforce in green building concepts.

"We offer in our apprenticeship training program a significant segment on solar energy," said George Hawkins, executive vice president of the Associated Builders and Contractors, San Diego chapter. "That's the primary area in which we are responding to the green-building movement and the requirements and needs there."

Mike Mowrey, international vice president for District 9 of the International Brotherhood of Electrical Workers, headquartered in Sacramento, said the union trains electricians in various elements of green power, including solar and wind power. IBEW Local 11 in Los Angeles also has an extensive training program in solar panel installation.

Mike Layton, executive director of the Apprentice and Journeyman Training Trust Fund of the Southern California Plumbing and Piping Industry in Compton, said apprentices don't learn about green-building practices on a day-to-day basis.

If companies make a request for training their employees in a certain green product or sustainable building concept, a weekend class or seminar may be offered.

"Every day something new comes up in terms of green building," Layton said. "If a new product comes up or an architect puts it into their drawings, then we have a seminar."

He said the concepts aren't incorporated into the regular apprenticeship program, because the technology is changing so fast that by the time it's presented and the apprentice finds a job, the product or building method is out of date.

Consolidated Contracting requires its employees to take two industry courses per year on any construction topic and reimburses them full cost.

"We haven't found any people out of school with knowledge in sustainable building," Troya said. "We're getting resumes from people who've been in the industry a long time because residential is down. The only one we hired has done some green projects. If I have a bunch of applications and they're all the same, but someone has that experience, that's who I'm going to hire."