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Shopping Smarts

Besides ever-changing consumer tastes, retail is being pushed into new realms by new codes and greater community involvement mandating more sustainable buildings with notably more energy-efficient lighting.

By Barbara Horwitz-Bennett, Contributing Editor -- Consulting-Specifying Engineer, 2/1/2006 1:00:00 AM

Retail developers and designers these days must deliver the gamut from big box stores to specialty boutiques. This is becoming increasingly difficult, as trends such as narrower target markets, the increasing popularity of "retail-tainment" and adding retail into mixed-use development demand more innovative thinking and additional resources. Perhaps the greatest task at hand is something somewhat foreign to the retail scene: achieving energy efficiency to meet the requirements of a new breed of codes.

Title 24 in California is receiving the most notoriety of these new standards with its requirement that general lighting consumption now be only 1.2 watts per sq. ft. But the Golden State is not alone. Oregon, Wisconsin and Florida have also adopted their own stricter energy codes, and most others

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have adopted at least the 1999 edition of ASHRAE 90.1 as their default energy guideline. Oregon's new code is not quite as stringent as California's—only 1.5 watts per sq. ft.—but its impact is huge, as the state's previous code had a flexible range of 3.4 to 8 watts per sq. ft.

"Most of our clients are getting hit pretty hard with these new lighting restrictions," says Jim Megerson, P.E., vice president, Larson Binkley, Kansas City, Mo., whose clients range from Bass Pro Shops to the Noodles restaurant chain. "In some cases, they're 7,000 watts over the minimum code requirement."

Multiply that times 1,000 stores nationwide and he says the excess electricity is enough to power a small town.

But even though retailers are being forced to revamp their entire approach to store lighting, the good news is that this change results in lower energy bills. The not-so-good news is that there are no easy fixes as newer—and more expensive—lighting technologies are often required to achieve the required efficiencies.

This, however, is an opportunity for the electrical consulting engineer to get more involved, says Megerson, as many of the specialty lighting designers that retailers traditionally utilize aren't registered engineers and often don't have as firm a grasp on energy efficiency and meeting the requirements of standards such as 90.1.

"This has really caused the lighting designer to work more closely with the engineer, but basically it's a win-win situation, because retailers have better-lit stores that cost them less money," he says.

Enlightening strategies

So how are design teams tackling these issues? One strategy is daylighting. Not only is it free, but according to Rod Wille, senior vice president and manager of sustainable construction at Turner Construction's Sacramento office, studies have shown that shoppers tend to buy more in a daylight environment, as sunlight contributes positively to their mood, and the natural light lends greater appeal to merchandise.

Turner recently teamed up with Arup to design and build a pair of experimental sustainable stores for Wal-Mart where natural light played a huge role. "Customers don't enjoy being flooded with undifferentiating fluorescent lights," adds Alisdair McGregor, P.E., principal, Arup, San Francisco. "We've found that it's not a good environment for people to be in for a long time, and it doesn't help sales."

Besides an abundance of skylights, photovoltaic-integrated clerestory windows were also



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Even in non-daylit stores, many retailers are lowering their general ambient lighting levels and focusing more on the direct lighting of displays. "Because lighting is what makes the product pop, we're trying to make sure that the light aspect of the store still has punch and appeal, without being too energy-greedy," says George M. Lewis, AIA, vice president and manager of retail commercial facilities for URS Corp.'s Grand Rapids, Mich. office.

"Essentially, we've gone to working with retailers to help them decide where they want to put their lighting," adds Deborah Raines, LC, senior lighting designer, Interface Engineering, Portland, Ore., whose clients include Nike and its new chain of NikeWomen stores.

One energy-efficient product she's experimenting with in display areas is LEDs. With their long life, low maintenance and energy efficiencies, Raines says LEDs are gaining appeal. "LEDs add a nice flair, color and attraction that draw the shopper in," she claims.

Wal-Mart has also turned to LEDs, but for a different reason. According to Don Mosely, Wal-Mart's project manager of experimental stores, the retailer has installed LEDs in its refrigeration cases because they produce little heat and allow cases to be enclosed.

A common complaint about LEDs is the caliber of their white light output, but that's improving. Cost is also an issue, but Lewis is confident that as time goes on, the cost efficiencies per ballast will even out.

Traditional track lighting is also changing, as the utilization of low-wattage metal-halide lamps on track heads is becoming more common, and individual incandescent bulbs are being replaced with fluorescents. The latter, however, presents the issue of color control, according to Lewis. Furthermore, he says, an organized maintenance program is necessary to ensure that the same fluorescent fixtures are being used to replace the old fluorescents as they burn out.

Sustainability gains

Both Nike and Wal-Mart are going to great lengths make their stores sustainable. A number of other retailers have also become green converts. "Just a couple of years ago, when we would bring up sustainable design to our retail clients, they hadn't heard of it and had no interest in it," observes Stan Laegrid, AIA, principal, Callison, Seattle. "But now they're interested in talking about it, seeing it as a positive public relations gesture to help them become more community-oriented."

That's one of the reasons Wal-Mart is experimenting with greener stores, but Mosely adds it's also frankly about developing best practices to lower operational costs. Laegrid adds that this a key factor

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for designers to note in marketing green to their clients, as he has noticed that Wall Street stockholders are starting to request that corporations make more gestures along these lines in their facility designs and practices.

Turner's Wille believes what's happening with Wal-Mart will have a significant ripple effect. "There's no question that it's going to impact not only the retail industry, but the entire building industry, especially if they follow through with the three-year testing and monitoring [of all the sustainable elements] program and can prove that some of these technologies have significant benefits," he says.

For example, one of the more novel technologies Wal-Mart decided on was integrated photovoltaics. Consequently, McGregor is optimistic that if the stores' energy-savings efforts—which are being monitored by the U.S. Dept. of Energy—reveal significant savings, it could be a big turning point for PV. "If the use of PV becomes more commonplace in these types of stores, it's going to drive the cost of PV down. I think that in five to 10 years, PVs are going to be everywhere where there's good sunshine," he predicts. (Click [here](#) for more on the Wal-Mart project).

Other large retailers, including Target, Kohl's and REI Sporting Goods, are beginning to follow suit. That being said, Megerson points out that it's easier for big chains to incorporate sustainability as they have stand-alone stores, whereas entities within malls are hostage to the systems already in place.

But more local jurisdictions may have something to say about that. In the case of Kohl's new 90,000-sq.-ft. store in Pleasanton, Calif., green measures were driven by a mandate from the city that all buildings larger than 20,000 sq. ft. meet basic LEED requirements. Consequently, the Larson Binkley-designed store utilizes high-efficiency HVAC units, low lighting power density and demand-controlled ventilation.

Steve Jones, a manager with real estate developer Jones Lang LaSalle, Atlanta, is somewhat skeptical that green stores will catch on in a big way due to retail's history as a traditionally low-profit business.

Still, it should be noted that local communities are exercising their authority much more on a variety of issues. "We're seeing more requests to improve the aesthetics of the building, as well as the incorporation of more landscaping," observes Raj Gupta, P.E., president, Environmental Systems Design, Chicago.

In other cases, AHJs are requiring changes in things like building size, parking lot layout and exterior lighting. At the same time, Raines' colleague, Mark Heizer, P.E., an associate with Interface, notes that sometimes if retailers are willing to incorporate things like on-site storm water retention or make an effort to accommodate mass transit, communities will respond in kind by easing overall

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requirements.

Wal-Mart was on the receiving end of such a magnanimous gesture in Aurora. "The planning committee was impressed and fascinated with the sustainable plans," recalls McGregor. "It obviously seemed to be a bonus in terms of getting the project through the planning process."

Awave of al fresco?

Perhaps green is subconsciously permeating the minds of more shoppers, store planners and approvers. It's a fact that traditional regional malls are beginning to take a back seat to retail within mixed-use developments.

"In general, indoor malls aren't exciting enough these days," says Laegrid, "as shoppers are getting more sophisticated and are looking for something fresher and more experience-oriented."

Instead, developers are pulling together retail, entertainment, office and housing into one quaint area, dubbed "lifestyle centers," which give people the option of living, working and playing all in one general space.

Such centers almost always incorporate outdoor elements with a "main-street" feel. "By incorporating things like open air, landscaping and water features—even in colder climates—this draws a lot of customers to the shopping environment and keeps them in the environment longer, even if they didn't come to shop," claims Beyard.

In addition, these developments appeal to folks short on time. "People need to have the ability to park close to the front door of the specialty store that they want to shop at and avoid navigating the crowds of the traditional mall experience," states Johnson. "If they can stop at the gym or grab a bite to eat at the same time, all the better."

Mixed-use also makes sense from a developer perspective. According to Laegrid, it takes similar resources to develop both kinds of shopping centers. However, traditional malls, on average, will be valued at \$50 million, whereas lifestyle centers approach the range of \$250 million.

It's also interesting to note that the food and beverage component of a mall is generally around 10%, whereas restaurants typically comprise 30% of a mixed-use development.

"This shows that people are really looking for a place where they can come and hang out," says Laegrid.

Beyond food, public services such as post offices, libraries or community gathering spaces are big draws. And according to John Larsen, associate principal and national director of retail/mixed-use

centers with the Baltimore office of Carter & Burgess, these non-revenue-generating components can open the door for public funding or allow the development to qualify for mechanisms such as tax incremental financing.

In addition to providing civic services, mixed-use developments are also appealing because they help build communities and promote healthier lifestyles. For example, the various spaces are generally within walking distance of each other, people have easy access to public transportation, there's more of a focus on neighborhood and culture, and at the end of the day, the development is less of a draw on energy resources.

And as more states adopt the latest edition of ASHRAE 90.1, it will only continue. As a result, sustainability is bound to gain greater attention in the retail market.

A Case for Controls

With all the hype about rising energy costs and new code requirements, will control systems gain greater appeal among chain retailers?

"About half of the chains we work with have remote monitoring, but few are actively using the technology," says Mark Heizer, P.E., associate, Interface Engineering, Portland, Ore. "Essentially, they've bought it, but they aren't watching it too carefully."

And, Jim Megerson, vice president, Larson Binkley, Kansas City, Mo. points out, neglecting to utilize controls is a big waste of money, especially for retailers with 300, 400 or even 1,000 stores. "The magnitude of energy costs that aren't being recovered could be astronomical," he says.

Consequently, Megerson and Heizer anticipate that such retailers will begin to seriously consider utilizing controls more extensively.

However, one side issue that will need to be addressed is the fact that capital investment is often a separate budget from maintenance budgets, according to Heizer. And because it's typically more difficult to procure funding for new technology, clients too often end up spending more on the maintenance end without the benefit of a well-integrated control and monitoring system.

The upshot is that a strong business case must be made for the sake

of controls. "Putting in strategies to reduce energy will only increase the bottom line," declares Megerson.

An Evolving Marketplace

As far as general trends in the marketplace go, a number of retailers are specializing into niche markets where they're targeting specific demographic groups. Called "narrowcasting," Michael Beyard, a senior resident fellow with a specialty in retail and entertainment development, Urban Land Institute, Washington, D.C., explains, it's a reaction by other retailers to the rapid growth of big box retailers and their essential takeover of the discount and mid-range markets.

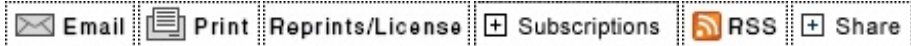
Another trend designers must keep up with is the fast pace at which retailers turn over their product displays—easily 10 to 12 times per year.

"Retailers, as well as banks and restaurants, are constantly refreshing their stores so that they look new and exciting," says Steve Jones with the Atlanta office of developer Jones Lang LaSalle.

Consequently, flexible design, such as easily movable fixtures and more neutral backdrops are a must. On the opposite end of the spectrum, developers and designers need to worry about reclaiming dark stores. "Many communities are becoming more concerned about retailers who build stores in their community, and then fail or get bought out, leaving an abandoned dark box," explains Craig Hale, AIA, principal, national director of retail stores, Carter & Burgess, Ft. Worth, Texas.

Although it can be a challenge to renovate and repurpose large, windowless spaces, it can be done. For example, Hale has seen big boxes turned into 24-hour call centers or subdivided into smaller retail spaces or offices. Smaller venues, in fact, are often taken over by competitors or new businesses seeking a low-cost start-up opportunity. In another instance, he points out a case where a national specialty retailer took over an empty three-story mall as the anchor and then turned each of the three floors into three different stores representing three of its brands. Vertical circulation, enabling easy access to each of the stores, as well as security concerns, were

solved with the addition of escalators located in a common area in front of the stores.



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