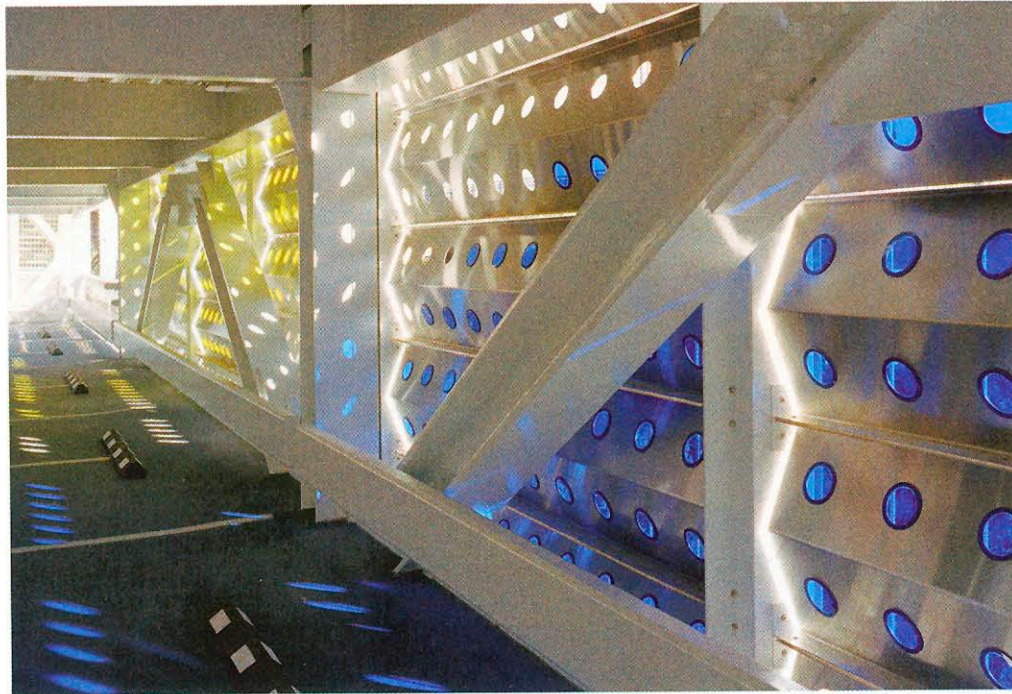


# Developer

BY MARGOT CARMICHAEL LESTER

## SPADE WORK

DEVELOPMENT FROM THE GROUND UP



**STELLAR STALLS:** Since 2000, the use of structural steel in parking garages has increased almost four-fold. Shown here, avant-garde Station Place Garage, Portland, Ore.

## Out of the Box

Parking solutions become more creative.

**W**ith parking at a premium in every development scenario, and environmental impact a hot-button issue for community members, paying attention to creating better parking solutions is in every developer's best interest.

No longer content (or able) to plunk down huge concrete monoliths, developers are taking a fresh look at parking, rethinking the materials and design of parking structures. Increased use of structural steel and sustainable design principles are also changing the face of today's parking garages and decks.

### STEEL'S SIGNATURE

The hallmark of today's parking projects? Steel. According to data from the Parking Market Re-

search Co., a McLean, Va.-based business intelligence firm, total market share by square footage for structural steel-framed parking projects was up three percent in 2006 to 11 percent. Since 2000, the use of structural steel in parking garages has increased almost four-fold.

Architects like Robert Leeb, founder of Portland, Ore.-based Leeb Architects, are driving increased steel usage. In the city's five-story Station Place Garage, Leeb used steel instead of precast concrete to mimic bridges and rail yards nearby. "The developer and the city wanted a signature garage, so we didn't want to come up with a concrete box," he recalls. "It really marks the spot."

The 413-stall structure, which won an American Institute of Steel Construction for In-

novative Design in Engineering and Architecture with Structural Steel award, serves a high-rise tower mixed-income housing complex and a 26,000-square-foot commercial space.

Beyond innovative design, steel makes sense for economic reasons: affordability, availability, and sustainability.

Cost savings attract many designers and developers. "We can normally save an owner between 10 percent and 20 percent using structural steel over concrete," explains Bill Pascoli, a senior regional engineer for the American Institute of Steel Construction, a Chicago-based trade association.

That certainly helped sell Leeb's steel-centric design. "We did research on cost, and steel was fairly comparable with regard to price," Leeb says, "which

the city liked very much."

Availability also keeps costs in check by avoiding delays that can bust budgets. "The lead time for precast concrete has gotten to 12 to 16 weeks in some parts of New England and eight to 12 weeks in most other areas," Pascoli says. "For most structural steel products, there is plenty of inventory. The turnaround can be days rather than weeks."

In addition, the cost of maintaining steel is lower than concrete. "A precast deck-and-frame system costs between 5 and 8 cents per square foot," Pascoli says. "A steel frame with post-tension deck is between 3 and 5 cents. That's about 40 percent lower."

Another bonus: size. "In a garage or deck, the size of the steel column required to bear the load is about 80 percent smaller than a concrete column," Pascoli remarks. "That means parking density can be higher." More cars, more revenues.

### SUSTAINABLE PARKING

Structural steel also makes parking areas more sustainable. "One of the advantages of using structural steel is that it's 80 to 90 percent recycled materials," Leeb says. Use of recycled materials is a key component of sustainable design and LEED certification.

Still, concrete remains a reality for most garages and decks, and its impervious surface creates the need for drainage systems and other solutions to reduce environmental impact.

"Standard impermeable surfaces, such as roofs and pavement, will increase runoff by factors of 2 to 5 times over normal," says Bill Hunt, assistant pro-

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fessor of biological and agricultural engineering at North Carolina State University in Raleigh, N.C. "That increase yields flooding downstream and stream bank erosion (which threatens homes), and acts as a storm water super-highway for pollutant transport. The latter point impacts fisheries and can make waterways unusable for intended purposes."

The solution to the runoff problem? Reduce the amount of water going into the system, says Hunt. "Routing runoff into storm water best management practices, like retention ponds, wetlands, or bioretention cells [rain gardens] will reduce the impact," he says.

### GREEN SOLUTION

That's why more developers are incorporating green space into their parking structures. Rooftop rain gardens in particular are a viable solution for urban developers. And they qualify the project for greenspace credits while

providing a natural amenity.

Known in the sustainable development circles as bioretention cells, rain gardens are small landscaped and graded areas containing a special soil mixture that absorbs and filters runoff. Designed with waterproof liners and drains, the cells send storm water into the structure's drainage system and protect its foundation.

The cost isn't prohibitive, according to the Low-Impact Development Center, a nonprofit organization in Beltsville, Md. Commercial, industrial, and institutional site costs can range between \$10 to \$40 per square foot, based on the need for control structures, curbing, storm drains, and under-drains.

"The storm water practices themselves are an extra cost," Hunt allows. "However, there is often a cost savings associated with the reduction of infrastructure for water transport."

Arc Development plans a landscaped roof for the 211-stall

parking structure at Solaria, a new residential condominium in Riverdale, the Bronx, N.Y. "The landscaping is a natural use of the roof between two buildings," says Joseph Korff, Arc's president. "We wanted to make the roof landscaped, walkable, and usable." The landscaping on the Solaria deck's roof creates a quasi-park for residents that will help absorb storm water. What water does drain off will flow into the on-site drainage system.

### APPROVALS

Parking has been known to tank some projects. Meeting community needs and requirements for stalls and entryways can be a headache. And that's before the issue of design is tackled.

At The Caribbean, an 18-story oceanfront condo tower under construction in Miami Beach, parking posed several challenges for Christa Development Corp. "The number of parking spaces is mandated by the city depend-

ing on how many residential units you have in your building," explains John Casey, Christa's president, and the project's 104 units created a significant need for parking spaces.

But building a parking deck wasn't an option. "Because we have a historic structure on-site, the City of Miami Beach required that the parking be below grade." So what? This is Miami Beach. "We had to get special approvals due to our need to excavate sand and having to transport some sand material off-site," Casey says. "We also had to implement special de-watering processes because we were building below the water table."

The company president estimates this work added about \$3 million to \$4 million to the project cost of The Caribbean. But it got the high-end project off the ground and created a valuable amenity no other property on the cramped beachfront can boast: underground parking.

This sort of creative thinking about parking structure design is becoming more commonplace as communities address sustainability and integration with surrounding properties.

"Many times ... the bulk of the parking structure is actually greater than the building itself," says Boston architect Daniel Perruzzi Jr., principal at Margulies & Associates. "Creativity in siting the garage, cladding it, and designing the features and appearance of the garage can greatly enhance the positive impact that such a large component can have on the overall development. Lack of consideration and creativity can, conversely, have a potentially large negative impact on the overall success and marketability of the development." ■

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## THE POINTS

### Back Right In

Looking for parking? Here are a few strategies for creating the spaces you need and the structure you want.

- **Connect to surroundings.** The most common mistake developers make is not creating a visual connection between parking garages and the buildings they serve, says Daniel Perruzzi Jr., principal with Margulies & Associates, an architecture firm in Boston. "The parking garage really has to be planned as part of the overall development. It should not be an afterthought. It should reinforce and work with the building planning. The range of possibilities can be as wide and as varied as those with buildings."
- **Plan for growth.** "Design your structure to be expandable," suggests Jon Field, associate general counsel for the Plise Companies, a developer of more than 5 million square feet of Class A office, retail, and mixed-use projects in

Southern Nevada. "For instance, if we want to put a building on surface parking, we can go back to the parking structure and accommodate that. We use the cast-in-place method so we can always add an additional floor."

- **Make size matter.** "Don't cheat on stall sizes to get more spaces," counsels George Thorn, president and founder of Mile High Development in Denver. The company is currently building a garage shared by residential and retail users and the Denver Art Museum. "You end up antagonizing people using garages with small spaces. They won't come back if they don't have to. So make it easy to park and be sure it's well lit and open instead of a dark, dank pit nobody wants to go into."