



*Landscaping can make any parking structure more attractive, while reducing urban heat island effect.*

BY PATRICK HAGER

# A GREENER APPROACH TO PARKING DESIGN

When you think of parking, what's the first thing that comes to mind? If you are like most people, chances are you don't think of environmentally friendly buildings that enhance the local landscape. Instead, you probably picture vast lots, paved over with asphalt; or ugly gray buildings that serve as huge storage bins for gas guzzling vehicles.

Ironically, Americans held an entirely different view at the beginning of the auto age. At that time, cars were seen as environmental saviors. No longer would the streets of America's cities be clotted with animal waste and disease ridden animal carcasses. And the areas in which cars were parked were seen as equally beneficial.

Obviously, now that we know more about auto emissions and their impact on air quality, few people would claim that cars benefit the environment. However, the past decade has seen important technological breakthroughs, such as the development of electric and hybrid vehicles, that have made automobiles more environment-friendly.

So far though, parking facilities have not kept pace when it comes to green design. Many designers are still creating old-fashioned structures and lots that offer no environmental benefits. This is unfortunate — and unnecessary. Today, it is possible to

build parking facilities that are attractive and ecologically beneficial. And in some cases, because of federal grant programs, they can actually be cheaper to develop.

### PROBLEMS AND SOLUTIONS

For many, parking lots epitomize the problem — vast areas of blacktop upon which row after row of cars, trucks and SUV's are parked. It is easy to understand this reaction.

Parking lots, particularly large ones, require significant amounts of land that could be put to better use. Furthermore, paved lots diminish the amount of open ground that's available for the absorption of groundwater. Because water can't drain properly, pollutants and sediment are collected and then released into local water supplies.

Additionally, parking lots are generally paved with asphalt, which absorbs heat and



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contributes to urban heat island effect. This, in turn, leads to increased energy consumption as people turn to air conditioning to combat the increased heat. While parking lots aren't necessarily the primary contributors to heat island effect, they are contributors.

So what can be done? After all, cars play a vital role in our everyday lives. We aren't going to give them up, and we need someplace to park them. Unfortunately, there is no magic answer. However, there are parking design approaches that can provide environmental benefits. The place to start is with the development of parking structures instead of lots.

Parking structures offer a number of advantages over lots. First and foremost, they permit the storage of more vehicles on a smaller footprint. This provides more room for green space and more area for water drainage. Furthermore, most structures are comprised of concrete, which is much lighter in color and reflects heat rather than absorbing it. As a result, structures don't contribute to urban heat island effect nearly as much as parking lots.

But replacing lots with structures isn't enough. When building parking facilities, designers should try to utilize environmentally friendly materials and design approaches when it is feasible to do so.

When it comes to materials, there are a number of options available to designers. For instance, precast recycled concrete can be used for parking decks. Also, concrete containing recovered materials can be used in other areas of the structure, and all concrete areas should be cured with low volatile organic compounds (VOC). Finally, painted surfaces can be covered with paints that contain low levels of VOCs.

There are also several design strategies that can be used to make parking structures environmentally friendly. For instance, rather than providing an open parking floor on the structure's roof, designers can create a "living roof," featuring trees, grass and other plants. A living roof, which is essentially a large garden, reduces urban heat island effect and provides a nice public area for patrons. Yet as beneficial as living roofs



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can be, they can also be costly because they require owners to sacrifice an entire level of rooftop parking.

There are, however, more common design approaches that can benefit the environment. For instance, by adding additional exit aisles and utilizing pay-on-foot technology, designers can facilitate quick exiting, thereby minimizing the amount of time patrons spend queuing in running vehicles. Also, if site dimensions permit, a light core running from the roof to the bottom level can provide natural light throughout the structure, which in turn reduces the need for electrical lighting during the day. Precast window openings can also be good sources of natural light throughout a structure.

Finally, garages can offer features that are designed to promote alternative methods of transportation. In recent years, many communities have turned to multi-modal transportation facilities featuring a combination of parking and mass transit to promote public transportation. Also, more cities are providing areas within parking garages to accommodate the safe storage of bicycles. This approach is particularly well developed in Europe and parts of Asia, where separate multi-story automated bicycle garages are common. In addition to bicycle parking,

these structures often provide locker rooms with showers and bicycle repair facilities, side-by-side with vehicle parking.

#### **PROVIDING A PLEASANT ENVIRONMENT INSIDE AND OUT**

In designing better parking structures, it isn't necessary to sacrifice form for function. Garages should enhance their neighborhoods aesthetically too. We no longer have to settle for the ugly gray banded parking structure that we all grew up with. Advances in building technologies, particularly precast concrete, are now permitting designers to create attractive structures that can fit seamlessly into the fabric of the neighborhoods in which they are located. They can feature facades of glass, granite, brick, and even marble — whatever is dictated by local architecture.

While it is true that parking design has not kept pace with other types of green development, this trend doesn't have to continue. There are many things that parking designers can do to make their structures more environmentally friendly and aesthetically pleasing. All it requires is a commitment on the part of parking owners and designers. +



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