

signed by Arquitectonica, will be integrated with a new three-platform train station and underground line. "The mall's roof will contain photovoltaic panels that will generate energy for the station and adjacent properties," says Fort-Brescia. The city plans to develop a direct express train line from Prague airport, running directly through the Bubny project, to Prague's main train station.

The project's sustainability strategy takes into consideration energy and water usage, materials, waste, ecology, transport, pollution, microclimate, quality of the built environment, and building design, with the goal to be a model of sustainable development within the Czech Republic and Europe. Building design will seek to reduce unnecessary energy use through orientation and massing, maximizing daylight and views while minimizing heat loss and peak solar gains. Passive design techniques and low-energy technology will reduce reliance on fossil fuels and minimize energy bills. Homes, offices, retail spaces, and recreational facilities will use nontoxic materials, natural light, and good air quality, creating high-yield investment properties. Additional initiatives will include investing in renewable energy for hot water and electricity, exploring opportunities in solar and groundwater technology, and reducing pollution and emissions from the surrounding infrastructure.

Locally, the redevelopment will reconnect two divided halves of Prague's Holešovice neighborhood. Long separated by the train station and surrounding fenced-off lots, as well as one of the city's most congested streets, the two residential areas are faced with a relatively short, but virtually impassable, distance. Adding 200,000 square meters (2,152,783 sq ft) of modern, high-quality residential space to the center of Prague should help reverse the current trend of the city's inhabitants to move toward the peripheries.

"It is said that the streets of Prague are like a book on which you can read the centuries that have passed," says Bem. "Orco's Bubny redevelopment will add a contemporary page to this book while helping ensure the city's future growth." **UL**

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Parking as a Catalyst for Revitalization

TIMOTHY HAAHS

Though parking is about getting people to their desired destinations, it can achieve more than that.

PARKING IS NOT ABOUT CARS, it is about people. And it has the potential to enrich urban, high-density, and even suburban areas. It can provide essential infrastructure as well as drive economic development, redevelopment, and revitalization.

Discussions of parking, both surface and structured, generate intense responses from planners, developers, governments, and communities that often center on the role of and lifestyle choices involving the automobile, and how they affect climate change and the environment. However, the role of parking should be examined and evaluated at a different level. Though the American love affair with the automobile is changing, it is far from over, and storage of vehicles will continue to require a solution. But beyond satisfying this need, parking can serve as a development tool and an economic driver for revitalization of communities through the creation of density.

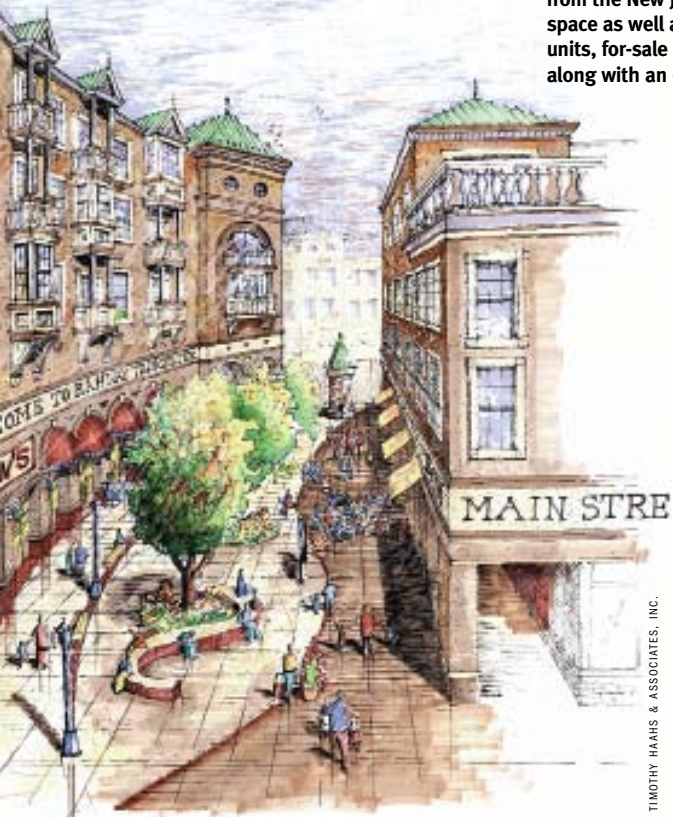
Current trends in parking garage design include expansion of mixed-use design, an increase in architectural sophistication, and integration of sustainable design concepts and technologies. Mixing building uses and types, and combining them with a parking component, has changed the parking and development industries. Many garage designs now incorporate retailers and restaurants at the street level; office components, condominiums, and apartments

An urban corridor at the University of Pennsylvania in Philadelphia, where safety and blight had been key concerns for the institution and its students, was revitalized with the addition of a cinema/theater, shops, a café/restaurant, and a mixed-use parking garage/supermarket.



LANDWRITES

Rahway, New Jersey, is involved in a major downtown revitalization project that centers on its designation as a transit village by the New Jersey Department of Transportation. A mixed-use parking garage on Main Street in the center of the city, across from the New Jersey Transit Rahway station, will provide office space as well as structured parking. Nearby market-rate rental units, for-sale condominiums, and retail space are planned, along with an open plaza area.



TIMOTHY HAAS & ASSOCIATES, INC.

on upper levels; and recreation and sports areas on rooftops. This mixing of uses in a single or related structure has changed the way parking is perceived and designed.

In addition to their functional and structural complexity, parking garages have been transformed from solely utilitarian structures to architectural creations responsive to local character and aesthetics. Garages may be themed and evoke the destination they serve; they may incorporate attractive facades and detailed articulation of historic and unique communities. They may even serve as architectural landmarks for a destination.

Owners and developers have moved toward sustainable design for many structures, and garages are no exception. The interest in and trend toward sustainable design for parking structures with mixed uses can be seen in a rise in applications for certification of such structures under the Leadership in Energy and Environmental Design (LEED) program, as well as in an increase in client re-

quests for garages with sustainable design features and implementation of new technologies. If the structure contains enough heated or cooled enclosed space, it may be eligible for LEED certification. Approaches to sustainable design are not limited to LEED criteria and certification; many garage designs now incorporate such elements as recycled materials, local production of construction materials, high-efficiency lighting, and water retention systems.

Despite these trends, ambivalence toward and resistance to structured parking—and even surface parking—still exist in many communities. Examples of poorly planned on-street parking and unattractive stand-alone garages abound, and communities often focus on the drawbacks of parking structures—their impact on residential neighborhoods and the cost of construction.

Careful and detailed planning and comprehensive financial analysis are critical for development of effective parking structures. To develop parking as an economic driver and as a tool for redevelopment and revitalization, certain conditions are crucial. Comprehensive financial analysis will reveal if, and when, the structure will generate revenue for an owner. The cost of construction for all building types has increased significantly over the past three to five years, and the cost per space in garages has escalated as well, varying significantly by region. The potential to generate revenue must be evaluated in order for the developer to understand how the garage will function in the development area.

An analysis of shared uses provides planners with an increasingly applicable tool as garages continue to serve distinct user groups, a trend fostered by the increase in mixed-use development both in and near the structure. When properly applied, the shared-use model will decrease the number of spaces required, saving considerable design and construction costs, as well as increase the activity level and use of the garage. The shared-use

model may incorporate the leasing of spaces in the structure for planned future development—an approach that can reduce the need for construction of additional spaces and expensive infrastructure, provide additional revenue to the owner, and aid creation of density. Future development may occur nearby simply because there is sufficient and safe parking available.

Understanding the financial pro forma and applying shared-use concepts are powerful tools in their own right, but as a catalyst for future development, the garage or mixed-use structure works best when it creates a positive impression for a person arriving at a destination, as well as for the same person departing. Structured parking now serves as the gateway to many places—downtowns, lifestyle centers, entertainment venues, restaurants, shops, and even workplaces and residences. An appropriately high level of service, including functional designs that are easy to navigate with suitable and effective signs, characterizes good garage design. Clear sight lines and open floor plans, natural daylighting, and lighting that is more than sufficient at night or underground are essential to create a secure and aesthetically pleasing environment. The design of elevator banks, lobbies, and indoor plazas can help create attractive interior spaces.

An appealing exterior design can help the garage serve as a driver for development. Massive parking structures with little or no articulation, long expanses of concrete walls, and heavy security grills and metal gates do not foster the gateway concept or provide a sense of place. Attractive, contextual architecture, attention to streetscape and landscape elements, and well-designed entryways and gathering spaces can help create a memorable experience for people who use the facility, and even for those who merely pass by. Using these elements, a garage can become a people place—a nexus where commuters, residents, and visitors interact in a shared space.

Density may be the most significant factor in development of this kind. Without the density required to support enough commercial and other activity, structured parking may be unnecessary and underused. With the right mix of nearby residences, offices, transit, retail space, and other elements, structured parking can be the solution to advance development and revitalization.

The following examples show how parking has been used toward these ends.

The University of Pennsylvania, Philadelphia, Pennsylvania. The University of Pennsylvania has been a leader in urban revitalization in Philadelphia, as well as a model for redevelopment for other institutions. The university continues to develop projects on and around its campus to create vibrant urban spaces to serve the student, faculty, and resident communities. Development of Hamilton Square was one of several projects to further this goal. The mixed-use project/parking garage revitalized an entire downtown corridor, creating a people place for the campus where once safety and blight had been key concerns for the university and its students. Hamilton Square, which includes a cinema/theater, shops, a café/restaurant, and a mixed-use parking garage/supermarket, helped transform the urban corridor into a hub of economic and social activity.

Beyond this project, Penn has a comprehensive land use and urban design plan, called Penn Connects, to advance the institution as a premier urban research university. The plan's goals include creating civic and open space, identifying land use and development zones, and improving physical connections for pedestrians, bicyclists, and automobiles. Penn has led by example with projects like Hamilton Square, strategically changing neighborhoods by taking the initiative to plan for both surface and structured parking in its vision for the campus.

Penn's eastern expansion continues the strong network of pedestrian pathways and urban design as the university moves forward with the Cira Centre South project, considered a gateway project because of its prominent location, close connection to regional transit, and access from major transportation routes in the city. The development as proposed includes two mixed-use towers and a 2,400-car parking garage with street-level retail space in the middle of the block. Additional program elements include office, retail, and restaurant space, as well as a hotel and condominiums. The development is located close to the heart of Philadelphia and the central business corridor, and is expected to create a closer physical connection among University City, the Penn campus, and Center City Philadelphia. Incorporation of structured parking is expected to create the foundation for the proj-

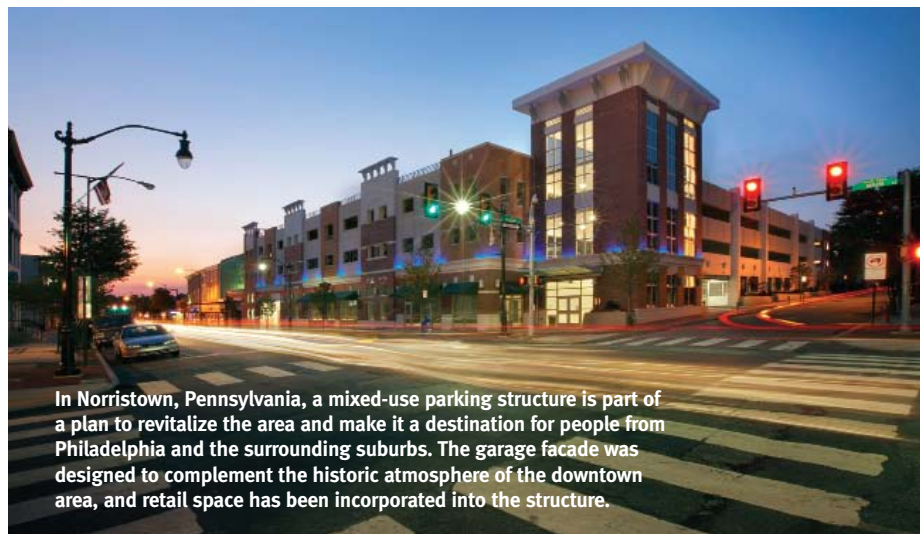
ect's success by providing essential infrastructure for each of the integrated program elements.

Rahway, New Jersey. The city of Rahway is implementing an ongoing major downtown revitalization initiative. In 2005, the city was designated by the New Jersey Department of Transportation as a transit village, which recognized it as a transit-oriented development (TOD) community that has welcomed and adopted the principles of smart growth. This was a major acknowledgement for Rahway, which has long embraced a vision for economic revitalization, as well as a commitment to compact, mixed-use development. The city's dedication to redevelopment has already resulted in a number of plans and projects that have helped it realize its vision for the future.

ignited developers for five of the sites within two blocks of the New Jersey Transit station. The city planning board applied aggressive TOD standards, waiving traditional parking requirements for downtown redevelopment. In addition, construction of the Rahway Transportation Center has spurred several revitalization projects, including market-rate rental units and for-sale condominiums, and retail elements.

By design, the Rahway Transportation Center itself is a mixed-use facility, providing office space as well as structured parking. Parking provides the essential infrastructure to support not only the surrounding residential elements, but also planned redevelopment in the city.

Building on the success of the Rahway Transportation Center, the city has embarked



In Norristown, Pennsylvania, a mixed-use parking structure is part of a plan to revitalize the area and make it a destination for people from Philadelphia and the surrounding suburbs. The garage facade was designed to complement the historic atmosphere of the downtown area, and retail space has been incorporated into the structure.

One of the most significant projects expected to contribute to this success is the Rahway Transportation Center, a mixed-use parking garage that represents the first step toward the city's goals of economic development and revitalization of the downtown district. Located on Main Street in the center of the city, the 524-space garage is a component of a larger strategy to redevelop surface lots with residential and multiuse projects. The project was built on a 92-space surface lot located across the street from the New Jersey Transit Rahway station and adjacent to the Rahway Redevelopment Agency. By design, the transportation center incorporates excess parking capacity to accommodate future demand from the city's planned redevelopment projects.

The Rahway Redevelopment Agency and the city council have adopted a plan and des-

on a new redevelopment project, the Rahway Town Center project. One of the next major steps in the revitalization of the downtown, the project is a master-planned redevelopment for the urban core of the city. The city selected a main street plan that includes a civic plaza, an outdoor theater and seating area, parking facilities, and a police station. The project will significantly increase the size of Rahway's downtown business district, adding 175,000 square feet (16,300 sq m) of retail space, as well as 400 residential units. The master plan has received an award from the statewide research and policy group New Jersey Future, acknowledging the effective use of smart growth principles, as well as the strategic use of structured parking to achieve development goals.

Montgomery County Redevelopment Authority, Norristown, Pennsylvania. Norristown,

the historic county seat of Montgomery County, is in the midst of a revitalization effort for its downtown and the surrounding community. Norristown joined with the county to commit the time and funds needed to implement a number of projects and programs, not only to attract more people, but also to encourage the creation of new businesses and jobs. The Norristown Main & Cherry mixed-use parking structure is one part of the plan to revitalize the municipality and make it a destination for people from Philadelphia and the surrounding suburbs.

The garage facade was designed to complement the historic atmosphere of downtown Norristown, emulating the materials, scale, and proportion of the neighboring buildings. The structure's retail component was seen as important in the design because it helps maintain pedestrian scale as well as the character of the streetscape along Main Street. Providing another occupancy type in the garage is expected to attract patrons, making the street more active.

Because Norristown officials realized that parking would be a critical component of downtown business revitalization, the mixed-use parking structure is designed to provide sufficient parking spaces for the area, as well as incorporate retail destinations that are expected to make the street and the surrounding neighborhood more vibrant.

Providing parking for redevelopment and revitalization is not simple. It requires a visionary process that incorporates not only municipalities, owners, and developers, but the community as well. Parking can make a significant contribution to economic and community revitalization as well as to sustainable land use by creating density and active places for people. **UL**

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The Parking Garage: Design and Evolution of a Modern Urban Form, by Shannon S. McDonald, is available (\$69.95, members; \$87.95, nonmembers) from www.uli.org/bookstore or 800-321-5011.

Synergistic Landscapes

PATRICIA L. KIRK

Attention to environmental concerns and the need to halt sprawl is ushering in a new era in landscape architecture, challenging designers to take a synergistic approach to creating environments that simultaneously satisfy the goals of multiple interests.

WHILE POLITICIANS in Washington, D.C., debate the effects of global warming, state and local governments faced with the reality of erratic weather patterns and resulting droughts and floods are taking matters into their own hands, implementing policies and incentives aimed at better management of water resources.

Most states have drought plans in place or in the works, and those already hard hit, such as California, Arizona, and Colorado, have issued strict requirements for on-site stormwater retention and treatment and new rules for development in urban areas to reduce groundwater draw. Some states, including Maryland and Florida, have enacted laws to ensure that development does not exceed a community's water resource capacity.

Some local governments, particularly those in arid climates, also are making zoning changes that favor conservation, creating water recycling infrastructure and rewarding developers for using landscaping strategies that conserve and recycle water resources. Code for new construction in Denver, Colorado, for instance, now requires water-efficient fixtures and appliances, and the city is building a dual water system to provide large users with recycled water for irrigation. Tucson, Arizona, is offering developers utility revenue kickbacks for using a desert, or "xeriscape," landscaping strategy, utilizing drought-tolerant plants, gravel, rocks, and other natural materials to conserve water and create attractive landscapes with little or no turf. In addition, the second phase of the U.S. Environmental Protection Agency's (EPA) National Pollutant Dis-

The 15-acre (6-ha) lake at the Bridgeport, a 70-acre (28.3-ha) development at Newhall Ranch in Valencia, California, serves as an aesthetic focus for the community, primary drainage conveyance and natural runoff water treatment facility.



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