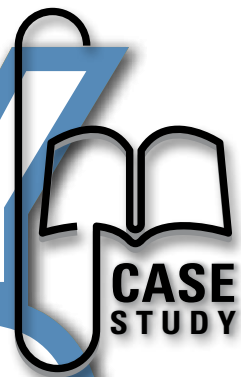# SOLUTELY TOMATED

West Hollywood, Calif., embraces automated garage technology in its newest parking structure.

By Iris Sharon

The City of West Hollywood, Calif., is undertaking a capital improvement project to develop premiere public facilities, parks, and open spaces. The 25th Anniversary Capital Project, launched in 2009, includes three major components. One of them is the West Hollywood City Hall Automated Parking Garage and Community Plaza project.

Automated parking garages use robotic devices that lift, transfer, and store vehicles in high-density storage vaults (see the September 2012 issue of *The Parking Professional* for more on this technology). Automated vehicle storage and retrieval systems (AVSRS) rely on technologies similar to automation used in automated storage and retrieval warehouse (ASRS) facilities worldwide.

The Challenge

The City of West Hollywood's City Hall parking lot is under-parked to code. City Hall employees currently use the 166-space Kings Road parking deck two blocks away. That garage is usually at capacity by 11 a.m. on weekdays, forcing city staff to use valets and stack parking.

For the new facility, the city required 200 spaces on a 194 by 120-foot footprint with high vehicle throughput for patrons. Together with Don Monahan, P.E., of Walker Parking Consultants, city staff considered and evaluated several options to address parking shortages at City Hall and in the mid-city area, including:

- A standard above-ground multi-level parking structure. The conventional multi-level parking structure option was too big for the site. The structure would come within 10 feet of the property lines and its resulting height would effectively block natural daylight from both the surrounding residences and City Hall.
- A below-ground/above-ground multi-level parking structure. This solution resolved concerns for building height, but the size of the structure was still too big for the site. This option was also determined to be cost-prohibitive.
- An automated parking garage. The footprint for the automated garage is 40 percent smaller than a conventional, multi-level parking structure and it needs less space to meet the same parking requirements on a 150 by 80-foot footprint. The building size for the automated garage provided more open area around the structure, which allowed for larger

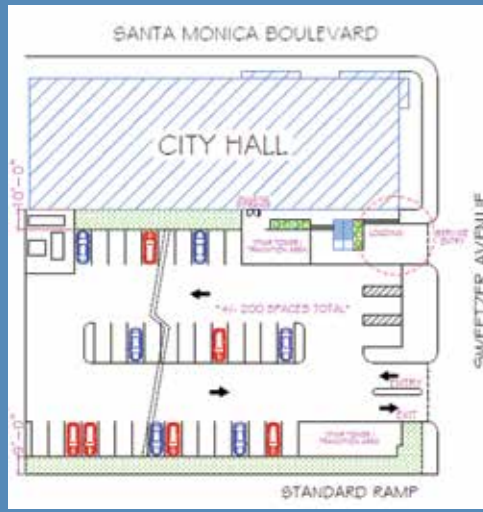**Image1**: The existing City of West Hollywood City Hall parking lot .

Image 2: Conventional multi-level parking structure garage site plan.

Image 3: Automated parking garage site plan.

DATA BY DON MONAHAN, PE., WALKER PARKING CONSULTANTS. ARCHITECTURAL DESIGN BY LPA, INC. WWW.LPAINC.COM, AUTOMATED VEHICLE STORAGE & RETRIEVAL SYSTEM DESIGNED BY UNITRONICS INC.

Table 1: Construction Cost Comparisons, Above-ground, Standalone

	Unit Cost, $ per SF	x	Efficiency, SF/Stall	=	Cost Per Stall	+	Automated Machinery Cost, $/Stall	=	Total Cost, $/Stall
Ramp Garage	$55	x	350	=	$19,250	+	0	=	$19,250
Automated Garage	$45	x	200	=	$ 9,000	+	$12,000	=	$21,000

Table 2: Construction Cost Comparisons, Under Building, Above-ground

	Unit Cost, $ per SF	x	Efficiency, SF/Stall	=	Cost Per Stall	+	Automated Machinery Cost, $/Stall	=	Total Cost, $/Stall
Ramp Garage	$105	x	450	=	$47,250	+	0	=	$47,250
Automated Garage	$ 85	x	225	=	$19,125	+	$12,000	=	$31,125

setbacks from adjoining neighbors and the street; retaining more natural light inside City Hall; and providing room to address deliveries onsite, relieving traffic congestion caused by loading and unloading in the street or parking lot. The automated garage allows sufficient extra open space to create a community plaza within the site for City Hall visitors, community events, and other public uses.

In late 2010, after the city decided to move forward with the automated garage solution, a request for qualifications was issued; the city received 11 responses. Those were reviewed by Monahan and the city's design team, and six companies were deemed qualified. In February 2011, the city invited those six qualified companies to submit bids for the design, fabrication, installation, and maintenance of an automated parking garage. This process allowed the design team to customize the building to fit the unique requirements of the selected automated parking system supplier.

In June 2011, the city selected Unitronics and signed an agreement for the design and construction of the automated parking garage.

The Solution

The selected solution is a five-level automated parking system consisting of four UniDrive™ entry/exit rotating bays, three Uni-

Vator™ elevating lifts, six UniParker™ conveyance shuttles, and Unitronics' Automated Parking Management Software (APMS). The system is designed to process a peak two-way traffic flow of 111 vehicles per hour.

One hundred twenty of the 200 spaces in the parking garage will be reserved for city employees; the other 80 will be open for visitors to City Hall and nearby stores and restaurants. Parking will be free for City Hall visitors.

Some of the concerns raised with fully-automated parking garages involve system and electric failures. In the case of the West Hollywood garage, avoiding delays during failures is achieved by several backup systems; for example, a backup generator will be activated in case of an electrical failure. In addition, solar panels located on the City Hall roof are expected to power the automated garage and some City Hall electrical needs.

By working closely with the city's fire, building, and safety departments, project architect LPA Inc., and Unitronics addressed potential structural and life safety concerns. Through this process, the companies were required to make some changes in the garage design to comply with Los Angeles County Fire Department requirements, such as fall prevention and chimney effect. A three-foot lane between vehicles allows firefighters access to all vehicles, which will be parked with their engines facing access lanes for the same reason.

Table 3: Construction Cost Comparisons, Under Building, Below-ground

	Unit Cost, $ per SF	x	Efficiency, SF/Stall	=	Cost Per Stall	+	Automated Machinery Cost, $/Stall	=	Total Cost, $/Stall
Ramp Garage	$75	x	450	=	$33,750	+	0	=	$33,750
Automated Garage	$65	x	225	=	$14,625	+	$12,000	=	$26,625

Attractive and Green

The automated parking system structure design allowed the architect flexibility in designing the façade for the garage and use a variety of materials, including steel, concrete, and some recycled materials.

The centerpiece of the garage is a glass shaft that allows people standing outside the structure to see the vehicles inside move. This addition will surely add to the excitement of having a fully automated garage at City Hall. One side of the structure that fronts a busy street is expected to feature public art by Ned Kahn, who is known for creating artwork that incorporates the use of natural elements such as wind and light.

The automated parking garage offers a green and economical parking alternative to a conventional multi-level parking structure for city staff and visitors. The amount of reduced CO_2 emissions in the automated parking structure equates to removing 92 vehicles from the road each year or planting 67,000 trees.

Construction is expected to begin in summer 2013 and be completed by fall 2014. The total cost will be $16 million, which will be paid for out of the city's parking improvement fund; $2.6 million of that cost is for the automated system.

When comparing construction costs between a conventional multi-level parking structure garage and an automated parking garage system, the automated system has a big advantage when the developer is dealing with smaller footprint or when excavation is needed to comply with parking requirements. In above-ground, standalone projects, the total costs per stall are almost the same. A conventional multi-level parking structure for an under-building, below-ground solution is more expensive than the automated parking system (see tables).

Challenges

As shown in Image 2, the conventional multi-level parking structure garage consumes almost the entire site. Because of required setbacks, the entire lot could not be used for the garage. There is a residential neighborhood to the south with only a 9-foot setback to the five-level garage. Additionally, the right side of the garage was only 10 feet from the City Hall building, blocking the view and light for many offices. The loading dock access problem was not entirely solved.

The automated garage required only 60 percent of the footprint of the conventional multi-level parking structure garage, which led to a 20-foot setback to the residential neighborhood to the left and allowed for a 27-foot wide landscaped civic plaza between the garage and city hall. There was a 41-foot setback created off of Sweetzer Avenue that provided a motor court for police and city vehicles while allowing trucks to pull in and back to the loading dock without affecting the automated parking access on the lower left side of the site. Ⓟ

The new city Hall Parking garage will incorporate automated technology to make the most of the property.

IRIS SHARON is marketing manager, Unitronics Systems Inc. She can be reached at iris.sharon@unitronics.com or 201.592.1444 x7503.