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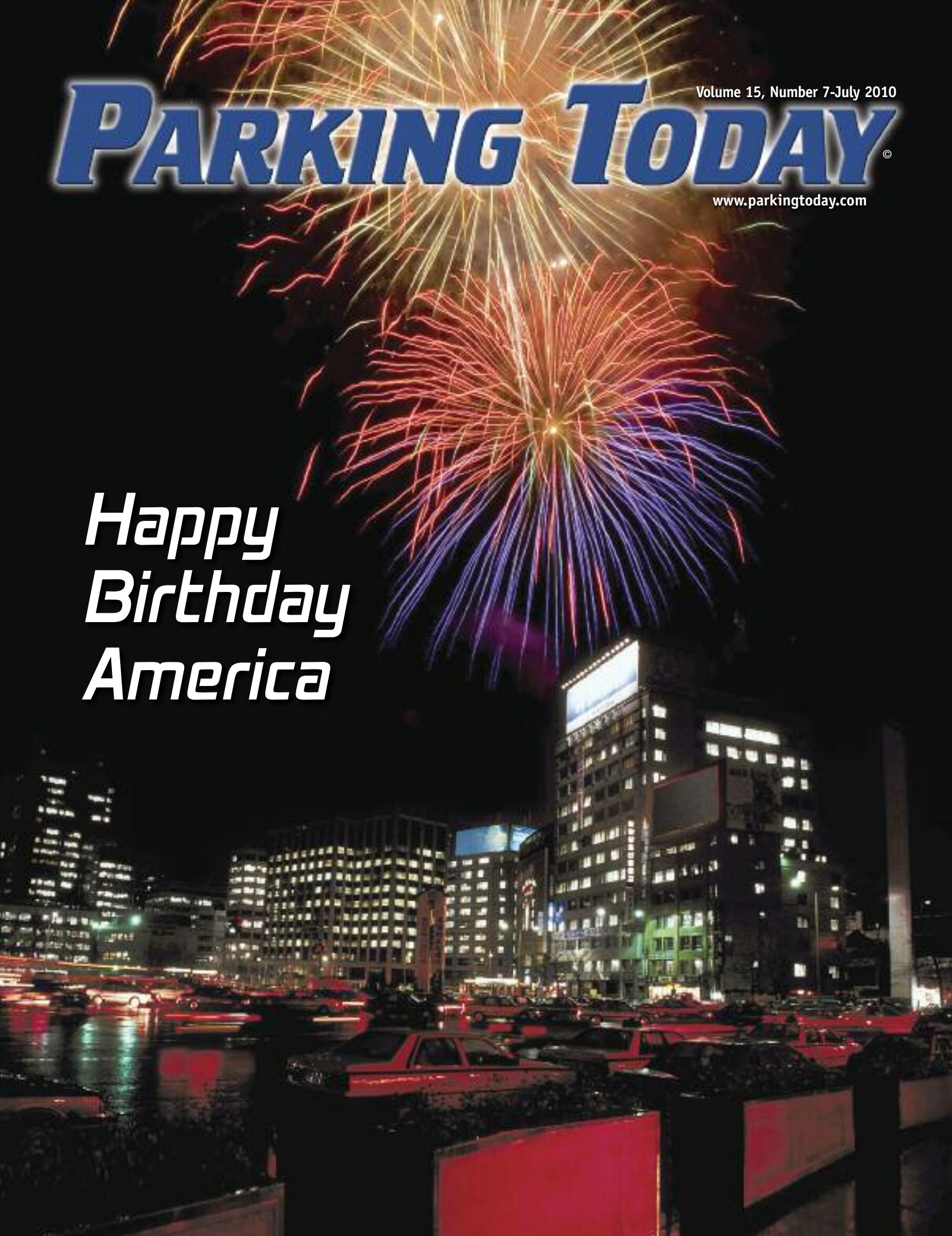

Happy Birthday America

CPTED Lights the Way

BY PETE GOLDIN

CPTED ILLUMINATES THE security needs of parking facility design, literally, in terms of the actual lighting of car parks.

CPTED, crime prevention through environmental design, takes into account the many factors that impact security of any facility – including car parks – and lighting is a major component.

"There is no one right lighting solution for all car parks," explains Randy Atlas, Ph.D., vice president of Atlas Safety and Security Design and author of the book *21st Century Security and CPTED- Protecting Critical Infrastructure*. "CPTED allows for diversity in lighting, based on a risk assessment and the experience the parking lot owner wants to deliver to the user."

A CPTED-aligned approach to lighting in car parks is outlined in the IESNA G-1-03 security lighting guidelines from the Illuminating Engineering Society, which recommend lighting levels of 5 to 6 foot-candles in gathering areas such as stairs, elevators, and ramps; 5 foot-candles for walkways; and a minimum of 3 foot-candles in open parking lots.

Meanwhile, entrances should be very bright, with either 10 foot-candles or twice the level of lighting in the area around the car park, to make the entrance stand out and increase visibility for patrons entering and exiting the facility on foot. Perimeter fencing should have at least one-half foot-candle of average horizontal illumination on both sides to minimize available hiding spots.

"Reducing height of light fixtures can significantly improve the ability of pedestrians to see past shadows caused by vehicles and obstructions," Atlas says. "Typical light posts are 30 to 45 feet high and illuminate a wide area, but they create deep shadows between cars."

"Most people are comfortable if they can identify someone walking towards them from 20 to 30 feet away," adds Barry Davidson, Executive Director for ICA, the Canada-based International CPTED Association, pointing out that the psychology of the design is a critical component of CPTED, intended to influence the behavior of criminals, but also improve the comfort of the car park patrons. "However, a lot of lighting is set so high that everything is in shadow, so you could see a body coming toward you but you don't have any kind of comfort level because you cannot identify them."

"Light from poles that are only 12 to 14 feet high passes through the car windows and reflects off the vehicles, dramatically reducing shadows and dark spots," Atlas continues. "Ideally, an open parking lot should have a combination of high and low lighting to provide maximum coverage and visibility, with minimum shadows and places to hide."

According to Atlas, paint can also have a substantial impact on lighting, and he suggests the interior of parking garages should be painted in light colors to increase reflectivity.

"One innovative car park owner in Ft. Lauderdale, Florida, painted the ceiling in white circles that reflect light," Atlas notes. "The ceilings of this garage are also higher than usual, allowing better light distribution by reflection and refraction of light."

In addition, Atlas recommends that car parks utilize luminaries with polycarbonate lenses which are more resistant to vandalism or breakage. A commitment to ongoing maintenance is also important, to ensure that damaged lights and burned out bulbs are replaced in a timely manner. Car parks can even establish a bulb replacement schedule based on known life expectancy.

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CPTED Lights the Way

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Lighting is a vital component of car park security, but it is not just about adding quantity and brightness. CPTED takes a very pragmatic approach to lighting – as it does with all elements of security – considering all the factors to deliver the greatest advantage. Adherence to CPTED lighting recommendations can provide car park owners and operators with a vital security edge.

Lights, Camera, Action

If a car park records CCTV footage, the type of source light is an important decision. For this reason, parking lot owners and operators should be aware of the color rendition of the type of lighting selected. The color rendering index (CRI) is a method of measuring the ability of a light source to accurately reproduce the true color of an object, which is essential for clear playback of CCTV recordings. Light sources with a high CRI are optimal for CCTV.

Today's car parks commonly use high-pressure sodium vapor (HPSV) lamps and mercury vapor lamps because they are commercially available, commonly used on roadways and highways, and inexpensive. Another alternative has also been low-pressure sodium vapor (LPSV) lamps. Both HPSV and LSPV are not ideal for CCTV because they have a low CRI.

Up until now, most CPTED practitioners recommended metal halide bulbs because they provide a CRI of 90 out of 100, however, new lighting alternatives are emerging.

"On the horizon, new light sources such as light-emitting diodes (LED) and induction lamps may ultimately change the way we approach lighting," Atlas predicts.

Developed for the military in the 1990s, induction lamps can last over 100,000 hours and be virtually maintenance free for over 25 years for most users, because they do not have filaments or electrodes. The CRI for induction lamps is 80.

"Induction lighting is good for applications with high ceilings that require high-color rendition and maintained lighting levels, such as car parks," says Atlas. "Induction lighting has instant-on capability and can be used with motion sensors for quick identification and/or camera usage."

Atlas warns that induction lamps run much hotter than other types of fluorescents, and require additional energy for ventilation and cooling, and careful handling.

LED (light emitting diode) lights are also growing in popularity. These advanced technologies convert electron flow to visible light.

"With no fragile glass to break, and no gases to escape, LED fixtures can endure conditions that would severely destroy conventional lamps," Atlas adds. "LED luminaries are being designed to replace street lights, pedestrian sidewalk lighting, and wall packs."

Atlas also points out that new technologies, using such advancements as laser and short wave infrared, are being developed for surveillance and CCTV in conditions where there is minimal light.

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