

EXTERIOR LIGHTING

The goal for exterior lighting should be to illuminate about 30 feet around a person. People need that much space between themselves and potential adversaries to have time to react.



Outside Light: Use Best, Not Brightest

It is possible to have a safe, secure outdoor lighting strategy while also being a good environmental steward by desiree hanford, contributing editor

For an area to be as safe and secure as it can be, as much light as possible must be shining on that area — or so conventional thinking goes. Safety, security and environmental friendliness are not often concepts used together when the discussion centers around outdoor lighting.

For most facility managers, safety and security will always trump being green, but those goals aren't mutually exclusive. At least when it comes to outdoor lighting, the key in balancing the three is to know what the safety and security goals are for a project and how those goals may affect the environment, then taking steps to minimize the impact on the environment. With that approach, facility managers can provide a well-lit, secure area while still being green.

"Safety, security and the environment don't necessarily work against each other," says Helen Diemer, principal and president of The Lighting Practice. "I think it's all about the execution in terms of how you create the safe environment and what choices you make for it to be low impact on the environment. For me, it's starting with the big idea. What are you trying to accomplish? What environment are you trying to create? What are the right tools to do that? What is the right light to do that?"

Understanding all the components that are involved in safety, security and the environment, including the design of the lighting and its role in an entire project, is paramount, says David Aggleton, president of Aggleton & Associates Inc. "It's a matter of understanding the features and doing a design that will incorporate the best features," he says. "The three are not necessarily incompatible."

Safety, Security Have Different Needs

Although safety and security are typically discussed in the same thought, security experts caution that, from the outset

of a lighting project, building owners and managers should be aware that they are, for the most part, two different issues.

Lighting a surface that people are walking on so that they don't trip and fall is a safety issue, one in which the luminaries are angled so that the light is shining vertically onto a horizontal plane. From a security standpoint, however, the individual on the horizontal plane wants to see the face of an approaching person. Light shining straight down may cause glare, making it difficult to see that individual. To eliminate the glare, the light needs to be diffused, something that's not necessarily needed for safety, Aggleton says.

"It's a balancing act; it's a compromise," he says. "If you have a pothole and someone trips and falls and sues, it may cost you more than someone getting robbed because, while it's fine in terms of security, it may not be in terms of safety."

David R. Duda, an associate partner with Newcombe & Boyd, says that humans need about 30 feet between themselves and potential adversaries in order to have enough time

to react. That, he says, is different than trying to prevent people from tripping and falling. "Basically, we try to light an area that's 30 feet around a person," he says. "Our standards are based on that, so that's our goal, to make people aware of their surroundings. It's situational awareness."

No matter whether the focus is safety or security, a uniform level of light should be maintained, experts say. Uniformity is at least as important as the number of footcandles because the human eye can

adjust to low light if it's uniform. If lighting fixtures are too widely spread in a parking lot, for example, an individual will go from light spots to dark spots and back to light spots, making it difficult for the eye to adjust, Aggleton says.

"You want uniformity, not shadows or bright spots and dark spots," says David L. Salmon, a senior advisor with OSS Law Enforcement Advisors.

Having uniformity, Aggleton says, gives individuals a greater sense of security because there aren't as many places where someone could hide and surprise the person.

More Light is Not Better Light

Regardless of whether building owners and facility managers are focusing on safety, security or both, an increase in

When it comes
to lighting, safety
and security pose
different demands

the amount of light doesn't guarantee an increase in the amount of safety and security in an area, nor does it necessarily make people feel better.

"That's our natural response, but it's not the case," says John Bullough, a researcher with the Lighting Research Center at the Rensselaer Polytechnic Institute.

The Lighting Research Center conducted a study in Albany, N.Y., and New York City with various levels of light and found that individuals felt safe and secure at one footcandle. Anything more than that amount didn't improve their impressions, Bullough says.

"The old concept that we'll put the brightest light and throw it everywhere is misguided," says Sarah Gandy, a lighting designer with Gandy 2 Lighting Design.

High security areas, such as in some areas of college campuses and areas where security cameras are being used, may require a high level of light, but the high level of light can often be limited to just that particular space and not the surrounding area, Gandy says. Because even the dimmer areas are adequately lit, the eye can adjust to the brighter areas more easily than it could going from dark to light.

Lighting should be part of a larger strategy for safety and security, Bullough says. Having a security guard or security cameras, for example, may be other pieces of the larger strategy.

Still, people generally feel more comfortable the more light there is, as long as there isn't any glare, Aggleton says. Individuals want to be able to see the faces of other people

Make The ***Right*** Lighting

Choice For ***Your***

Outdoor Lighting Applications

Get the Whole Story!

www.visuallyefficientlighting.com

©World Institute of Lighting and Development Corporation

Magnaray®

International

P: 941 755-2111

Proud to be a



▲ FREE INFO: Circle 425

CASE STUDY: LEDs Balance Safety, Security and Green at Walmart

Many different types of technology are used for outdoor lighting, the most common being HID (high-intensity discharge). LED (light emitting diode) lighting is viewed by many lighting experts as the most efficient in terms of energy and longevity. Some retailers, including Walmart, have also turned to LED lighting in an effort to balance safety and security with being environmentally responsible. Nearly three years ago, the retailer began working with its counterparts to develop specifications and common standards for outdoor lighting.

› LED's higher color rendering, higher vertical footcandles and excellent distribution provided a safe and secure



Ralph O. Williams

atmosphere for customers with lower energy consumption than the incumbent HID technology. LED's superior optical control meant the retailer could have an "excellent cutoff to reduce light trespass and off site glare, which are expectations from our neighbors," says Ralph O. Williams, senior

systems engineer for Walmart. Instead of lighting that went from light to dark to light, producing high contrast, Walmart found that it could use LEDs and keep its lighting uniform.

"It was still bright enough to be inviting and for customers to feel safe, while reducing energy use by over 50 percent," he says.

› Walmart conducted several tests using LEDs for site lighting and eventually installed them at a new store in

Leavenworth, Kan. The retailer surveyed its customers and found that they felt safe and secure with the new technology. Walmart did some retrofits on stores closer to its headquarters in Bentonville, Ark., all of which were "closely reviewed for customer and operations expectations," says Williams. The LED technology passed those tests. With that success in the books, Walmart began rolling out the use of LED lighting nationally this year.

› "The energy savings, lower maintenance costs and long life are the appeal to LEDs," Williams says. "In most sites, Walmart will burn lights all night every day of the year, so that's important."

— Desiree Hanford



so that they can make a rational decision as to whether that person intends to harm them. If they can't see a face, people have a tendency to feel less secure. "This is perception and not necessarily measurable," he says.

Using Light Effectively

The challenge of outdoor lighting, even when specified for safety and security, is keeping the impact on the environment to a minimum. Whether it's sky glow, light trespass, glare or wasted energy, the effect that lighting can have on the environment can be substantial. Sky glow, or the increase of sky brightness, can make it difficult to see the stars. It can also confuse certain species of animals, including sea turtles and birds, lighting experts note. Light trespass, which is light spilling into a residential or commercial area, can be annoying, particularly to people trying to sleep. Glare can make it difficult to see, affecting the environment and the level of safety and security. And lighting that's not serving a purpose is a waste of energy.

"I think it's really an issue of people not using light in the most effective way," Diemer says. "It's sometimes like hitting the problem with a sledgehammer."

So how can building owners and facility managers have a safe, secure environment while also being good environmental stewards? One approach is to use sensors, which allow light to be used or concentrated in an area only when needed. Different types of lights take different amounts of

time to turn on, so building owners and facility managers need to be aware of that so that individuals don't walk too far into a dark area before tripping the motion sensors, he says.

A motion detector combined with instant-strike capability, where lights become bright immediately with no warm-up period, provides another option. The lights on a pole can dim but as soon as someone approaches the pole, the lights brighten immediately, Salmon says. After staying on for a few minutes, the lights then revert to a dimmer level.

Cut-offs, or lights with hoods or other housing, help focus light straight downward. Full cut-off fixtures, as opposed to partial cut-off fixtures, won't project light above a 90-degree angle, keeping light trespass and sky glow to a minimum, Gandy says. "The larger the fixture or the higher the wattage, the more important cut-offs are," she says.

Securing a property more efficiently can lead to reduced light usage, Salmon says. A shopping mall may be using the maximum amount of lighting all night, even after everyone has departed. Pulling a crossbar down and cutting off access to the parking garage or parking lot means less light can be used in those areas, he says. ■

Desiree J. Hanford, a contributing editor for Building Operating Management, is a freelance writer who spent 10 years as a reporter for Dow Jones. She is a former assistant editor of Building Operating Management.

Email comments to edward.sullivan@tradepress.com.

Emergency Lighting: Wherever the Path Leads



At Philips Emergency Lighting, we offer solutions to meet your needs ... wherever the path may lead. The BSL722 Emergency LED Driver and the B4CF1 Cold-Pak Fluorescent Emergency Ballast are just two options. For more information on our award-winning product lines, contact your local Philips Bodine sales representative today.

Philips Emergency Lighting Since 1962

800.223.5728

www.philips.com/bodine

PHILIPS
bodine

▲ FREE INFO: Circle 426