

LIGHTING LAYOUT GUIDE SERIES

CONTROLS GUIDE 4

KEY TIPS

Modern fluorescent and LED lighting has high color rendering (CRI) that makes it easier to accurately identify colors and may aid in visual acuity.

Occupancy sensors come in two major types: Passive Infrared (PIR) and Ultrasonic. The complex floor plans of parking garages may suggest the use of both types in the same device. Dual Technology sensors combine the strengths of both sensor types for maximum performance and savings.

Many manufacturers offer integrated photosensors in occupancy sensors, allowing for layered energy saving strategies from one device.

PARKING GARAGE CONTROLS

THE OPPORTUNITY

Many parking garages have brief periods of high use and long periods of intermittent, low use. The HID lights often used in parking garages are left on 24/7 due to the fact their start-up time can be as long as four minutes. This leads to higher energy and maintenance costs that are often unnecessary during low occupancy. For above ground parking structures, there is often an open perimeter that allows daylight in. This is another opportunity for savings if the lights adjacent to these openings can be dimmed or turned OFF.

THE SOLUTION

Use Adaptive Lighting Controls with modern fluorescent or LED lighting that has dimmable ballasts or drivers. The lights can be dimmed or turned up to full power rapidly as the occupancy condition changes. Additionally, if lights in the perimeter daylight zone are controlled with photosensors they can respond to changing conditions, helping save even more energy.

DESIGN CONSIDERATIONS

In parking garages, good visibility will ensure there is a low chance for pedestrian-vehicle conflict. Having adequate light on both the horizontal and vertical plane is a key factor in the lighting design. But, it's not the only consideration. An Illuminating Engineering Society (IES) uniformity ratio of less than 10:1 (Max to Min) is recommended. When deploying lighting controls, it's important to keep these parameters in mind. While dimming the fixtures in unoccupied areas it's important not to have the lights go OFF completely, as this can lead to high-contrast with the lit areas that are occupied and can make occupants feel unsafe.

Because of low ceiling heights in these spaces, it is recommended that a high-density sensor strategy be deployed. Mounting a sensor on each luminaire can accomplish two goals: 1) ensure there are enough sensors for complete coverage, and 2) provide a convenient way to get power to the sensors reducing installation costs. If the sensors are networked (wired or wireless), they can be grouped in small zones and provide reporting on operating conditions, energy use, and occupancy levels.



www.lightingdesignlab.com



NORTHWEST
LIGHTING NETWORK

www.nwlightingnetwork.com

PARKING GARAGE CONTROLS OPTIONS

STRATEGY	DESCRIPTION	BENEFITS	TECH NOTES
Astronomical Time Clock	An electronic timer that turns OFF the lighting in spaces not scheduled for activity.	Comparatively inexpensive and fairly easy to install.	Must have a way to override system for unscheduled activity.
Occupancy Sensor	Senses activity in areas around fixture.	Lights come to full power only when space becomes occupied.	Lighting alerts others when space is occupied, providing an extra sense of security.
Daylight Sensor	Dims light levels if daylight is present.	Daylit spaces can be turned OFF even when there is activity.	Sensors integrated or mounted to fixtures make for easier zoning and commissioning.
Networked Controls	Allows communication between fixtures.	Easy zoning and reporting of system performance.	Can be wired and wireless (radio, IR, WiFi).
Other Sensors	CO2, temperature, transient sounds, and key card activity.	Robust data gathering capabilities, and alerts for fire and security events.	Advanced sensors can have benefits that are not yet predicted.

These controls can all be deployed for an Advanced Lighting Controls strategy.



Parking garage with modern linear fluorescent lighting and bright reflective surfaces.