DL7 Photosensor Placement (Climate Zones: all)

Photosensors used should be specified for the appropriate illuminance range (indoor) and must achieve a slow, smooth, linear dimming response from the dimming ballasts.

A *closed loop* system is one in which the interior photocell responds to the combination of daylight and electric light in the primary sales area. The best location for the photocell is above an unobstructed location such as a circulation path. If using a lighting system that provides an indirect component, mount the photosensor at the same height as the luminaire or in a location that is not impacted by the uplight from the luminaire.

An *open loop* system is one in which the photocell responds only to daylight levels but is still calibrated to the desired light level received on the merchandise. The best location for the photo sensor is inside the skylight well.

DL8 Calibration and Commissioning (Climate Zones: all)

Even a few days of occupancy with poorly calibrated controls can lead to permanent overriding of the system and loss of all savings. All lighting controls must be calibrated and commissioned after the finishes are completed and the merchandise is in place. Most photosensors require daytime and nighttime calibration sessions. The photosensor manufacturer and the QA provider should be involved in the calibration. Document the calibration and Cx settings and calendar intervals for future recalibration.

DL9 Daylight Levels (Climate Zones: all)

Occupants expect higher combined light levels in daylighted spaces. Consequently, it is more acceptable to occupants when the electric lights are calibrated to dim when the combined daylight and electric light on the merchandise exceeds 1.20 times the designed light level; i.e., if the ambient electric light level is designed for 50 maintained footcandles, the electric lights should begin to dim when the combined level is 60 footcandles ($50 \times 1.20 = 60$).

DL10 Interactions (Climate Zones: all)

Energy savings due to reduced electrical consumption should be weighed against any potential loss caused by increased cooling or heating loads.

References

IESNA. 1997. *EPRI Daylighting Design: Smart and Simple*. New York: Illuminating Engineering Society of North America.

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NBI. 2003. *Advanced Lighting Guidelines*. White Salmon, WA: New Buildings Institute. www.newbuildings.org/lighting.htm.

USGBC. 2005. LEED NC Indoor Environment Quality Credit 6.1 "Controllability of Systems: Lighting." Washington, DC: U.S. Green Building Council.

Electric Lighting Design

Interior Lighting

Good Design Practice

Goals for Merchandise Lighting. The primary lighting goals common to all types of merchandising spaces are attracting and guiding customers, facilitating merchandise evaluation to initiate purchases, and enabling completion of the sale. Generally, merchandising lighting systems consist of three basic components:

Ambient lighting—The ambient lighting system should provide a general, uniform illuminance over the entire merchandising area or in contained areas of merchandising. This illuminance level may range from 15 to 75 footcandles

depending on the store type and merchandising strategies. Designing to lower ambient footcandle levels can permit more effective accent lighting strategies.

Perimeter lighting—Perimeter lighting is important in providing impressions of a pleasant space, will help define a sense of space, and can assist in drawing customer attention to specific merchandising areas.

Accent lighting—Accent lighting provides areas of more intense illuminance, creating visual contrast and interest. Accent lighting can be used to create focus, define customer movement, and allow for more intense scrutiny of merchandise color, texture, and detail.

Other lighting features to consider that play important roles in merchandise recognition and the perceived lighted environment include decorative lighting (pendants, sconces, table lamps, etc.), internal casework lighting, and furniture/wall integrated lighting.

EL1 Lighting Walls/Perimeter Lighting (Climate Zones: all)

Better eye adaptation, luminous comfort, and impressions of pleasantness and space can be achieved when light is distributed to the walls. To light walls, use wall wash luminaires or locate ambient lighting fixtures closer to walls. There will be occurrences where it will be desirable to use accent lighting for certain perimeter wall features. When placing fixtures, always consider the final location of the merchandise to be illuminated, not the wall surface behind the merchandise (See Figure 5-22).

EL2 Additional Interior Lighting/Accent Lighting (Climate Zones: all)

The following additional lighting power densities (LPDs), from the Recommendation Tables in Chapter 3, are available for adjustable lighting equipment that is specifically designed and directed to highlight merchandise (accent lighting) above and beyond the base 1.3 W/ft^2 allowance. See EL12 for switching recommendations.

0.4 W/ft^2 (spaces not listed below)
0.6 W/ft^2 (sporting goods, small electronics)
0.9 W/ft^2 (furniture, clothing, cosmetics, and artwork)
1.5 W/ft^2 (jewelry, crystal, china)

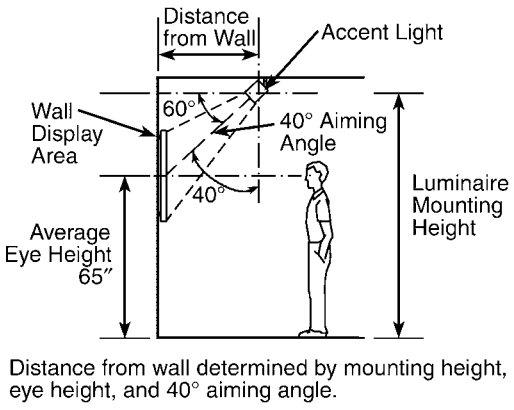

Figure 5-22. (EL1 and EL2) Accent lighting aimed at 40°.

The use of accent lighting to highlight ALL merchandise does not create the proper contrast ratios. Use accent lighting to highlight key merchandise locations or vignettes to "feature display" light levels (three to ten times the general merchandise lighting level in the area of the display). Along perimeters, accent lighting should be aimed up at 40° from vertical (straight down) to reduce reflected glare off specular surfaces. The aimed accent light should not exceed 45° from vertical, and attention should be given to both the direct and reflected characteristics of the light distribution. In areas open to customer view from multiple vantage points, the accent lighting should be aimed up at no more than 30° from vertical to reduce the possibility of direct glare visible to the customer (see Figure 5-22).