



*Retail
Lighting
Guide*



experience
**lighting's
best**



HOLOPHANE[®]
LEADER IN LIGHTING SOLUTIONS

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Holophane... Lighting to meet Retail Needs

Holophane has been the leader in lighting solutions for more than one hundred years, providing innovative lighting systems that efficiently place light where it is needed to create comfortable, highly visual environments.

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Retail Lighting Guide



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HOLOPHANE[®]
LEADER IN LIGHTING SOLUTIONS



Holophane has been the leader in lighting solutions for more than one hundred years, providing innovative lighting systems that efficiently place light where it is needed to create comfortable, highly visual environments. Customers who shop in stores illuminated by Holophane fixtures often find product selection easier because of the fixtures' ability to showcase the colors of merchandise and emphasize textures, designs and fabrics.

Holophane systems bring customers into stores and keep them there longer by supplying attractive, yet unobtrusive illumination that allows them to select products and complete their transactions.

Lighting to Meet Retail Needs

Borosilicate glass reflectors/refractors are the hallmark of Holophane's comprehensive indoor and outdoor luminaire line, supplying a combination of uplight and downlight that makes any space bright and welcoming. Holophane luminaires are appropriate for almost every area within the retail store—from the display floor and dressing rooms to checkout areas, warehouse and storage facilities, entrances and offices.

Holophane also offers a full line of outdoor lighting systems for parking facilities, walkways, loading docks and doorways.

For more information, contact Holophane at 740-345-9631 or visit our Web site at www.holophane.com.



FLORIDA MARKET



*Bealls Department Store
Perflector® with cover (type 10)*



Lighting for Results

The goals of any interior retail lighting system are often the same: to attract and guide customers, to help them evaluate merchandise and to assist them in quickly and easily completing the sale. If done correctly, lighting has been proven to increase merchandise sales.

The Guiding Light

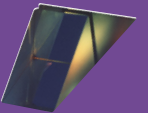
While lighting must attract customers to the retail space, it must enable customers to read signage and move throughout the store. The quantity and quality of the illumination will create a lasting impression and will help customers decide whether they want to return to the store in the future to shop.

The Buying Decision

Customers will not make a purchasing decision until they have the opportunity to evaluate merchandise and determine its specific attributes, such as color, texture and quality. Illumination must be sufficient so customers can read price tags and all labels. In facilities such as clothing stores, the lighting must be sufficient in sales areas and dressing rooms so customers can see how the items look before they purchase them.

It's a Sale!

The lighting within a store must facilitate customer transactions. Once customers make a final decision, they must be able to easily locate the sales register. The lighting should also help sales personnel quickly ring up the sale, scan credit cards and wrap packages. Good lighting will help minimize returns since customers can fully evaluate merchandise in the store and are less likely to be disappointed with their purchases later.





*Old Navy Clothing Store
02454 with Electra optics (type50)*



*Fed Co-op Grocery Store
HSM Fluorescent Strip (type50)*



*The New York Company
Illuminaire® Crest (type50)*



Lighting for the Environment

The lighting system selected for each retail environment will depend upon the store type and the merchandise sold. Retail facilities usually fall within one of the following categories:

Warehouse/factory outlet – Offers overstocks, discontinued goods and irregular products. This facility will likely have one type of light source for general or “ambient” lighting. General lighting averages 75 fc and higher.

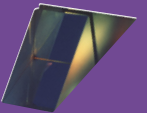
Mass merchandiser/big box stores – Sells brand name and house brand merchandise in large volumes in a self-service environment at discounted prices. Lighting in this type of store uses a general lighting system that provides 40 to 60 footcandles, combined with accent lighting for specialty areas.

Fashion designer/specialty shop – Markets fashion and often designer merchandise in an elegant environment. This type of store will have a high-end lighting system that includes decorative, accent and ambient luminaires. Ambient light levels average 20 to 40 fc. This lighting facilitates the personal attention given to each customer.

A Selling Combination

Retail environments are likely to appear more attractive, exciting and inviting when they combine accent with ambient lighting. Referred to as “general” lighting, the ambient light system provides a diffuse layer of uniform illumination throughout the store. Luminaires used for ambient lighting typically have broad distributions and are arranged symmetrically.

Accent lighting can emphasize product shape, color, texture and finish and help create contrast between merchandise and its background. Spotlights and track lighting are ideal for accent lighting because they can be controlled and directed to provide required focal lighting, directing eyes to specific displays or other areas. The ratio between accent and ambient lighting should be a least five to one, with a maximum of 10 to 1.



Fixtures' "Sparkle" Draws Customers to Hogan's Market

Yesteryear's "mom and pop" grocery stores are a thing of the past. Contemporary "super" stores offer customers a wide variety of merchandise in a very bright and attractive atmosphere.

Hogan's market in Puyallup, Washington, is recognized as one such "super" store. The store was recently remodeled and expanded from 28,000 to 36,000 square feet, with the 14-foot lay-in ceiling raised to 17 feet.

Although the store was originally lit with 8-foot, high output fluorescent strips, management wanted more efficient luminaires that would enhance the store's aesthetics. Seventy-six PrismGlo® Athena® luminaires from Holophane with 400-watt super metal halide coated lamps were installed above the main floor and spaced 17 feet on center.

To boost light levels, the store used a combination of "white" high pressure sodium track lighting and fluorescents above the produce counters to spotlight fruits and vegetables. Colored, back-lit glass blocks accent the white columns located throughout the store.

Prismalume® luminaires from Holophane with 400-watt metal halide lamps were installed on the 19-foot ceilings above the check-out counters. The fixtures provide 20 percent uplight to eliminate the dark ceiling. Light levels throughout the store are 100 footcandles average maintained.

"We feel the Holophane luminaires are more appealing than competitive fixtures," said Jerrod Irwin, president of Washington Electric Co., the electrical contractor. "The luminaires are easy to install and require less maintenance."

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Design Considerations

A well designed lighting system does more than provide sufficient footcandles. It considers all of the elements within the space and uses the most appropriate luminaires and lamps to create a comfortable and highly visual environment.

Table 1; on page 17 compares the importance of design considerations to types of retail spaces.

Lighting Uniformity

Customers will feel comfortable in a uniformly lit environment because they can view the merchandise and discern details. Most retail environments will benefit from some degree of uplight, which promotes uniformity by reducing the contrast between the light source and the surrounding area. A system with uplight will improve the luminance of vertical surfaces, such as signage, and will minimize shadows and glare.

type 90 (80-100 percent uplight)
Luminaires with this type of light distribution are ideal for spaces that demand maximum uplight. When a large quantity of light is bounced off the ceiling, the result is a diffuse illumination that creates an open and airy environment.

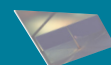
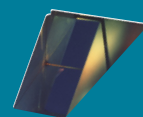
type 50 (40-60 percent uplight)
An almost equal balance of uplight and down-light supplies high levels of illumination on floors and display areas while allowing a certain amount of light to bounce off the ceiling. Type 50 luminaires are great for large areas where retailers want a simple, yet high-quality and efficient lighting system.

type 30 (20-40 percent uplight)
Type 30 luminaires focuses customer eyes on the merchandise, yet provide enough uplight to prevent a dark and gloomy ceiling. They enhance the aesthetics within a space and bring out the true colors of merchandise while emphasizing texture.

type 10 (0-20 percent uplight)
When maximum levels of illumination are needed for a specific task, such as alterations, a type 10 is the best solution. Light is focused on the task enabling easy visibility.



*Hogan's Market
Primalume® (type30) and
PrismGlo® (type50)*



Dave & Buster's Employs Prismatic Lighting to Create Unique Feel

Customers come to Dave & Buster's locations for good food and plenty of fun. The Victorian and Art Deco-style restaurants combine the picturesque and relaxing atmosphere of an outdoor café with the excitement of a Las Vegas-style arcade.

Dave & Buster's uses prismatic glass lighting fixtures from Holophane supplemented with recessed luminaires to create interest and to move guests from one area to the next.

In the Grand Dining Room, Holophane prismatic glassware forms two chandeliers with black iron hardware and a circle of 15-watt clear incandescent lamps. Enclosed 02454 luminaires were mounted on black ironwork around live palm trees, with two acorn-shaped GranVille® fixtures installed on black iron posts to complement the historic outdoor feel.

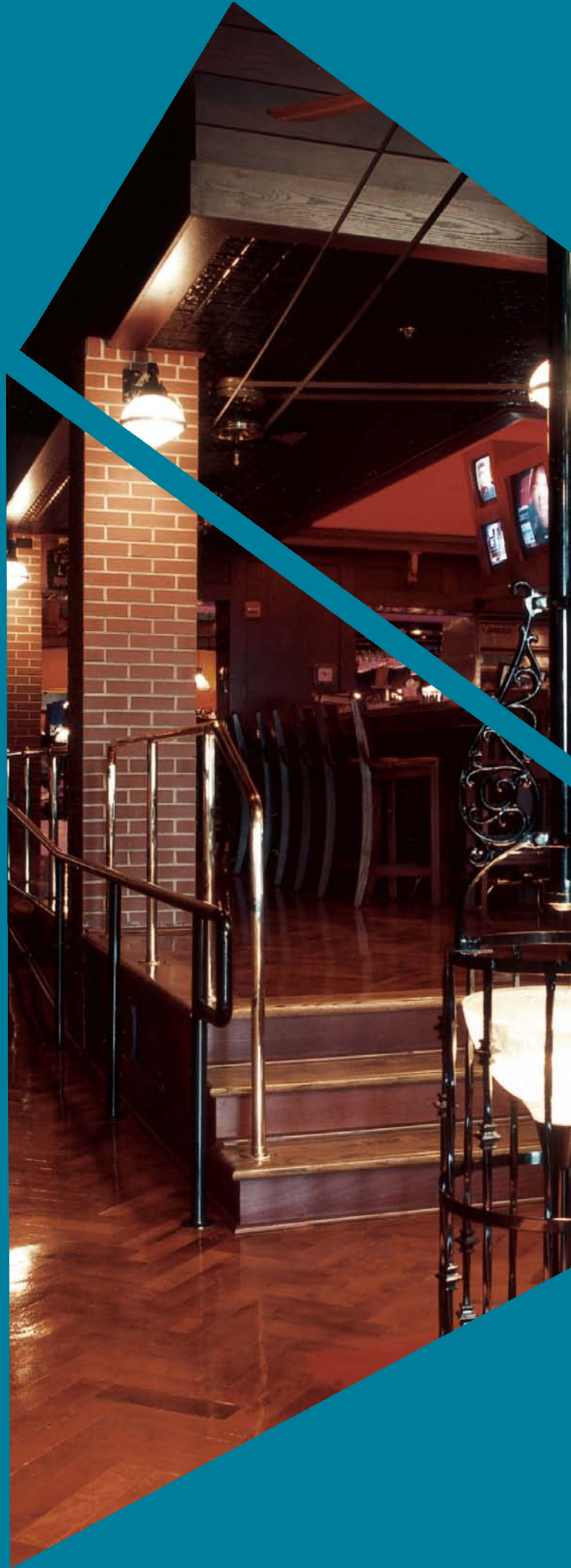
PGRL prismatic glass reflector luminaires with 150-watt blue light spots were installed above the handcrafted mahogany pool tables in the billiards room, hung from polished brass poles. The 02454 luminaires were mounted on custom black brackets on the sides of the brick columns in The Midway Bar, with PRGL luminaires hung on black grappling hooks above the tables.

PrismGlo® Electra® luminaires with 40 percent uplight were installed above the tile floor that winds through Dave & Buster's Million Dollar Midway.

"We used Holophane luminaires because they are quality fixtures that offer a great deal of flexibility," said Fain, designer of the first Dave & Buster's. "The units create a certain amount of warmth while providing a serviceable glow."

Dave & Buster's used GranVille luminaires along the walkway leading to the restaurant entrance. Wallpack® II units with 250- and 400-watt lamps were installed near exterior back doors.

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warmth while providing
a serviceable glow.*”





*Dave and Busters
Paradome® (type30) and PGRL® with cover (type10)
Many other Holophane products are used
throughout the Restaurant and Arcade*

Color Rendering and Temperature

Color is a powerful merchandising tool. Shoppers must be able to determine the exact colors of merchandise—whether they are selecting clothing, furniture, automobiles, packaged goods, or food.

Color rendering is the ability of the light source (the lamp) to represent the true colors in merchandise. The closer the color rendering index (CRI) is to 100, the more natural and vibrant colors will appear.

The lamp's color temperature must be considered since it determines whether the environment appears yellowish and warm or bluish and cool. The correlated color temperature (CCT) is measured in Kelvin (K), with a higher CCT (4,000K) appearing cooler or blue, and a lower CCT (3,000K) appearing warmer.

A warmer feel enhances skin's color and works for many areas within a grocery store, such as the meat counter. A cooler environment enhances the appearance of clothing and produce.

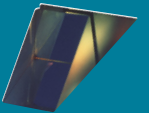
Noise

It is imperative that retail stores are comfortable to shop in, including background noise. A ballast that hums or music that is played too loud is disturbing to a customer. They will choose not to spend much time in that store. Electronic ballasts and potted ballasts are virtually noise-free allowing the customer to concentrate on the merchandise, not the noise.

Daylighting

Daylight adds another dimension to the overall lighting design and can impact customers' perception of the space. The amount of daylight that comes into the store should be controlled.

Daylight can be controlled through thoughtful architectural design and window treatments. Electronic lighting controls are also available that allow stores to take advantage of daylight while creating a more visually exciting space. The Prismatron® electronic Daylight Harvesting™ ballast from Holophane, for example, facilitates harvesting through automatic, full range dimming, allowing the light level to be controlled while providing energy savings.



Golfsmith Creates Inviting Atmosphere Using Retailer[®] Luminaires

The Golfsmith store in Northville, Michigan wanted to enhance the customer experience by simulating the look and feel of a real golf course inside its new 25,000-square-foot facility. The store installed a putting green in the middle of its retail space with a landscaped water fall.

“We wanted people to hear the whisper of falling water and to enjoy the CD music we play in the back-ground,” said Chris O’Brien, general manager for the Northville location.

“The Retailer fixtures provides a sparkle that was impossible to achieve with the acrylic high bay fixtures used in other Golfsmith stores.”

Because sound was an issue, ballast noise was considered when the lighting system was designed. While O’Brien liked the visual advantages associated with a metal halide system, he was concerned about ballast buzz.

The store installed Retailer luminaires from Holophane, which include Endural[®] prismatic glass reflectors. The fixtures, which use 400-watt pulse start metal halide lamps, are encapsulated in a resilient potting compound to reduce and absorb ballast noise.

Fixtures were installed at 16 feet, mounted on a threaded rod with a hook that attaches to the metal deck ceiling. Spacing was 16’ x 18’ on center, with the facility using spotlights to emphasize merchandise and signage. Light levels are 70 to 75 footcandles.

“We wanted the store to look light and bright, but not so bright that the spotlighting lost its effect,” said O’Brien. “The Retailer fixtures provides a sparkle that was impossible to achieve with the acrylic high bay fixtures used in other Golfsmith stores.”





*GolfSmith
Retailer® (type30)*

Modeling

Lighting can be used to reveal the depth, shape and texture of various types of merchandise. How the light is directed and distributed will depend on the merchandise itself, although most stores will benefit from a combination of diffuse light (uplight) and directional light (downlight).

In most instances, retailers should avoid using one-dimensional lighting, which will make merchandise appear flat and dull. Multi-directional lighting is a better choice. A retailer selling cosmetics, for example, should avoid using a concentrated downlight because it will create harsh shadows on faces where as multi-directional lighting will improve facial modeling.

Surface Characteristics

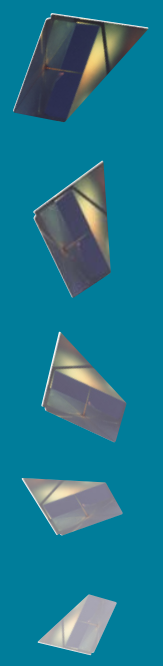
The characteristics of various objects within the space—texture, color and specularity, and reflectance values—will affect the perceived brightness of walls, ceilings and displays. Merchandise and surfaces with matte or satin finishes can help minimize reflected glare, while objects with saturated colors and glossy finishes will help stimulate visual interest.

When designing the lighting system, various circuits may be used separately or together to alter appearances and light levels for varying surface characteristics within the same spaces. Also, luminaires are available that are specifically designed to light walls and ceilings and to increase surface luminance along the store perimeter. Dimming and daylight harvesting can provide additional flexibility while saving energy.

Glare

The light reflected by polished or glossy surfaces (such as golf clubs) can be very uncomfortable and may reduce shoppers' visibility.

Veiling reflections can be minimized by using well-designed luminaires that provide illuminance from the sides or by bouncing a portion of the light off the ceiling. Using shields on luminaires or windows can also help reduce glare. In this way light comes from more than one direction, preventing veiling reflections.



Major mall renovation includes prismatic lighting

When ShopRite purchased the Long Hill Mall in Oakland, New Jersey, the company had a primary objective: to give the 1970's-looking facility 1990's appeal.

The \$9 million renovation included a dramatic change in the lighting system. Previously, the lobby area was lighted with a 2' x 4' fluorescent system.

According to Robert Clare, vice president, three goals were established prior to selecting the new system: First, the lighting system had to increase vertical footcandle levels. Second, the lighting system had to be visually appealing. This was especially important since the average age of the mall's targeted customer is 38. Third, the lighting system had to illuminate the lobby from one end to the other and from the floor to the ceiling without creating shadows or glare.

“
Although the PrismGlo fixtures cost more per unit to purchase, the system is less expensive than a fluorescent system because fewer fixtures were needed. The prismatic glass units are also less costly to operate,” Clare said.
”

The lighting system installed in the lobby area is Enhanced PrismGlo® Aurora® fixtures from Holophane. The prismatic glass units use 150 -watt metal halide lamps and feature a cranberry-colored band that complements the decorative wall tile. The fixtures are pendant and wall mounted 11 1/2 feet off the floor, with spacing 14 feet on center. The PrismGlo units provide 40 percent uplight and supply 40 footcandles.

“When shoppers walk into the lobby, we want them to be able to see to the far end of the corridor. The PrismGlo fixtures provide uniform illumination throughout the space. They are also comfortable; a shopper can look directly into the units without feeling blinded,” Clare described.

In addition to the standard size PrismGlo units, Compact PrismGlo fixtures with 100 -watt lamps are installed at the end of the corridor and PrismGlo Aurora units with 400 -watt metal halide lamps and a white decorative band are installed in the lower parking garage.

Clare related that the PrismGlo units are efficient. In comparing the prismatic glass units with a fluorescent system, he found that twice as many fluorescent fixtures would have been required to achieve the same light levels.



Operating Considerations

Operating Costs

First cost or purchase price should not be the only consideration when examining a lighting system. Final cost must be determined by including the system's performance and operating costs—over both the short- and long-term.

Holophane lighting systems provide the best combination of lighting performance with low owning and operating costs. State-of-the-art optical systems promote energy efficiency and wider spacing between luminaires, which reduces the number of luminaires needed.

Maintenance Ease

Quality luminaires perform better, last longer and require less maintenance. Design features such as interchangeable parts, a quick disconnect and a hinged door assembly will simplify repairs and reduce the time required to change out lamps.

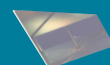
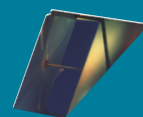
Holophane glass optical systems never become discolored or attract dust, reducing cleaning requirements and maintain the desired light level. Low copper aluminum alloys used for fixture housings are corrosion-resistant, which makes the luminaires appropriate for parking lots, walkways and other outdoor settings.

Lighting Codes and Regulations

Energy codes, standards and demand side management (DSM) programs help minimize lighting energy waste and assure that facilities use energy efficient lighting systems. Various utilities and government agencies offer incentives that encourage energy efficient lighting designs. Federal legislation and some state codes have been enacted to establish minimum lighting code requirements for existing or new facilities.



*ShopRite; Oakland Mall
PrismGlo® with Aurora optics (type50)*



Lighting Store Spaces:

An application guide to how Holophane can provide lighting solutions



Type of store: "Big Box"



*Harley Davidson Store
CrystalGlo® with Electra optics (type10)*

Types of spaces:



*Exterior/
Entrance*



Sales Area



Counter Spaces

solutions for all retail spaces

Types of Stores

- Warehouse / Factory Outlet
- Mass Merchandiser "Big Box"
- Fashion Designer / Specialty

Merchandise Spaces

- Entrance and Exterior
- Sales Area
- Stock Rooms



Harley-Davidson Uses Lighting to Enhance Merchandise Appearance

Harley-Davidson wants customers to keep their eyes on the merchandise. Several years ago, Harley-Davidson initiated a national lighting program to promote consistency in the appearance of its dealer locations.

Harley-Davidson of Baton Rouge, Inc. participated in the program when it constructed its 40,000-square-foot showroom and service facility. The facility installed cylinder-shaped Perфлектор® luminaires from Holophane with 250-watt metal halide lamps in the showroom, mounted 13 feet above the stained concrete floor.

Metal covers on the luminaires were painted dark gray to match the color of the exposed ceiling. The Perфлектор luminaires include a perforated ballast housing that creates a visual transition from the illuminated reflector to the opaque ballast enclosure.

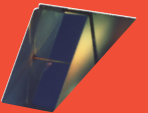
The Perфлектор luminaires were spaced 14 feet on center to avoid dead areas or hot spots. Because Harley-Davidson merchandise is often dark in color, the dealer installed track lighting with halogen lamps to boost light levels along walls. Ambient light levels are 35 to 45 footcandles, with light levels along the walls as high as 120 footcandles.

The dealer installed 02454 luminaires from Holophane with clear 100-watt incandescent lamps at the cashwrap and parts counter.

"The luminaires' rugged feel complements the atmosphere dealers are trying to create," said Chris Smith of Nelson Electric Supply Company, the lighting design firm. "The glass reflector and clear lamps provide a certain sparkle, which is important since the cashwrap is often the last area customers see before they leave the store."

CentaGlo® luminaires from Holophane were installed in the shop and service and storage areas.

LIGHTING SPACES



HOLOPHANE Retail Lighting Guide



*Brandon Town Center Mall
Prismalume Enclosed® (type30)*



*Victor's House of Music
IDW Fluorescent (type90)*



Best Buy
Prismpack® V (type 10)



Lighting Store Spaces

Holophane offers a wide variety of HID and fluorescent luminaires to efficiently and effectively light the various areas inside and outside the retail store.

Entrances

A shopper's first impression will be shaped at the store entrance. The lighting should be aesthetically pleasing and complement the architecture while facilitating safe passage and creating a sense of security. Store entrance lighting should be designed to help customers visually adapt from the exterior to the interior environment, and vice versa. Holophane offers many products which effectively illuminate store entrances.

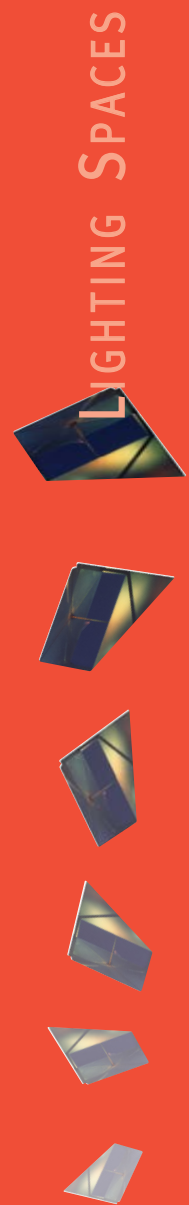
Sales Areas

Lighting in sales areas must be inviting and highly visual so customers can easily initiate and complete sales transactions. Many elements must be considered when designing the lighting system:

- Type of merchandise sold (*hard or soft goods*)
- Ambient light levels
- Shape and size of space
- Illuminance of adjoining spaces
- Luminance ratios between feature displays and surrounding areas
- Location of displays, including feature displays
- Reflectance from architectural surfaces, such as walls and ceilings
- Size and location of store graphics, including signage
- Display methods—racks, gondolas, counters, etc.
- Location of sales areas and method of transaction
- Store traffic patterns

All luminaires in the Holophane product line may be used for ambient lighting in sales areas and are suited to a range of ceiling heights and room configurations.

Illuminance Level (fc)	Store Types
High 75+	Warehouse Stores, Discount Mass Merchant, Grocery/Supermarket, Self Service Convenience
Medium 45-75	Department Stores, Better Mass Merchant, Specialty Shops, Life Style Stores
Low 20-35	Upscale Specialty, Upscale Life Style Stores, Precious/Fine Jewelry, Designer Boutiques





*Oakland Mall
PoleStar® II*



*Coronado Island
Utility Series GranVille®*



*Prismatron®
with
CentaGlo Optics
(type30)*



*Builders Square
Bantam 2000® with
Prismalume Optics (type30)*



Ancillary Spaces

Most retail facilities have a variety of ancillary spaces that may be used by customers, staff or building and service personnel.

Holophane offers a full line of fixtures for facilities with high or lower ceiling heights.

Both HID and fluorescent fixtures are available with a range of uplight and downlight combinations to promote visibility and energy efficiency. The luminaires may be used with occupancy sensors and electronic ballasts containing automatic, full range dimming capabilities.

Dressing rooms – Color appearance, contrast, and modeling of faces and objects will be especially important in this area. A combination of vertical illumination and directional light is the best way to illuminate dressing area.

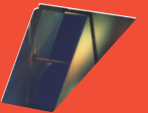
Fitting and alteration rooms – Again, color appearance and color contrast will be important. These types of facilities will require task lighting with low glare, while maintaining a “look” consistent with the store’s image and character.

Stock rooms – Light levels must be sufficient on horizontal and vertical planes so workers can read labels and identify merchandise on pallets and shelving. Large storage areas, such as those connected to a warehouse or discount store, will likely require high bay lighting, perhaps with supplemental task lighting

Outdoor Areas

Outdoor lighting should help create a safe and secure environment for pedestrians and drivers while promoting visual interest. Designers should evaluate outdoor luminaires according to their ability to provide required light levels while placing illumination where it is needed without creating glare.

Many tasks on roadways are horizontal (other vehicles, obstacles in parking lots), where as luminaires selected for pedestrian areas must provide sufficient levels of vertical illumination to light building facades, landscaping and other pedestrians. In addition to providing adequate footcandles, outdoor lighting should be visually attractive as well as scale appropriately to its surroundings.



Selecting Light Sources

Luminaire and lamp performance characteristics will affect the lighting system's overall effectiveness and efficiency.

Light Sources				
Lamp Type	Lamp Life (hrs)	Efficacy (lms/w)*	CCT (K)	CRI
Incandescent (A lamp)	750 - 1,000	16 - 19	2100 - 3300	100
Ceramic MH (E17, BT37)	10,000 - 20,000	68 - 75	3000 - 4100	85 - 94
Pulse MH (quartz)	10,000 - 20,000	48 - 82	3000 - 4200	65 - 75
Metal Halide (E17, BT37)	10,000 - 20,000	48 - 53	3000 - 4100	65 - 75
T-5 Fluorescent	20,000	87 - 96	3000 - 4100	82
T-8 Fluorescent	20,000	78 - 92	2700 - 6500	75 - 86
Compact Fluorescent (T4)	6,000 - 15,000	59 - 65	2700 - 5000	82
High Pressure Sodium	24,000 - 30,000	76 - 112	1900 - 2100	22

* lms/w (Lumens per Watt) calculated using mean lumens divided by nominal wattage. All values are for common lamps.

Lamp Life

Lamp manufacturers generally rate the life of their lamps as the time when at least 50 percent of the lamps within a group remain operational under controlled conditions. The initial and replacement costs of the lamp should be considered when the lighting system is designed.

Efficacy

A system's efficacy is expressed as lumens per watt (LPW) for either the lamp alone or the lamp and the ballast combined. For HID and fluorescent sources, the system efficacy combines the lamp efficacy with the additional power losses in the ballast. Ballast losses usually range from 5 to 20 percent of the lamp wattage.

Lumen Maintenance

Lamps produce less light over time. This loss, referred to as lamp lumen depreciation, is less for some lamp types than others. A standard incandescent lamp, for example, will depreciate up to 20 percent over life. A standard metal halide lamp will depreciate up to 25 percent.

Actual lumen maintenance and lamp life, except for incandescent lamps, will depend on lamp design and loading (lamp current). The type of ballast

used will also affect lumen maintenance. Electronic ballasts improve the lumen maintenance for metal halide and fluorescent lamps by as much as 10 percent.

Correlated Color Temperature and Color Rendering Index

Correlated color temperature (CCT) is the lamp's color appearance when it is energized. It is measured in Kelvin (K), with a higher temperature indicating a cooler feel. Retailers selling metal goods such as golf clubs or hardware may want to create a cooler environment, whereas stores merchandising clothing or linens will likely prefer a warmer environment.

Color rendering index (CRI) refers to how well the colors of merchandise will appear when displayed under various types of light sources. Colors will seem more natural and vibrant when the lamps used have a higher CRI closer to 100.

Costs

The cost of a lighting system only begins with the purchase and installation costs. The designer must consider operating costs over the life of the system, which includes energy usage and maintenance.

Value Added Services

In addition to a large staff of highly trained Holophane sales representatives that are deployed on a local level throughout North America, Holophane provides Retail National Account Managers (NAM) that are expertly trained, geographically deployed and solely dedicated to your lighting needs. The following are resources that are available to you from your Retail National Account Manager, and the local Holophane Factory Sales Representative:

- 1) Local training on lighting concepts
- 2) Professional seminars at Holophane's Light & Vision facility
- 3) Lighting system audits
- 4) Lighting calculation models using Visual Software
- 5) Financial analysis of systems options
- 6) Custom presentations and support for you to your customers
- 7) Product samples for demonstration and trial installations
- 8) Custom luminaires with specialized features to compliment your design
- 9) Marketing collateral such as brochures and photo essays
- 10) www.holophane.com

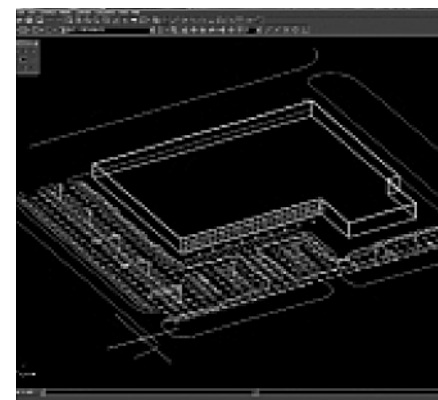


Table 2: Lighting Design Guide for Merchandising Spaces and Associated Areas

INTERIOR	★ VERY IMPORTANT	◇ IMPORTANT	● SOMEWHAT IMPORTANT														
LOCATION AND TASKS																	
	Appearance of Space and Luminaires	Color Appearance (and Color Contrast)	Daylighting Integration on Surfaces	Direct Glare	Light Distribution on Surfaces	Light Distribution on Task Plane (Uniformity)	Luminance of Room Surfaces	Modeling of Faces or Objects	Point(s) of Interest	Reflected Glare	Shadows	Sparkle/Desirable Reflected Highlights	Surface Characteristics	System Control and Flexibility	Illuminance (fc) Circulation ¹	Illuminance (fc) General ^{2,4}	Illuminance (fc) Perimeter ³
Grocery/Supermarket	●	●	★		●	●								●	25-30	75-85	75-85
Discount	◇	◇	◇	◇	●	◇	◇		●	◇				●	25-30	75-100	75-100
Department	◇	★		◇	◇	◇	●	◇	◇	◇	◇	◇	◇	◇	20-25	40-50	50-75
Upscale Department	★	★		◇	◇	◇	★	★	◇	◇	◇	★	◇	◇	15-20	30-40	40-80
Specialty Retailer	★	★	◇	◇	◇	◇	◇	◇	★	◇	★	★	◇	◇	20-25	40-50	50-75
Designer Shop/Boutique	★	★	◇	◇	★	◇	★	★	★	◇	★	★	★	◇	8-12	20-30	20-60
Jewelry/Crystal/China/Silver ⁵	★	◇	★	★	★	◇	★	★	★	★	★	★	★	◇	8-12	20-60	20-60
Drug and Convenience	◇	◇	●		◇		●	●		●			●		25-30	75-85	75-85
Home/Bath/Bedding	★	★	◇	●	★		★	◇	◇		◇		◇		20-25	40-50	50-75
Furniture	★	★	◇	◇	★		★	◇	◇		◇		◇		8-12	20-30	20-60

¹ Circulation is space not normally used for display or appraisal of merchandise (aisles, foyers, escalators)
² General is the common selling floor where merchandise is presented and routine appraisal occurs
³ Perimeter is the wall area where merchandise is appraised. Recommended illuminance is in the vertical plane.
⁴ For feature display areas, illuminance values are based on ratios between general and accent lighting of 5:1 and 10:1
⁵ The higher general illuminance value is for case work and label areas only.

Summary

Successfully lighting a retail store will involve many elements: a quality lighting system, photometrics that place the light where it is needed without creating glare, and reliable luminaires that perform efficiently and effectively to minimize operating and maintenance costs. A quality retail lighting system will provide both direct and indirect lighting to create a uniformly lighted environment that is highly visual and inviting.

A lighting system is a long-term investment in the appearance and functionality of a retail store. When selecting a lighting system, make sure you choose luminaires from a company that has been in the lighting business for a number of years and has a reputation for quality and reliable service.

We recommend visiting similar applications and asking questions. You should also request recommendations from designers, electrical contractors and consultants.

A Partial Project Listing

Ace	FED Co-op	Oakland Mall
Stores	Ferrari Florist	Office Depot
Adidas	Filene's Basement	Old Navy
American Eagle	Fred Meyer	Oshmans
Outfitters	Fulton Fish Market	Panera Bread
Annapolis Seafood	Furniture Row	Pick'n Save
Associated Wholesale Grocers	Gander Mountain	Piggley Wiggley
Audi Canada	Garden Ridge	Price Chopper
Australia Country Road	Golftown	Publix
Bally Total Fitness	Guess Jeans	Rafferty's
Bartell Drugs	Gulf West Clothing	Red Robin
Bealls Department Store	Half Price Books	Roche Brothers
Best Buy	Harley Davidson	Rona Building Supplies
Big Lots	Harris Teeter	Roseville Mall
Bi-Lo	Hechingers	Sam Goody's
BJ'S Wholesale Club	HH Gregg	Saturn Auto of Santa Maria
Bonanza Foods	Hillside Furniture	Shaws
Borders	Hobby Lobby	Slo Brewery
Boston Interiors	Hogans	Sofa Bed Conspiracy
Brandon Town Center	Home Depot	SONY
Bridgeport Center	Home Goods	Southwest Center Mall
Brookharts	Honda World	Specs Music
Brookshire Brothers	Hyundai	Sports Chalet
Brookshire Grocery	IDG Jewelers	St. Bernard Sports
Burlington Coat Factory	IFR - International	Staples
Camping World	Furniture Rental	Stop & Shop
Carl's JR	Kentucky Fried Chicken	SuperValu
Chick-Fil-A	Kroger	Taco Burrito King
Chico's	Lane Ave Shopping Center	Teddy Bear Club
Cincinnati Reds Retail	Limited Too	The Container Store
Circuit City Stores, Inc.	Lindenwood Jewelers	The Crossing
Cleveland Acura	Linens N Things	The Shops at Boardwalk
COMP USA	LL Bean	Tim Horton's
Costco	Macy's	TJ Maxx
County Seat	Marshalls	Toy's R Us
Creekside Grocery Store	Mattress Firm	Treasure Coast
Dave & Busters	Mazda Sterling Heights	Commerce Center
Discount Tire	McDonalds	UCLA Book Store
Dooney & Bourke	Meijer	Urban Outfitters
Drexel Heritage/My Favorite Things	Men's Warehouse	Victors House of Music
DSW	Mimi Maternity	Video Affairs
Eagle Country Market	Murray Motors	Wal- Mart
Eckard Drug	Mustard Seed	Whole Foods
Everybody's Supermarket	NAPA	Winn Dixie
	Northshire Bookstore	Woolworths
	Northwest BMW	

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3825 Columbus Road, Granville, OH 43023 /
HoloPhane Canada, Inc. 9040 Leslie Street,
Suite 208, Richmond Hill, ON L4B 3M4 /
HoloPhane Europe Limited, Bond Ave.,
Milton Keynes MK1 1JG, England /
HoloPhane, S.A. de C.V., Apartado Postal
No. 986, Naucalpan de Juarez, 53000 Edo.
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