

COMBINING  
ENERGY EFFICIENCY  
AND QUALITY DESIGN

## A knowhow™ CASE STUDY

# AMESBURY SKATE & SPORT

# demonstrating lighting



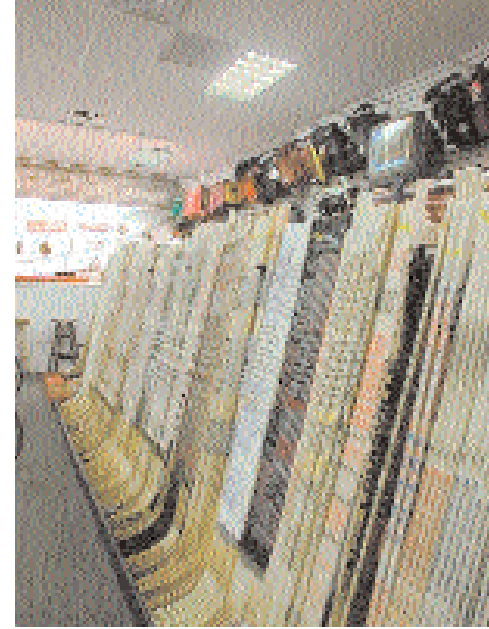
For customers walking in the door, the lighting strikes a mood, an atmosphere that's bright and appealing. It helps draw new customers in addition to long-time, loyal customers.

Amesbury Skate and Sport recently made the move to a high traffic, high profile mini mall just off Interstate 495, 1-1/2 miles away from their previous location. Antiquated fluorescent strips that used to light the old downtown store gave the products an overall dreary look. With the new location and lighting installation, the store's merchandise has never looked better!

The new lighting scheme, which follows the DesignLights™ Consortium *Small Retail Lighting knowhow™ Series* guide, is key to the store's expansion and success. High quality, energy efficient, yet affordable parabolic ceiling fixtures light the 119 by 36.5-foot space. Hailing the store's emphasis on skating, wall wash halogen track lighting accents an 18-foot long skate wall and, in the back right corner, a skate sharpening and service area.

The professional, clean presentation from the lighting promotes the quality of the merchandise. Uniform and bright, the high color-rendering light of 85 makes the bicycles, skateboards, ice skates, clothing, lacrosse, soccer, baseball and other equipment look far more visible and appealing.

The sporting goods are displayed in random freestanding displays and wall racks reaching almost to the ceiling. Eighteen ceiling-mounted narrow-beam halogen track fixtures spotlight the skate wall. In the far right corner, another 8-foot long row of six ceiling-mounted halogen track lights beam down on the skate sharpening and tuning area and service desk.



The lights over the skate sharpening and service area reinforce that service is an important part of Amesbury Skate & Sport's business. Many people come in just for skate sharpening; the lights immediately highlight where the department is located within the store. The halogen track lights and a 4-foot fluorescent strip under the counter enhance safety for staff working with the skates, blades and sharpening tools.

Although the new store occupies a larger space (4,343 square feet) than the previous downtown location, electricity costs on a square foot basis fell 5–10% because of the new lighting's energy efficiency. "We get better coverage from the lighting, which is more energy efficient at the same time—more light for lower costs," says owner Robert Ouellette.



The louvers mask the lamps' image, cutting off the view of the bright fluorescent at normal viewing angles, reducing the glare from the luminaires.



The store now has a color rendering index of 85 which makes the merchandise far more appealing and visible.

## PROBLEMS OVERCOME

Amesbury Skate and Sport remained for 25 years in the smaller, older downtown location that was inadequately lit. "We had to add lights," says Ouellette. Old style bare 8-foot fluorescent lamps on an 18-foot ceiling ran the length of the store. These were a standard system of illumination rather than an energy efficient one.

When Ouellette moved to the new mini mall location, he had to remodel space previously occupied by a small grocery store. It had again been lit with bare fluorescent 8-foot strip lamps mounted on an original 18-foot ceiling.

An electrician's original proposal for lighting the new store was to default to four rows of 8-foot fluorescent lamps. Initially, this might have lowered costs, but the inadequate lighting would have made the merchandise look dull, and the chance to install an energy saving system would have been lost.

## LIGHTING QUALITY

In upgrading Amesbury Skate and Sport's lighting, DesignLights™ Consortium member, Massachusetts Electric Company together with Lighting Resources Management, Inc., applied the principles of the *Small Retail Lighting knowhow™ Series* guide. Developed by the DesignLights Consortium, the guides outline criteria that ensure quality in energy-efficient lighting systems.

The parabolic luminaires, engineered to achieve optimum illumination and visual comfort, feature white louvered baffles curved in a parabolic shape. Cell louvers control light through precisely contoured surfaces in the optical assembly. Aesthetics improves with better quality, even light. The louvers mask the lamps' image, cutting off the view of the bright fluorescent lamp at normal viewing angles, reducing the glare from the luminaires.

QUALITY INDICATORS	RATING		
	ACCEPTABLE	GOOD	EXCELLENT
Control of Direct and Reflected Glare		✓	
Light on Walls and Ceilings		✓	
Fixture Location Related to People			✓
Light Patterns and Uniformity			✓
Daylight Integration		✓	
Color Rendering and Color Temperature			✓
Lighting Controls and Flexibility		✓	
Quantity of Light on Horizontal Surfaces (fc)			✓





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The parabolic fixtures cast minimal shadows at the corners where the walls meet the ceiling. This is an important attribute because Amesbury Skate and Sport stocks merchandise on walls almost to this level. The halogen track lighting on the skate wall provides floor-to-ceiling accent lighting as well as perimeter lighting above the skates. More track lighting is being considered to cast the same effect on other wall areas.

Lumens per watt, halogen is the most efficient incandescent lamp available. Its color is whiter, brighter than any other incandescent, with high color rendering index and rich textures and colors. The lamps have long life, high center beam candlepower, with excellent lumen maintenance.

## QUALITY LIGHTING SOLUTION

Ambient lighting in the store is supplied by forty 18-cell ceiling parabolic luminaires, each with three T-8 lamps and electronic ballasts. The fixtures are arrayed in four rows of 10 running the length of the store, 10 by 12-foot on center. The fixtures are mounted on an 11-foot high drop ceiling constructed with 2 by 4-foot acoustical panels.

Providing the mini track lighting for the skate wall and skate sharpening area are white gimbal ring heads, each holding a 50PAR30 (50W) halogen flood lamp. The two rows of track fixtures make the store's lighting look consistent.

## IMPRESSIONS

For Robert Ouellette, lighting is the icing on the cake on top of many store improvements. "Without proper lighting, we couldn't put forth the professional, clean looking, eye appealing presentation that we have," he says.

The lighting creates a great impression for first-time customers, helping draw new customers. "People feel a lot more comfortable walking in here," he says, adding, "We get tons of comments from customers."

## AND NOW THE NUMBERS

Light levels in the store average 50 footcandles, i.e., 35 to 40 footcandles between fixtures and 55 to 60 footcandles beneath fixtures. Display areas as low as bottom shelves remain in the 25 to 40 footcandles range. Light levels at 3-feet above the floor are relatively uniform. Toward the front of the store, the storefront window lifts light levels to above 100 footcandles on bright sunny days. (3.04KW fluorescent, 1.20kW. Total connected lighting load is 4.24kW incandescent). Lighting power density comes to below 1 watt per square foot.



"Without proper lighting, we couldn't put forth the professional, clean looking, eye appealing presentation that we have."

*Robert Ouellette, owner*

### COSTS

Total fixtures and lamps	\$5,433
Total installation labor	\$2,889
Installed system cost	\$8,322
Materials per square foot	\$1.25
Installation labor per square foot	\$0.66
Total cost per square foot	\$1.91

### SAVINGS

Demand reduction	1.2 KW
Watts saved per square foot	0.3 W/SF
Annual utility cost savings <sup>1</sup>	\$362

<sup>1</sup>Based on 3,120 hours per year usage and local utility rate of \$0.10 per kilowatt-hour.



The halogen track lights and a 4-foot fluorescent strip under the counter enhance safety for staff working with the skates, blades and sharpening tools.

## PROJECT SUMMARY

<b>Utility:</b>	Massachusetts Electric Company
<b>Utility Representative:</b>	Joanne Schepis-Stone
<b>Customer:</b>	Robert Ouellette
<b>Facility:</b>	Amesbury Skate and Sport
<b>Location:</b>	Amesbury, Massachusetts
<b>Space:</b>	Retail
<b>Area:</b>	4,343 square feet
<b>Ceiling Height:</b>	11 feet
<b>Fixtures Used:</b>	Metallux III 3/T8-lamp, 18-cell, white louvered parabolics. White gimbal ring track heads fitted with 50PAR30 halogen flood lamps.
<b>Mounting:</b>	Varies
<b>Light Levels Achieved:</b>	50 footcandles average
<b>Lighting Power Density:</b>	Under 1 Watt per square foot
<b>Lighting Specifier:</b>	Lighting Resource Management, Inc.
<b>Installing Contractor:</b>	Lighting Resource Management, Inc.



## THE LIGHTING KNOWHOW™ SERIES

The DesignLights™ Consortium publishes the *knowhow™ Series* for office, small retail, classroom and industrial/warehouse lighting. This *demonstrating lighting knowhow™ Case Study* highlights a specific installation of lighting that showcases quality, comfort and efficient use of energy. With members located throughout the Northeast and the Mid-Atlantic, the DesignLights™ Consortium is “a regional collaboration seeking to influence naturally occurring lighting events towards quality, comfort and efficiency.” The DLC includes among its members many electric utilities as active participants, as well as several other interested stakeholders. The DLC created these case studies with the intention of helping contractors and lighting specialists sell and deliver the benefits of high quality, energy efficient lighting to their customers in the commercial building market.

### Efficiency Vermont

#### Long Island Power Authority

#### National Grid

- Massachusetts Electric
- Narragansett Electric
- Granite State Electric
- Nantucket Electric

#### Northeast Energy Efficiency Partnerships, Inc.

### Northeast Utilities

- The Connecticut Light and Power Company
- Western Massachusetts Electric Company

#### New York State Energy Research and Development Authority

#### NStar Electric

#### United Illuminating Company

#### Unitil

- Fitchburg Gas and Electric Light Company



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