

COMBINING
ENERGY EFFICIENCY
AND QUALITY DESIGN

SALEM PLUMBING SUPPLY— DESIGNER BATH

A *knowhow*™
CASE STUDY

demonstrating lighting



"We did it professionally. The manufacturers are pleased with the way we present their products. The atmosphere is uplifting for customers and employees; it makes me cheerful. It's a real selling tool."

Ralph Sevinor, owner.

Salem Plumbing Supply – Designer Bath, located in Beverly, MA, has a brand new high quality lighting scheme that adds sparkle to its high-end bathroom fixtures, faucets, vanities, and similar goods that it retails. Ambient light from 57 suspended parabolic luminaires in an open ceiling spreads clean, bright and comfortable light throughout the 6,247 square foot store. Additional punch thrusts from 115 halogen track lights interspersed among the parabolics, accenting the finish of the merchandise.

The new lighting scheme has provided the best rendering of Salem Plumbing Supply's fine chrome, brass and copper fixtures and fittings, ceramic tubs and sinks. All are well presented in either wall-mounted or freestanding displays.

PROBLEMS OVERCOME

Previously, light levels and quality had degraded in the 5,175 square foot main store area from old, yellowing prismatic lensed luminaires. In the store's recently remodeled 1,072 square feet area, incandescent track lighting created glare so uncomfortable that customers had to squint.

The new lighting design corrected the glare in the remodeled space that was lit solely by fifty-eight 150-watt incandescent track lights. The lamps pointed every which way, projecting hot, uncomfortable, glaring light. "Every way you turned, the light was hitting you in the face, making you squint," says lighting designer Rob Quintal of Lighting Resource Management, Inc.



Employees were constantly re-positioning the track heads. The high watt-consuming incandescents were also wasting energy as energy density in the renovated area reached 8 watts per square feet.

Lighting in the 115 by 45-foot main showroom needed upgrading as well. Light output of thirty-four 2 by 2 prismatic lensed luminaires deteriorated from age, dirt, and yellowing of lenses. Lighting efficiency had degraded considerably over fifteen years. The luminaires had served their useful life. Supplementing the prismatic luminaires were eighty-one 150-watt incandescent track lamps, which also had a tendency to add excessive glare to the space.



Light output of thirty-four 2 by 2 prismatic lensed luminaires deteriorated from age, dirt, and yellowing of lenses.

DESIGNLIGHTS
CONSORTIUM

demonstrating retail lighting *knowhow*™

COMBINING
ENERGY EFFICIENCY
AND QUALITY DESIGN



The halogen track lights accent the finish of the bath fixtures by catching the eye of the consumer without being obtrusive.

LIGHTING QUALITY

In upgrading Salem Plumbing Supply's lighting, DesignLights™ Consortium member, Massachusetts Electric Company, and Lighting Resource 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. "We decided to light the space properly," said Rob Quintal.

The storewide parabolic luminaires improve ambient lighting with high color rendering and little or no glare on the shiny chrome, brass, copper, and porcelain bath fixtures and accessories. The lighting is even and comfortable throughout the store. The luminaires are fitted with T8 fluorescent lamps, which have a color temperature of 3500K and a color rendering index (CRI) of 82. Average footcandle levels on the showroom floor have risen from 30 to 40 footcandles.

The halogen track lights accent the finish of the merchandise at 75 to 100 footcandles, providing sparkle to the wallboard and floor displays. This shine on the bath fixtures' chrome, brass and copper catches the eye without being obtrusive.

QUALITY LIGHTING SOLUTION

In the main showroom, Quintal replaced the prismatic luminaires nearly one for one with forty-two 9-cell, white louvered parabolic luminaires, each powered by two T8 U-lamps and electronic ballasts. The luminaires, suspended 9.5-feet above the floor fixed to open bar joists, create a "virtual ceiling." As in the original layout, the parabolics are arrayed in four rows of ten on 8-foot centers. Interspersed among the parabolics are eighty-five 50WPAR30 (50-watt) halogen narrow flood lamps in new WAC track heads that maximize emitted light.

In the 1,072 square foot remodeled area, Quintal says, "We ripped out two-thirds of the track heads and put up fifteen parabolics, accented by thirty 50WPAR30 halogen lamps in new WAC track heads replacing the remaining heads." The lighting spacing is the same as the rest of the store.

Sleek new luminaires, engineered to achieve optimum illumination and visual comfort, feature white louvered baffles curved in parabolic shape. Cell louvers control light through precisely contoured surfaces in the optical assembly. Light is distributed with less glare and better light control. Aesthetics improve with better quality, even light.



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)			✓

COMBINING
ENERGY EFFICIENCY
AND QUALITY DESIGN



The louvers cut off views of the bright lamps at normal viewing angles, lowering the luminaires' brightness unless you stand directly under one of them and look up.

For the track lighting, 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.

IMPRESSIONS

"We did it professionally. We received lots of oohs and aahs from customers, the merchandise looked so good," Salem Plumbing Supply owner Ralph Sevinor says of the new lighting design. "When I returned from vacation after the work was done, it looked like a new store. The high-end products are shown in an excellent light."

"The products are lit correctly. The manufacturers are pleased with the way we present their products. The atmosphere is uplifting for customers and employees; it makes me cheerful. It's a real selling tool," Sevinor continued.

AND NOW THE NUMBERS

The energy-sparing lamp replacements in the showroom and remodeled area save 14 kW to reduce Salem Plumbing Supply's annual energy bill by \$3,500. Payback for the installation is possible in six years. Storewide lighting power density falls to below 1.4 watts, compared to 3.7 watts per square foot previously.

The relighting marked Sevinor's second round of energy savings. Seven years ago, Massachusetts Electric Company helped Salem Plumbing Supply improve lighting energy efficiency (in the offices, stock room, shipping and receiving spaces) by installing electronic ballasts and energy-saving T8 U-lamps. Sevinor says he saw a dramatic change in his electric bill then.



This shine on the bath fixtures' chrome, brass and copper catches the eye without being obtrusive.

COSTS

Total fixtures and lamps	\$13,880
Total installation labor	\$5,723
Miscellaneous costs	\$972
Installed system cost	\$20,575
Materials per square foot	\$2.22
Installation labor per square foot	\$0.92
Total cost per square foot	\$3.30

SAVINGS

Demand reduction	14.2 KW
Watts saved per square foot	2.27 W/SF
Annual utility cost savings ¹	\$3,538

¹Based on 2,500 hours per year usage and local utility rate of \$0.10 per kilowatt-hour.

COMBINING
ENERGY EFFICIENCY
AND QUALITY DESIGN



PROJECT SUMMARY



- Utility:** Massachusetts Electric Company
- Utility Representative:** Kathleen Callahan and Marie Raphael
- Customer:** Ralph Sevinor
- Facility:** Salem Plumbing Supply – Designer Bath
- Location:** Beverly, Massachusetts
- Space:** Retail
- Area:** 6247 square feet
- Ceiling Height:** 9 feet 6 inches
- Fixtures Used:** Day-Brite 2/T8 U-lamps, 9-cell, white louvered parabolics. WAC track heads using gimbal ring heads with 50WPAR30 halogen narrow flood lamps.
- Mounting:** Varies
- Light Levels Achieved:** 40 footcandles average (horizontal) with 100 footcandles of accent lighting.
- Lighting Power Density:** 1.4 Watts per square foot
- Lighting Specifier:** Lighting Resource Management, Inc.
- Installing Contractor:** 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



Prepared by Weller & Michal Architects Inc. with WV Engineering Associates PA.
Technical writing by Robert S. Seeley. Photography by George Leisey. Graphic Design by Braden Printing, Inc.

Disclaimer: These studies are provided for information purposes only. Neither the Sponsoring Agents nor any of their employees or sub-contractors makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product or process disclosed in this document, or represents that its use will not infringe any privately owned rights, including, but not limited to, patents, trademarks or copyrights.