

OCTOBER  
1999

# architectural lighting

1999

APPLICATIONS ISSUE

*Projects & Products*

A MILLER-FREEMAN PUBLICATION

U.S. \$7.00

[www.archlighting.com](http://www.archlighting.com)

[www.lightforum.com](http://www.lightforum.com)



# Ciros

A graceful, curved extrusion, with subtle grooves along the upper housing to create an intriguing luminance pattern, combined with a diecast endcap, provide the aesthetic for a high-performance direct/indirect luminaire.



A unique connector hub for adjustable fixture corners or connections of 3 or 4 fixtures in patterns.

Design flexibility and superior performance characteristics - high efficiencies, variable distributions with up to four T8 lamps, separate direct and indirect lamp chambers, and multiple diffuser options to meet the most demanding lighting design requirements.

*Another distinctive performance luminaire from Litecontrol.*

Call Litecontrol or your local Litecontrol representative or visit our website for more information.

 **LITECONTROL**

100 HAWKS AVENUE HANSON MA 02341 781 294 0100 FAX 781 293 2849 [info@litecontrol.com](mailto:info@litecontrol.com) [www.litecontrol.com](http://www.litecontrol.com)

Circle No. 1 on product service card

## See Your Designs in a Better Light



Lutron's new Tu-Wire™ Ballast has it all:

- Small size for more design flexibility
- 2-wire power and control for easier installation
- 5% dimming for architectural performance
- Superior energy efficiency vs. incandescent

Announcing new models!

- For 18, 26 and 32W compact lamps
- For T8 32W linear lamps



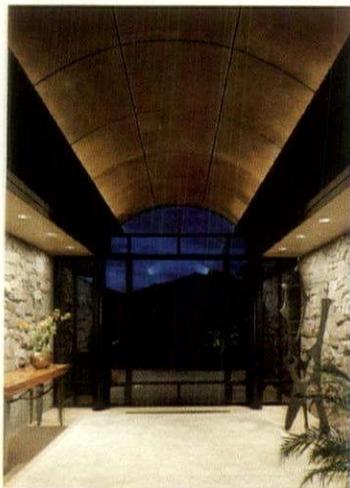
### Fluorescent dimming just got better— and easier—with new Tu-Wire™ Electronic Dimming Ballasts from Lutron.

Lutron's new Tu-Wire™ dimming ballasts make it easy to design efficient architectural compact fluorescent lighting systems for demanding commercial *and residential* applications. The first of a new ballast family, Tu-Wire delivers the superior performance you expect from Lutron—the inventor of the electronic dimming ballast.

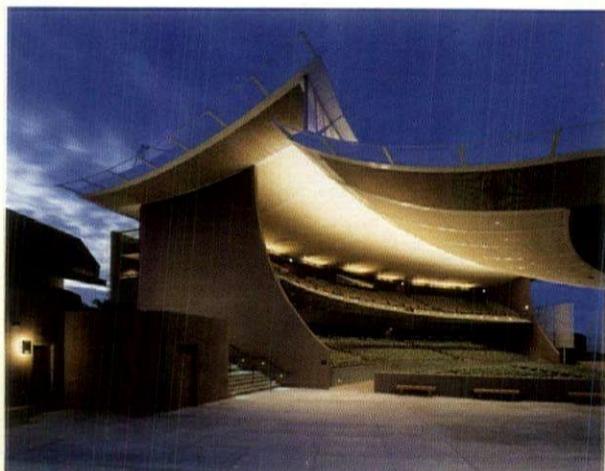
Combine new Tu-Wire's features with Lutron's many lighting control options, and you'll see why specifier's count on Lutron, the leader in quality fluorescent dimming for over 25 years.

For more information, call toll free 1-877-2LUTRON, Ext. 115

**LUTRON**  
www.lutron.com



RED MOUNTAIN RESIDENCE 16



SANTA FE OPERA THEATER

24

### PROJECTS

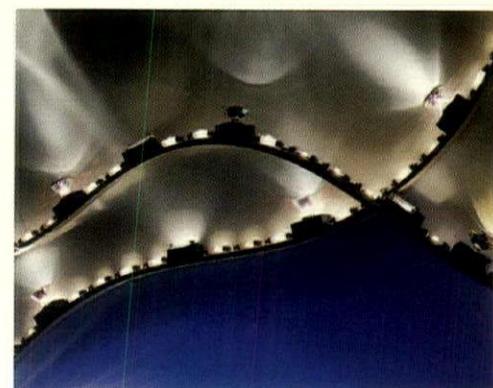
- 12 **Tricks of the Trade**  
Nautical themes inspire the lighting design of this Connecticut bank and trading floor
- 16 **Art & Leisure**  
A glowing example of Aspen life, this residence uses lighting to enhance both art and architecture
- 20 **Standing Tall**  
The historic Chicago Water Tower holds a place of honor in the Toddlin' Town's diverse skyline
- 24 **Peak Performance**  
This open-air theater in Santa Fe features a graceful design, working harmoniously with its surroundings
- 28 **Perfect Fit**  
The L Collection, an upscale boutique, offers its customers a sleek and clean retail environment
- 30 **Research Project**  
The lighting design and architectural team do a little R&D to determine the best solution for lighting a Boston research center

### PRODUCTS USED IN...

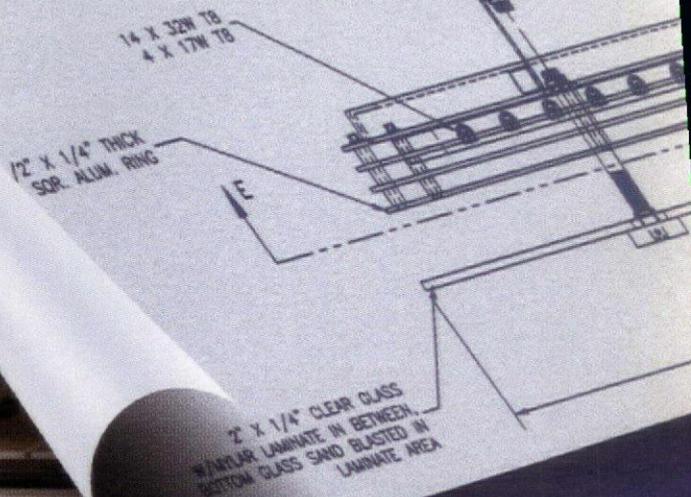
- 34 **UBS Center**
- 36 **Red Mountain Residence**
- 39 **Chicago Water Tower**
- 40 **Santa Fe Opera Theater**
- 40 **L Collection**
- 44 **Boston University Center for Photonic Research**

### DEPARTMENTS

- 6 **Editorial**
- 9 **Updates**



# Lighting Solutions at Your Fingertips



Over the last decade, Kramer Lighting has established a reputation as a premier manufacturer of the highest quality luminaires, second to none in meeting the custom lighting needs of designers and specifiers. Now after years of research and successful custom projects, Kramer Lighting introduces a comprehensive catalog of lighting design solutions for your architectural, commercial and retail applications.

Kramer Lighting's total project approach to your lighting essentials results in the most striking and highest quality luminaires, designed to adapt to the real world of construction projects. Our advanced engineering department, equipped with state-of-the-art 3-D software, fast-tracks new designs without physical prototypes. Whether your lighting requirements run to standard items or tailored specials, the responsiveness, adaptability and uncompromising manufacturing techniques of Kramer Lighting will delight your most exacting customer.

Visit our web site or ask your representative for a copy of the new Kramer Lighting catalog - and see the more than 1,200 luminaires we call standard.

Kramer Lighting...  
Examine the Design Possibilities

401-849-5100  
FAX 401-849-5119  
[www.kramerlighting.com](http://www.kramerlighting.com)

# Kramer Lighting

An Advanced Lighting Technologies Company

Project: Charles Evan Whittaker U.S. Courthouse, Kansas City, MO  
Architect: Ellerbe Becket  
Engineer: William Tao Associates  
Photograph: Courtesy of Timothy Hursley

© 1999 Kramer Lighting Middletown, Rhode Island, USA 02842

Circle No. 3 on product service card

# architectural lighting

Editor-in-Chief

CHRISTINA TRAUTHWEIN  
(212) 615-2631  
ctrauthwein@mfi.com

Publisher

CRAIG DILLOUÏE  
(212) 615-2304  
cdilouie@mfi.com

Art Director

JEANNE LAWLOR  
(212) 615-2273

Assistant Editor

ALICE LIAO  
(212) 615-3067  
aliao@mfi.com

#### CONTRIBUTING EDITORS

WANDA JANKOWSKI, JEAN GORMAN, DAVID HOUGHTON, PE

#### EDITORIAL ADVISERS

RENEE COOLEY, RENEE COOLEY LIGHTING DESIGN  
HOWARD BRANDSTON, LC, FIALD, FIES, H.M. BRANDSTON & PARTNERS  
GARY STEFFY, LC, FIALD, GARY STEFFY LIGHTING DESIGN  
RAND ELLIOTT, FAIA, ELLIOTT + ASSOCIATES ARCHITECTS

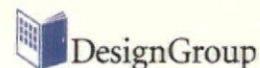
Group Publisher	PHILLIP A. RUSSO	(212) 615-2368
Production	VINCE HABICK	(415) 905-2454 fax (415) 905-2236
List Rental		(847) 619-9800 fax (847) 619-0149
Circulation	WENDY SAAR	(212) 615-2687 fax (212) 279-4460
	CUSTOMER SERVICE	(800) 255-2824 fax (847) 647-5972
Reprints	VICKI BREWSTER	(516) 365-2646 fax (516) 681-7315 62 Northwoods Rd. Manhasset, NY 11030

#### ADVERTISING SALES

NORTHEAST/INTERNATIONAL	CLIFF SMITH	(212) 615-2649 fax (212) 279-3955
CENTRAL	MARIE KOWALCHUK	(773) 792-1830 fax (773) 792-1831
WEST	JON HENG PATRICIA OLAIZ HENG	(626) 799-3610 fax (626) 799-5853
CLASSIFIED SALES		(212) 615-2727 fax (212) 279-3955

#### MILLER FREEMAN, INC.

CEO/Miller Freeman Worldwide: Tony Tillin; Chairman/Miller Freeman Inc.: Marshall W. Freeman;  
CEO/Miller Freeman Inc.: Donald A. Pazour; Executive VP/CFO: Ed Pinedo; Executive VP: John Pearson;  
Executive VP: Galen Poss; Executive VP: Darrell Denny; VP/Circulation: Jerry Okabe;  
Senior VP/CIO: Lynn Reedy; Senior VP/Human Resources: Macy Fecto;  
Senior VP/Building Group: Mark Kliensky



#### MILLER FREEMAN DESIGN GROUP

Architectural Lighting	Contract Design	Facilities Design & Management
ASID Design Power	Alt.office Journal	Alt.office Conference & Expo
InterPlan	The Design Show	Batimat Design-Build

Miller Freeman, Inc., division of United News & Media,  
One Penn Plaza, New York, NY, 10119-1198  
Telephone (212) 714-1300 Fax (212) 279-3955  
[www.archlighting.com](http://www.archlighting.com), [www.lightforum.com](http://www.lightforum.com)

Miller Freeman  
A United News & Media publication

ARCHITECTURAL LIGHTING/[www.lightforum.com](http://www.lightforum.com)

## The "E" Series

By now we all know the advantages of metal halide lamps. The second generation of fixtures from **Times Square Lighting** has arrived. Clean lines, lightweight, and no one can tell where the ballast is...A thing of beauty!

Available in

Par30

Par38

And Linear.

**TIMES SQUARE**  
LIGHTING

Route 9W  
Stony Point, NY 10980  
914.947.3034  
914.947.3047(fax)  
[www.tslight.com](http://www.tslight.com)

Circle No. 4 on product service card

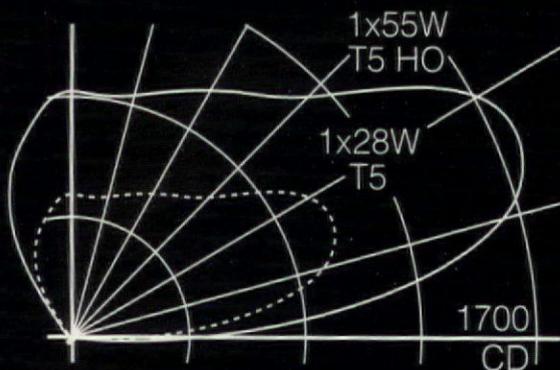
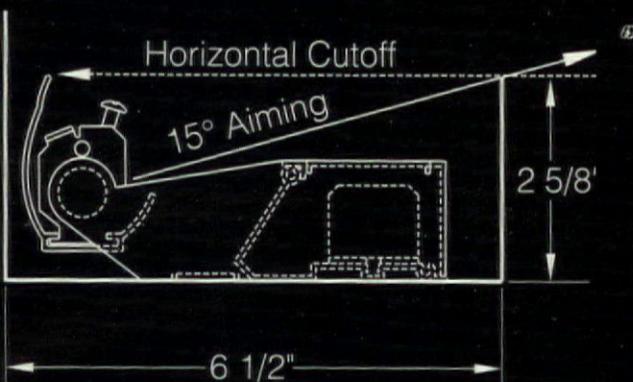
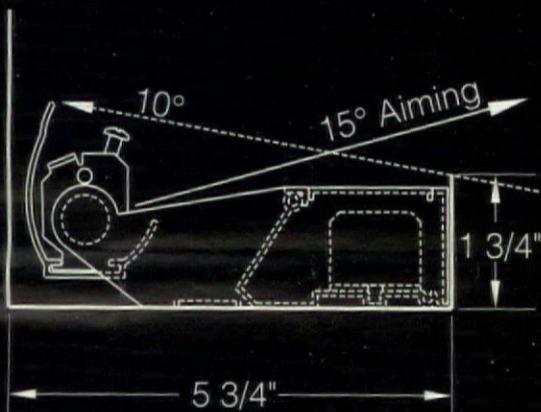
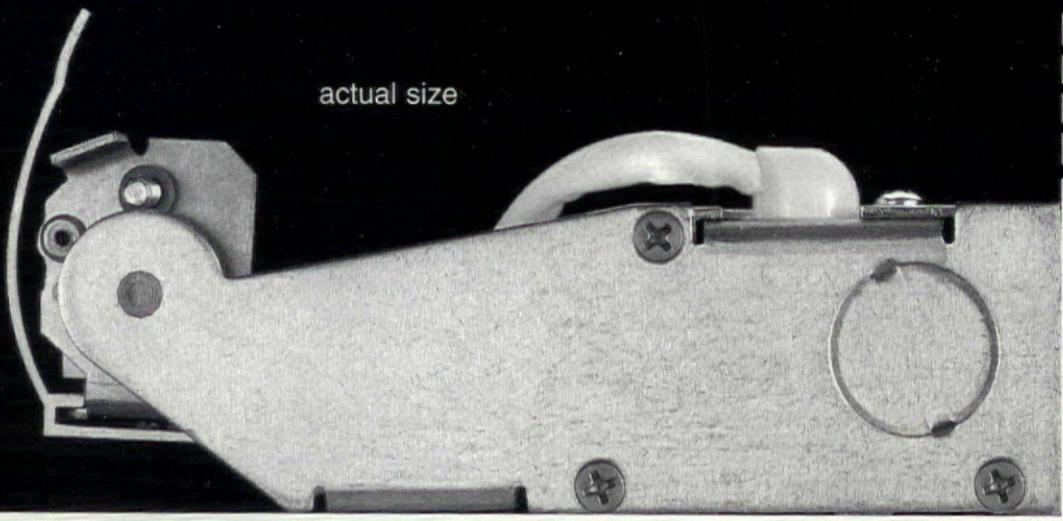
**size  
matters...**

performance, too

your cove just  
got smaller

### Style F305

- T5 fluorescent
- linked, adjustable and lockable aiming\*
- all aluminum and stainless steel construction



\*U.S. Patent No. 5,550,725 and foreign.



**elliptipar**  
... there is no equal™

114 Orange Avenue  
West Haven, CT 06516  
203.931.4455 Fax: 203.931.4464  
[www.elliptipar.com](http://www.elliptipar.com)

Circle No. 5 on product service card

## BOLD & BEAUTIFUL

When *Architectural Lighting* was delivered to your office this month, many of you might have been surprised by its size. In fact, you may be wondering, "Why the change?" Well, for this specific edition—the 1999 Applications Issue—the magazine staff wanted to showcase selected projects in a particularly dramatic and striking manner—allowing readers to truly be captivated by the pictorial beauty of the designs and hone in on the details.



PHOTO BY CHRIS LAMB

CHRISTINA TRAUTHWEIN  
EDITOR-IN-CHIEF

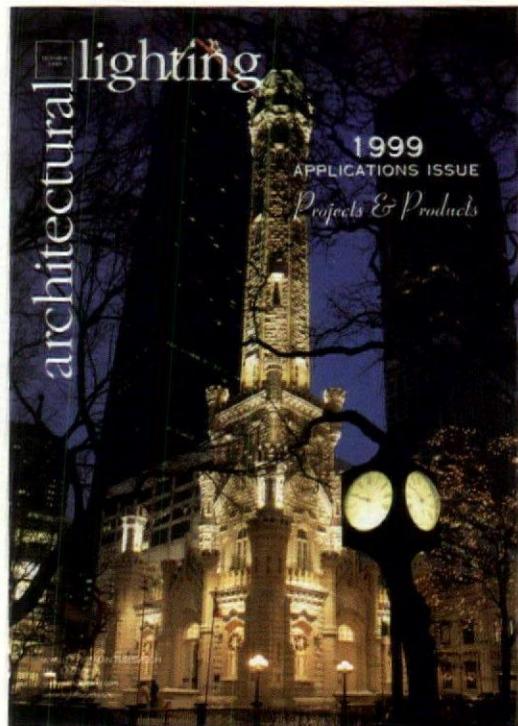
A first for our magazine or any other lighting publication, the Applications Issue was conceived as a result of readers' requests for "more projects, more products." In response to that demand, the editors decided to marry the two in a rather unique way—an issue dedicated to detailing

both the projects and the products used within them. We know our readers have eagerly awaited this concept, and we feel that it will provide a tremendous service in designing your projects.

On the following pages you will view a stunning range of applications both indoor and outdoor, spanning the major vertical markets—from office to residential—and then learn, through photos and descriptions, the primary products used in the projects, as suggested by the lighting specifier.

On a final note, the editors at *Architectural Lighting* want to review *your* best lighting project for consideration in our magazine. We're interested in creative, innovative and practical lighting solutions. Send us your project—include a written description explaining the objective, scope, philosophy and planning in as much detail as possible; sharp, high-quality color transparencies focused on the lighting achievements (either 4x5s or 35 mm slides); and, if possible, sections or technical details that illustrate the solutions, any special fixtures, installations or other notable features of the project.

By sending us your work for possible publication, not only will your work be showcased in the



best light possible, you will be able to share your successes with your peers, enabling them to learn from your solutions and to incorporate your ideas and suggestions into their next challenging project.

We're anxious to hear your thoughts about this issue. Drop me a line and tell me what you think... ■

### A CROWNING ACHIEVEMENT IN FIXTURE DESIGN

Each member of Lumière's Coronado line of metal halide fixtures is a unique specification grade fixture designed to use the newest in high technology natural color rendering metal halide lamps.

Unique, timeless, and patented design, and patented fixture aiming mechanism set these fixtures at the summit, above all others in their class. The ADEX Award winner for landscape lighting, the Coronado series adds to the long roster of Lumière fixtures honored for design excellence.

Available in versions to accept the PAR 20, 35 watt (Cat. #720), PAR 30, 35 or 70 watt (Cat. #730, pictured), and PAR 38, 70 or 100 watt (Cat. #740) metal halide lamps. Coronado fixtures can be mounted in the ground, on trees or walls, and can be remoted from their waterproof composite ballast compartment.

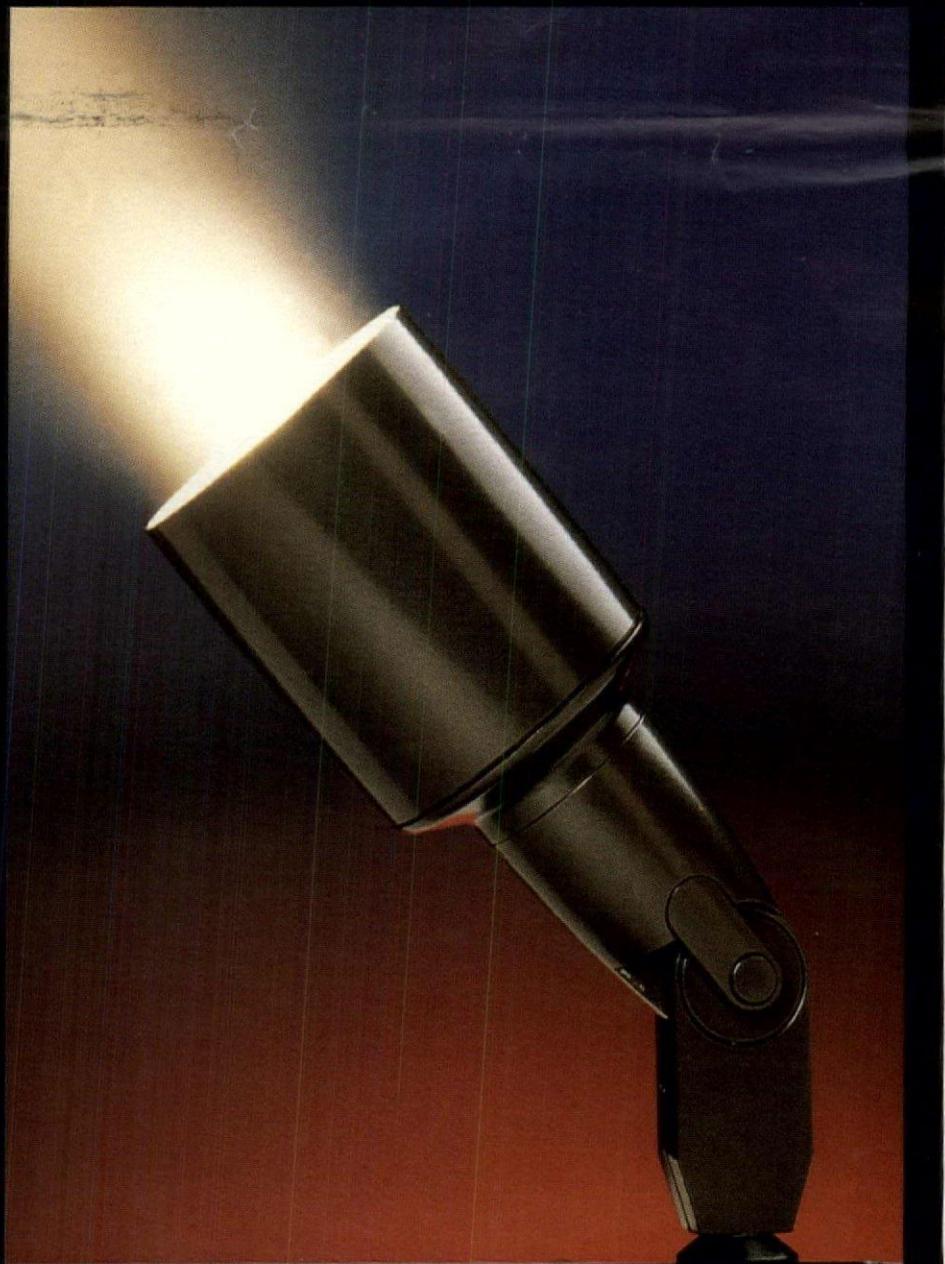
Another groundbreaking, award winning fixture?

Of course, its Lumière!

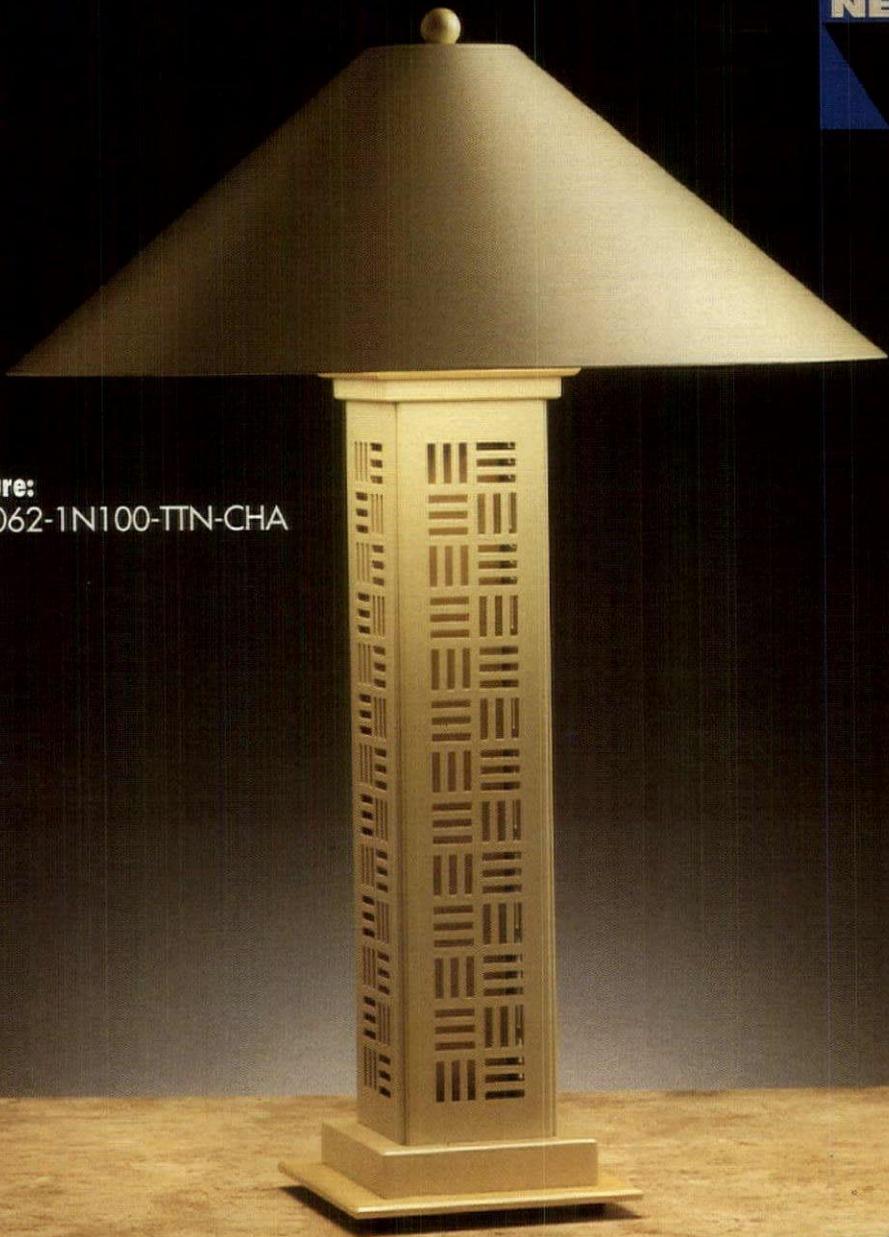


Lumière

COOPER Lighting

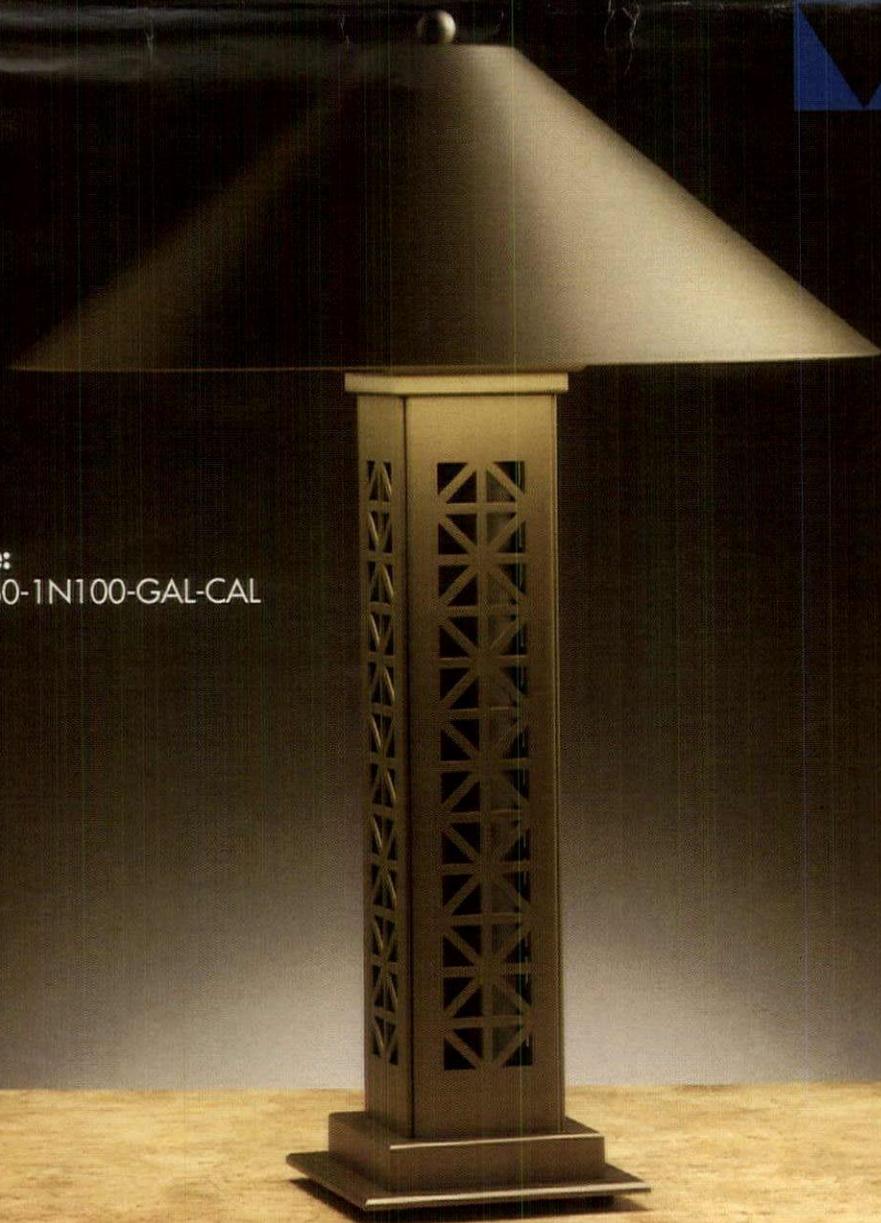


NEW



Fixture:  
TF1062-1N100-TTN-CHA

NEW



Fixture:  
TF1060-1N100-GAL-CAL

# LODGE FACTS...

With logical architectural detailing and fresh geometry these lamps exemplify our artistic craftsmanship in portable fixtures. The rigid mount option makes these lamps ideal for spec public space with styling variations to fit any interior.

Compact fluorescent or incandescent versions are available with linen or solid spun metal shades in numerous finish options.

 **VISA LIGHTING**  
An Oldenburg Group Company

8600 West Bradley Road • Milwaukee, Wisconsin 53224  
414-354-6600 • Fax: 414 354-7436  
[www.visalighting.com](http://www.visalighting.com)

# 1-800-788-VISA

Circle No. 7 on product service card

# COOPER Lighting



*The Source for Bright Ideas*

Call 1.847.806.3586 or visit us at [www.cooperlighting.com](http://www.cooperlighting.com)

**HALO**<sup>®</sup>

**HOMELUX**<sup>®</sup>

**LUMARK**<sup>®</sup>

**SURE-LITES**<sup>®</sup>

**Metalux**<sup>®</sup>

Portfolio<sup>™</sup>

neoney<sup>™</sup>

FAIL<sup>~</sup>SAFE<sup>®</sup>

Lumière<sup>®</sup>

USL<sup>®</sup>  
Universal Sports Lighting

**UTILITY**  
LIGHTING SOLUTIONS

McGRAW-EDISON<sup>®</sup>  
The Architecture of Form & Light

IRIS<sup>™</sup>  
LIGHTING SYSTEMS

OPTIANCE<sup>®</sup>  
BY SUPERVISION<sup>®</sup>

**MWS**<sup>®</sup>  
Modular Wiring System

Circle No. 8 on product service card

## TIVOLI MERGES WITH TARGETTI

In a joint announcement, **Tivoli Industries, Inc.** and **Targetti Sankey, SpA** announced that they have entered into a merger agreement in which Tivoli will become a wholly owned subsidiary of Targetti. "Targetti is pleased about this merger with Tivoli because it emphasizes our strong commitment to continued growth within the U.S. and North American markets. Our relationship with Tivoli through our joint venture—Targetti USA—has established a successful framework and foundation upon which to continue our marketing and sales efforts," said Paolo Targetti, president of Targetti Sankey, SpA. "The two companies have complemented each other from a product, market, cultural and organizational perspective. Tivoli's reputation as a high-end specialty lighting supplier provides expanded opportunities to increase exports from the U.S. to Europe, the Pacific Rim and South America."

Terrance C. Walsh, chairman and CEO of Tivoli Industries, will remain with the new firm as vice chairman and CEO. Charles F. Kimmel, currently Tivoli's president, will retain this position in the new organization.



# ZOOMS

Imagine. . .

projecting any pattern,

any color,

any size,

from 15 to 40 degrees.

ZOUNDS !

For a BP75 information kit,  
send your letterhead to:

Lighting Services Inc

2 Kay Fries Drive

Stony Point, NY 10980

(800) 999-9574



[www.LightingServicesInc.com](http://www.LightingServicesInc.com)

Circle No. 9 on product service card

## TAKING THE SHOW ABROAD

Combine the wisdom and experience of internationally recognized lighting designers with the fresh

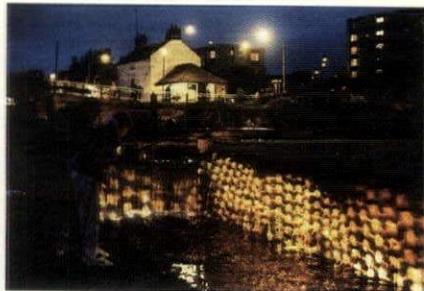
ideas and creativity of design students, then throw a global flavor into the mix, and the groundwork has been laid for remarkable lighting projects. This is what the **International Theatre Academy Rohr** did late July in Bochum, Germany. For five days, Paul Gregory of the U.S. and Jonathan Speirs of the U.K. led an architectural lighting design seminar and workshop for 25 students from nine countries—the students were all theater lighting professionals. Many of them were from the top theaters in their countries, yet they were beginners to exterior lighting techniques. Working with more than 20 fixtures, six desks, six technicians and one mile of cable, the students were able to test design ideas with a wide variety of equipment. Mornings and afternoons were spent in lectures, classes, group sessions and reviews, and evenings were spent familiarizing the students with fixtures and applying the lessons from the day to the city's buildings. Two sites were chosen for lighting, the bunker monument on Universitätsstrasse and the Paulus Church with the surrounding facades of the Spakasse and the Kortum-Karree, two dramatic and architecturally complicated buildings. According to Speirs, "The quick turn-around time between the conception and realization of ideas let the students respond intuitively to the design challenges that they were presented." Added Gregory, "The many different fixtures gave the students the freedom to experiment with almost any idea that they could imagine."

### Leni Schwendinger Light Projects Ltd.

created "Water Above Water: a Sublime Floating Landscape" at Glasgow's Maryhill Locks and Kelvin Aqueduct to celebrate the Aqueduct's history and extend site accessibility into the evening hours. On view earlier this year, the temporary art installation coincided with "Glasgow 1999: Year of Architecture and Design," a festival recognizing the involvement by local people in the redefining of their environment.

A consortium of over 70 participants worked together to interpret a design brief for Water Above Water's "imaginative canal craft," which illuminated Maryhill's locks and basins with a sparkling armada of light sculptures. More than 1,000 spectators visited the lighted Kelvin Aqueduct, which is listed as an "Ancient Monument" of Scotland and was built in 18th century.

Water Above Water is part of the Millennium Link, a project aimed at providing once again navigable water linkages between Edinburgh and Glasgow and restoring the Forth & Clyde and Caledonian waterways to their former glory.

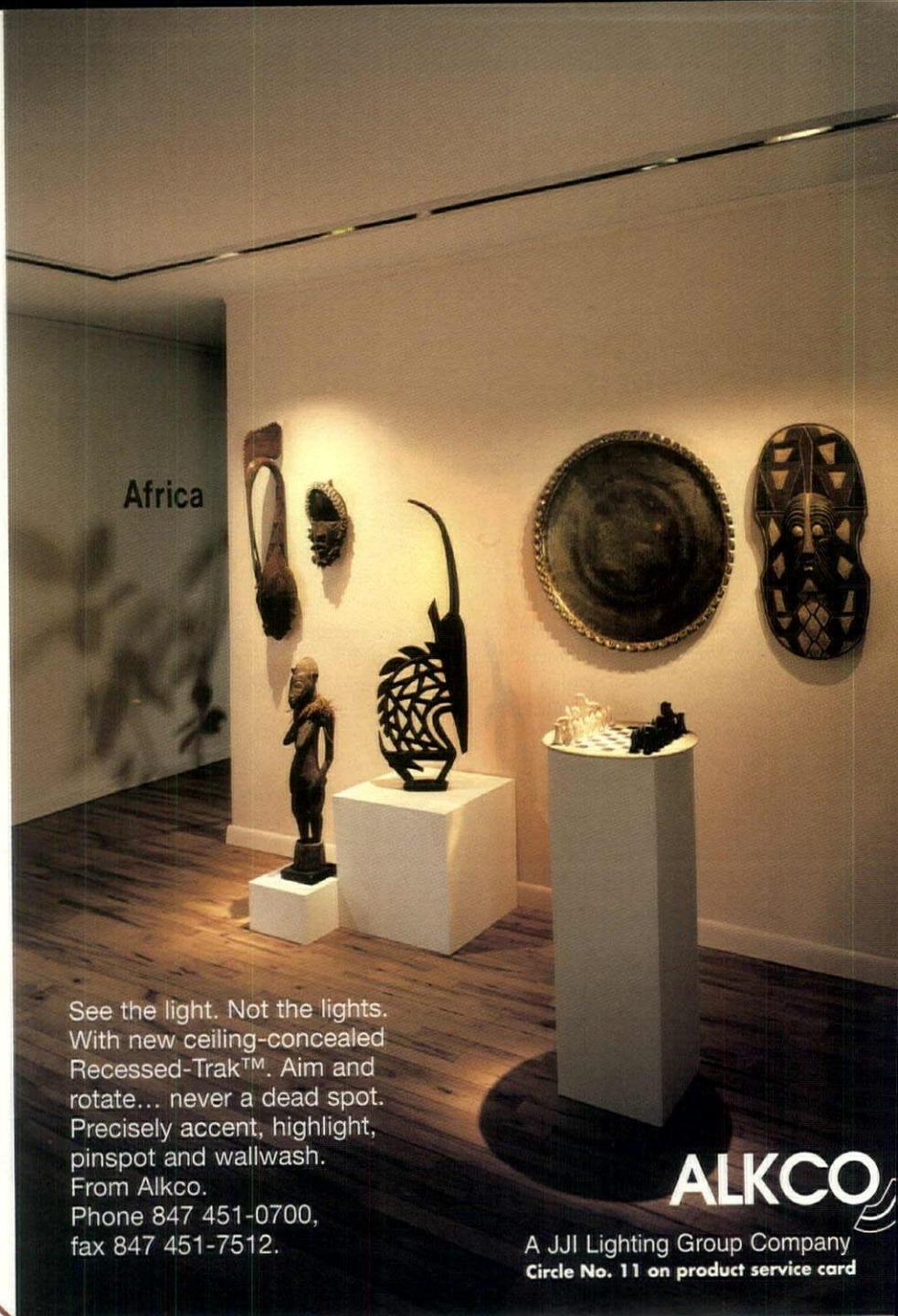


## AND THE AWARD GOES TO...

**Lumen Awards** were presented in late June at a reception held in the Grand Ballroom of the Manhattan Center in New York City. Paul Marantz and Hank Forrest of Fisher Marantz Stone (FMS) won an Award of Merit and a Citation for the interior and exterior of the Miho Museum in Shigaraki, Japan; Richard Renfro, formerly with Fisher Marantz Renfro Stone and Barry Citrin of FMS were awarded a Citation for the restoration of the Grand Central Terminal in New York City; Scott J. Hershman of FMS won a Lumen for the J. Paul Getty Center and the Getty Museum in Los Angeles; and Alicia Kapheim, Hank Forrest and Charles Stone of FMS won a Lumen for the New Jersey Performing Arts Center in Newark, NJ. For the Hall of Bio-Diversity at the American Museum of Natural History in New York City, Lumen Awards were presented to Chou Lien, Richard Dorfman and Jung Soo Kim of H.M. Brandston & Partners and Kyle Chepulis, Henry Chepulis and Matthew Smith of Technical Artistry. Francesca Bettridge and Daniel Rogers of Cline Bettridge Bernstein Lighting Design were presented an Award for the Estuarine Habitats and Coastal Fisheries Center in Lafayette, LA. The Lumen Feltman for retail projects was given to Rogers and Bettridge for the Tourneau Time Machine store in Manhattan; Bettridge and Michael Hennes won an Award of Merit for the Brooklyn Academy of Music; and Bettridge and Cline won a Citation for the Santa Fe Opera Theater in New Mexico (see story on page 24). Technical Artistry claimed the EPRI Lumen for an energy-efficient project for the Dzanga-Dangha Rainforest Diorama at the American Museum of Natural History; and an Award of Merit was presented to Lien, Kim and Scott Matthews at H.M. Brandston for the Petronas Twin Towers in Kuala Lumpur, Malaysia. Citations went to Domino Gonzalez Designs for Gantry Plaza State Park in Hunters Point, NY; Horton•Lees Lighting Design for the Dakota Jackson Showroom in Los Angeles; and Susan Brady and Kim Loren of Susan Brady Lighting Design for lighting the offices of Bloomberg in Princeton, NJ.

**The International Illumination Design Awards** committee of the Illuminating Engineering Society of North America has announced the 1999 IIDA recipients. The awards were presented at the IIDA luncheon, August 10, in conjunction with the IESNA Annual Conference held August 9-11 at the Sheraton New Orleans Hotel in New Orleans, LA.

This year, the winners of the Edwin F. Guth Memorial Award Special Citation were: Richard Renfro and Barry Citrin of Fisher Marantz Stone for the Grand Central Terminal; Patrick Gallegos, Karl Haas and Aram Ebben of Gallegos Lighting Design for the Long Beach Aquarium of the Pacific and Charles Lloyd of Visual Performance Inc. for Paint Inspection. Winning the Edwin F. Guth Memorial Award

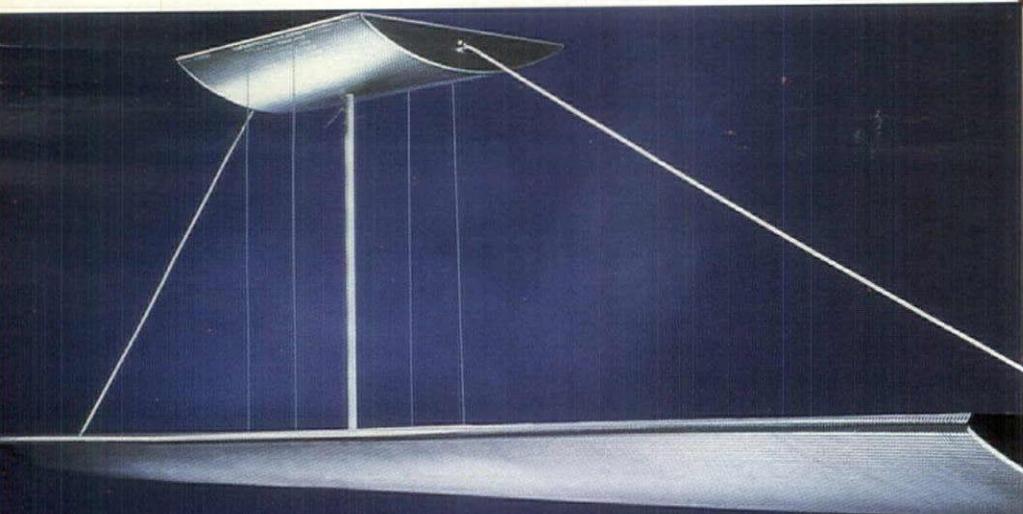


See the light. Not the lights.  
With new ceiling-concealed  
Recessed-Trak™. Aim and  
rotate... never a dead spot.  
Precisely accent, highlight,  
pinpoint and wallwash.  
From Alkco.

Phone 847 451-0700,  
fax 847 451-7512.

**ALKCO**

A JJI Lighting Group Company  
Circle No. 11 on product service card



Bridge to Y2K™: cunning, indirect  
lighting from architecturally-elegant,  
8-foot spans needing barely 12-inch  
clearances... full perf reflectors  
sparkle direct light down, eliminate  
shadow zones.

LAM Lighting Systems  
Phone 800 732-5213,  
fax 714 662-4515.

**LAM**

A JJI Lighting Group Company  
Circle No. 10 on product service card

of Excellence were: Barbara Horton and Stephen Lees of Horton•Lees Lighting Design, Inc. for the Dakota Jackson Showroom; Jonathan Speirs, Alan Mitchell, James Mason and Iain Ruxton of Jonathan Speirs and Associates for the Hal 900 Cemex Computer Centre; Ross De Alessi, Trish Connor, Andrew Pultorak of Ross De Alessi Lighting Design for MGM Grand Gateway of Entertainment; Roger Hale of Connell Wagner Pty. Ltd. and Rob Scowcroft of Thorn Lighting Pty Limited for the Olympic Park Rail Station; Denise B. Fong and Megan Strawn of Candela for the Pacific Science Center 3D IMAX Theater & Gallery Additions; and Craig A. Roeder and George A. Balle of Roeder Design for the Margaret and Trammel Crow Collection of Asian Art. The Edwin F. Guth Memorial Award of Distinction was awarded to Dr. Kisho Kurokawa and Hank Cheriex of Kisho Kurokawa Architect & Associates and Motoya Takami of Matsushita Electric Works, Ltd. for the Kuala Lumpur New International Airport.

For the lighting of Tower Grove Park's Victorian Age Ruins, the members of the IESNA St. Louis Section received the Paul Waterbury Award Special Citation. Projects awarded the Paul Waterbury Award of Excellence were: Centro Cultural de Merida Olimpo by Elias Cisneros Avila, Georgina Salazar Solis and Luis Castello Guadarrama of GA Iluminacion; Facade Illumination of Torre Colpatria by Robert Daniels, Brilliant Lighting Design; and the Miho Museum by Paul Marantz, Hank Forrest and Alicia Kapheim of Fisher Marantz Stone. The Paul Waterbury Award of Distinction was awarded to Miki Matsushita, Naoki Takayama of Miki Matsushita Lighting Design Co. Ltd. and Satoshi Ono of Matsushita Electric Works, Ltd. for the Fukuoka Tower Lighting Improvement Plan.

The Staples Distribution Center by Naomi Johnson Miller of Lighting Research Center, RPI won the EPRI Award of Excellence.

**The Illuminating Engineering Society of North America** has announced its 1999 award recipients. The IESNA Award program recognizes outstanding individual achievement and professionalism in the field of illumination through a variety of awards programs. The 1999 awards were presented at the IESNA Honors Luncheon, August 9, in conjunction with the IESNA Annual Conference.

This year, receiving the Distinguished Service Award were: William Brown, A.L.P. Lighting & Components Co., Inc.; Russell Churchill, retired, GE Lighting; Noel S. Florence, consultant; Delores Ginthner, University of Minnesota; John Green, Holophane Corporation; and Charles Loch, FIES, consultant. The IESNA Medal Award was presented to Howard Brandston, FIALD, H.M. Brandston & Partners. Winners of the Fellow Award were: Ivaldo C. Pasini, FIES, Public Works Government Services of Canada and Willard L. Warren, FIES, Willard L. Warren Associates, Inc. The Taylor Technical Talent Award was awarded to Eric E. Richman and Carol C. Jones of Pacific Northwest National Laboratories and JoAnne Lindsley, Lindsley Consultants, Inc. Winners of the Presidential Award were: Ronald E. Jamagin, Pacific Northwest National Laboratories; Ronnie Farrar, Duke Power Co.; and Gary Gordon, IALD, Gary Gordon, LLC.

## LAMP RECYCLERS FORM ASSOCIATION

The Association of Lighting and Mercury Recyclers recently formed to promote recycling and to support new EPA regulations that make it easier and more cost effective to recycle fluorescent lamps.

According to the EPA, the universal waste rule is designed to reduce the amount of hazardous waste items in the municipal solid-waste stream and to encourage the recycling of common hazardous wastes through reducing regulatory burdens for businesses.

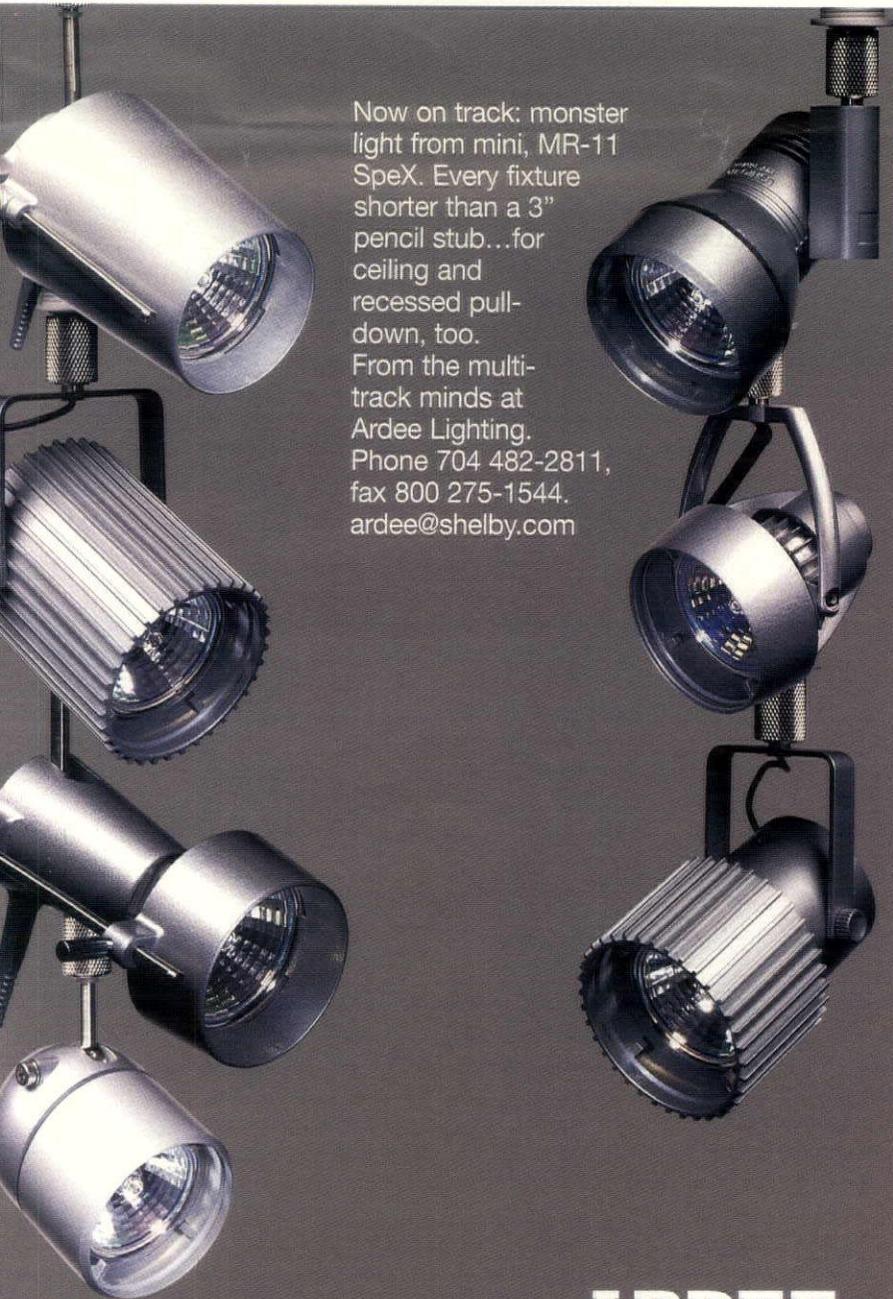
The recycling industry lobbied extensively for this regulatory change and in anticipation of the adoption of the EPA's new rule, the Association of Lighting and Mercury Recyclers was formed. The Association includes firms in the recycling industry that share common practices for the recovery of mercury and other materials and that operate a large majority of recycling facilities and equipment manufacturers in the U.S.

The Association's goals include the promotion of recycling for all mercury waste products and the expansion of recycling opportunities for businesses and governments across the country. "We support the development of government policies, programs and practices that promote the recycling of all lighting and mercury-containing items," said Paul Abernathy executive director of the Association.

Association companies subscribe to industry "Standards of Excellence" and "Best Management Practice" to ensure the highest quality of performance. Recyclers that process mercury-containing lamps separate hazardous mercury from the rest of the lamp components, recover clean glass and metallic parts and reuse as much of the other materials as possible.

## LIPA NAMES AUDITORIUM AFTER HIGH END SYSTEMS

The Liverpool Institute for Performing Arts (LIPA) has named the control room in the Paul McCartney Auditorium after Austin, TX-based High End Systems. The High End Systems Control Room was named in appreciation of the continued support High End Systems has shown to LIPA. High End Systems has donated a lighting console and automated fixtures to LIPA.

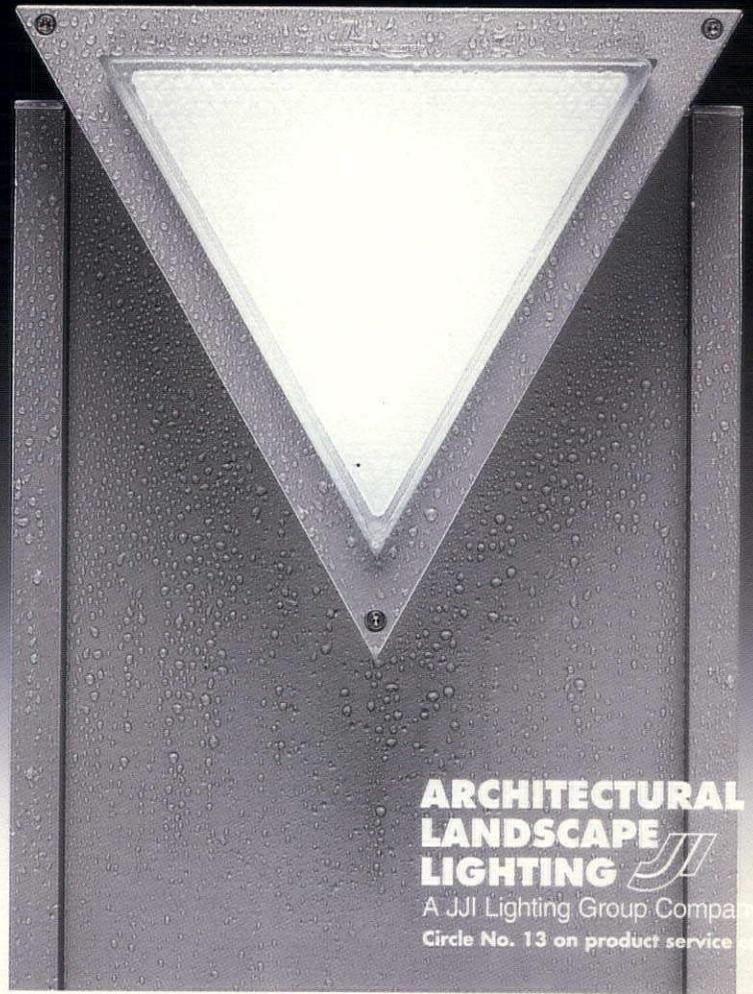


Now on track: monster light from mini, MR-11 SpeX. Every fixture shorter than a 3" pencil stub...for ceiling and recessed pull-down, too. From the multi-track minds at Ardee Lighting. Phone 704 482-2811, fax 800 275-1544. ardee@shelby.com

**ARDEE** 

A JJI Lighting Group Company  
Circle No. 12 on product service card

Metric. Page 21 in our new Portfolio. May it help broaden your vision of the future. For your copy... phone 714 668-3660, fax 714 668-1107. Architectural Landscape Lighting, Santa Ana CA



**ARCHITECTURAL  
LANDSCAPE  
LIGHTING**   
A JJI Lighting Group Company  
Circle No. 13 on product service card

## IESNA PUBLICATIONS

The IESNA *Lighting Handbook*, which includes explanations of concepts of lighting, techniques, applications, procedures and systems as well as detailed definitions, tasks, charts and diagrams is now available. The 9th edition is new—the "Lighting Design Guide" (Chapter 10) replaces the former illuminance recommendation table and changes the way lighting issues are considered. There are also revisions to "Theater, Television and Photographic Light," "Industrial Lighting, Sport and Recreational Facility Lighting," "Exterior Lighting," "Roadway Lighting," "Transportation Lighting" and "Underwater Lighting." The 9th edition of the *Lighting Handbook* is being offered at a pre-publication sales rate until December 15, 1999.

The IESNA also announces the publication of two new recommended practices: Lighting for Parking Facilities, IESNA RP-20-98 and Lighting for Exterior Environments, IESNA RP-33-99.

In addition, two revised lighting measurement guides are now available: Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps, IESNA LM-46-98 and Photometric Measurements of Roadway Sign Installations, IESNA LM-52-98.

To order any of these publications, contact Albert Suen at (212)248-5000, ext. 112.

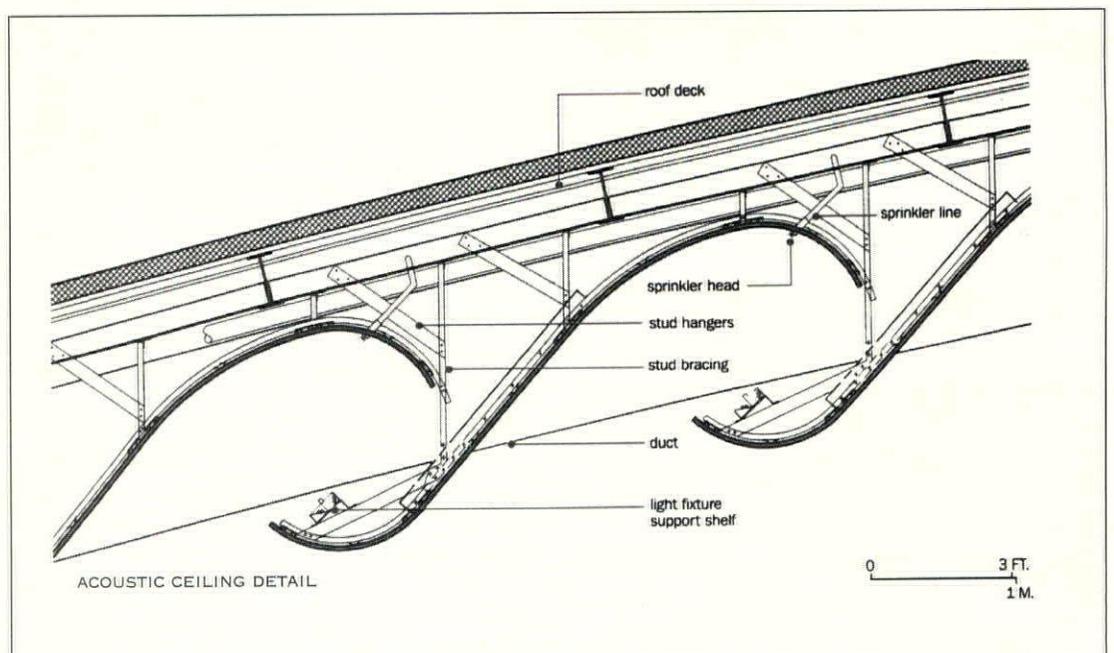
## WEBSITE LAUNCHES...

The **Holophane Corporation** has launched a website at [www.holophane.com](http://www.holophane.com). The site features a company profile, contact information, a schedule of seminars as well as information on basic lighting principles. Products are organized by categories and browsers can access reference literature, case histories and download multi-media presentations for each product.

**Venture Lighting International** has launched [www.venturelighting.com](http://www.venturelighting.com), a new website that offers information about metal halide lighting technology, along with information on the company's metal halide product line. Information ranges from basic to detailed product specification data on the company's line of metal halide lamps, ballasts and controls. Complete specification sheets and product data are also available.



IN THE LOBBY (ABOVE), FLUORESCENT STRIPLIGHTS SUFFUSE THE PEDESTRIAN BRIDGES WITH A BLUE GLOW; A FIELD OF CUSTOM CEILING PENDANTS PROVIDES CONTRAST, GIVING THE BANK A DRAMATIC PRESENCE AND IDENTITY IN THE EVENING. THE TRADING FLOOR (OPPOSITE) IS ILLUMINATED BY AN EXPANSE OF S-SHAPED ACOUSTICAL PANELS SUSPENDED BY CABLES AND SUPPORTED BY BOW TRUSSES. THE PANELS (RIGHT) ARE INDIRECTLY LIGHTED BY FLUORESCENT FIXTURES AND CONTAIN A DOWNLIGHT FOR DIRECT ILLUMINATION.



# Tricks of the Trade

LIGHTING DESIGNER STEPHEN MARGULIES DELVES INTO HIS LIGHTING PALETTE TO DESIGN A SCHEME FOR AN EAST-COAST BANK AND TRADING FLOOR

BY ALICE LIAO, ASSISTANT EDITOR

From ceiling pendants that glow like lighthouse beacons at night to the shimmering blue of a transparent lobby, the lighted UBS Center in Stamford, CT seems to bear traces of the sound—Long Island Sound—located not far in the distance. According to Skidmore, Owings & Merrill's project design partner, Mustafa K. Abadan, FAIA, "The buildings are full of nautical themes." The buildings he refers to include a 13-story office tower and an adjacent seven-story trading and parking facility which together, make up Phase I of a 12-acre development to be completed in three or more phases. When finished, the complex will provide 1,400,000 sq. ft. of offices, trading areas, parking facilities and public parks.

In lighting Phase I of this complex project, Stephen Margulies of Cosentini Lighting Design reinforced architectural concepts, developed systems that satisfied functional aspects and infused the space with beauty and drama. To do so,

Margulies also introduced special elements—one of which is blue lighting. Remarked Margulies, "When we first proposed the colored light, the client's response was, 'We're corporate America, not Times Square.'" However, as UBS's corporate color, the blue light helps give the bank a fitting presence after dark. "The atrium-like lobby becomes the public face of the bank and illuminated at night, it appears almost as a window that one can look into," said Abadan. "The different layers of lighting lend the space an incredible depth and richness."

Providing much of the dramatic focus in the evening, the seven-story structure houses the main lobby, a 50,000-sq.-ft. trading floor and a five-level enclosed parking facility. A cantilevered staircase and a sheet of fritted glass conceal the garage, separating it from the long and narrow atrium. Margulies took advantage of the glass layers to create an effect he likens to that of Lincoln Center in New York City. "At Lincoln Center, you can see people walking





behind the large windows in silhouette," explained Margulies. "Here, the parking structure is behind the lobby, so people emerge on different levels to travel along bridges that connect to the lobby spaces and elevators. We imagine a flow of bodies walking behind the glass in the morning and at night."

The lighting solution responds to the flow of traffic along these bridges as well as the architecture. Margulies remarked, "All the lighting in the reception lobby is quite linear and reinforces the shape of this glass box." At each level, tubes of cold cathode, recessed in a ceiling soffit, run along the underside of the pedestrian bridges. The bridges are separated from the rear wall by glass blocks located at the edge of the floor. The glass blocks transmit light from fluorescent striplights tucked inside hidden coves. At night, the striplights create a visible blue line on the floor, suffusing the passageways with drama and during the day, wash the wall in white light. "Because the color was a bit controversial, we tried to keep the lighting simple," Margulies explained. "Just in case the client didn't like the blue, we could always change it to a white light."

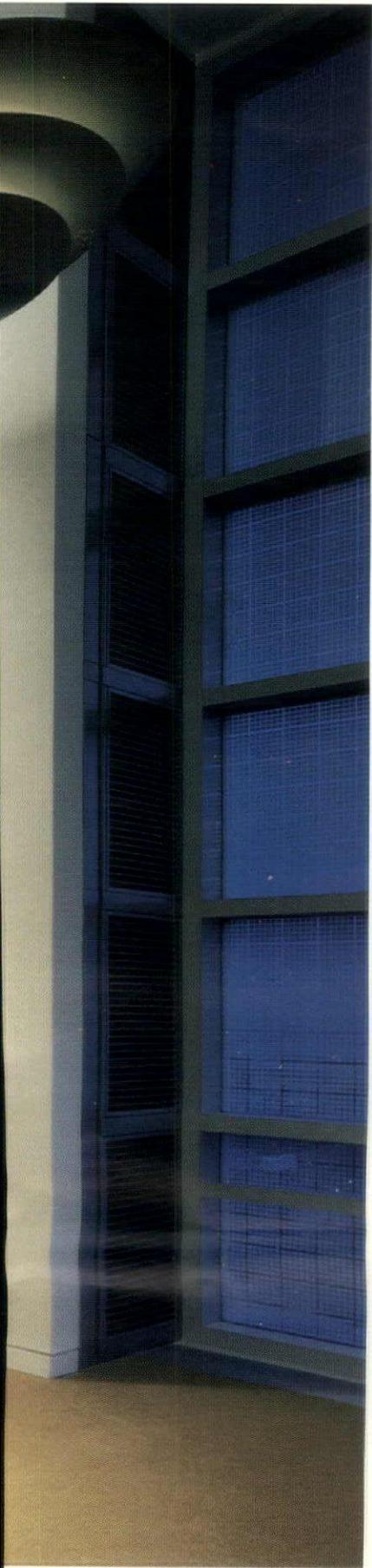
Other special features of the lobby include an onyx wall backlit by fluorescent striplights. The lamps are positioned 1 ft. on center in parallel rows to produce a "completely luminous field," with no visible lamp images or socket shadows. Said Margulies, "The light had to be very intense and very uniform, because the onyx picks up irregularities very easily." To enter the lobby, one passes underneath a frit glass patterned canopy. The canopy is lighted by floodlights mounted on a rear support bar over the entrance. A stretch of custom-designed pendants illuminates the ceiling of the lobby. The pendants are composed of wood panels lighted by a central downlight lamped with

low-voltage sources. Fluorescent striplighting integrated in the panels creates the illusion that the panels float.

#### NIGHT LIGHT

Located above the lobby area, the 50,000-sq.-ft. trading floor presented the design team with their biggest challenge. Accommodating 600 traders who often trade into the night, the large, open space features a northfacing clerestory and an arched ceiling whose height ranges from 30 ft to 50 ft. According to Margulies, illumination of the space would accomplish several objectives. "We wanted to create a lighting system that would be glare-free and produce adequate illumination levels for these people to perform their tasks," said Margulies. "Thirdly, the system also had to be interesting and architecturally dynamic." In response, the lighting design team and the architects at SOM developed the concept of a folded ceiling. "We arrived at this concept by brainstorming from the beginning on how to deliver so much light in such a high space, which was the major challenge," said Margulies.

Target illuminance levels for the trading area were 45 fc, which according to Margulies, "was pretty high." He added, "It's hard to produce 45 fc in a 50 ft. high space without having any glare." Supplying indirect lighting, a field of waved panels was suspended by cables from a skeletal structure and supported by bow trusses. The S-shaped acoustical panels are integrated and lighted with fluorescent fixtures measuring 4 ft. long. Each of the box-like fixtures contains four 40W bi-x lamps for



CUSTOM FIXTURES WERE USED THROUGHOUT THE BANK TO ADD VISUAL INTEREST AND BEAUTY. IN THE CONFERENCE ROOMS AT THE TOP OF THE OFFICE TOWER (LEFT), THEY PROVIDE INDIRECT LIGHTING AND FUNCTION AS A LIGHTHOUSE-LIKE ELEMENT AFTER DARK. THE CAFETERIA (BELOW) IS INDIRECTLY ILLUMINATED BY FLUORESCENT FIXTURES LOCATED BETWEEN GLASS PANELS THAT MEASURE 5 SQ. FT.; THE GLASS AND METAL COMPONENTS OF THE CUSTOM PENDANTS WERE MANUFACTURED BY AN ARCHITECTURAL METALS FABRICATOR.



powerful light output. Metal halide downlights, recessed in the panels, add direct lighting. "When an entire room is indirectly lighted, things tend to flatten out," remarked Margulies. The square reflectors, radiused for the curved surface, add texture to the ceiling.

To evaluate light levels achieved by this assembly, the design team built full-size mockups of the ceiling and through computer simulation, conducted photometric tests in house. "We used different computer-simulated models to check and recheck our assumptions," said Margulies. "When we finally walked into the trading floor and measured the light levels, we were right on target." A controls system enables the lighting to adapt to changes in daylighting and to ensure ample illumination for evening trading. For flexibility, the system provides individual control for each row of panels.

Although the trading floor reprises the nautical theme with its undulating ceiling, Abadan considers the complex lighting solution, though significant, more of "an internal solution to the bank's needs." As community interaction and access to the complex were crucial to the project, for Abadan, the illumination of the office tower and its conference center on the thirteenth floor represents a kind of civic gesture. "We wanted to create a skyline-forming signature for the building without having to execute a particular architectural rooftop treatment," remarked Abadan. "We used lighting in the conference rooms as lanterns at night; they become a lighthouse-like element at the top of the building. The office tower doesn't have a name on it, but its recognition comes through these large windows that glow after dark."

The source of the beacon-like glow, custom pendants measuring 60 in. in diameter and resembling gigantic nautilus shells indirectly light the generous meeting rooms. "The conference center was another important part of the project," said Margulies. "These rooms are double-height and contain a lot of video-conferencing and other technology. The custom hanging fixtures, which we designed, each have 12 fluorescent biax lamps to give us a lot of indirect lighting." The fixtures also integrate a tungsten downlighting

component. Because the meeting rooms are subdivisible, the pendants are arranged into groups of four per module. Recessed downlights provide supplementary illumination and add visual interest to the space.

Although the office tower and trading pavilion represent but one phase of a larger project, the lighting thus far has helped mold a public identity and presence for the UBS Bank at night. Remarked Abadan, "In each instance, the lighting transforms these spaces from their normal function during the day and makes them even more beautiful." ■

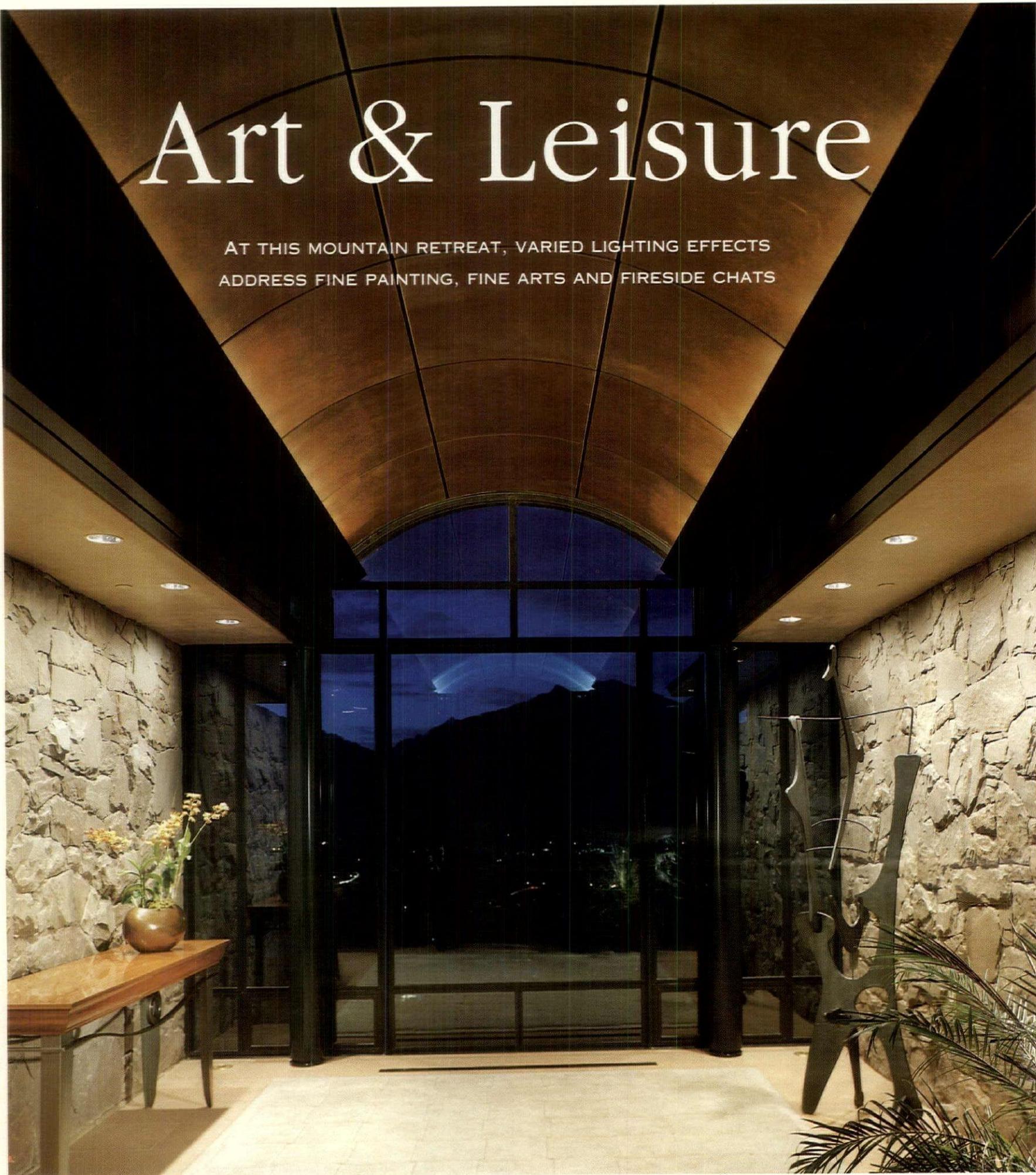
*Turn to page 34 for information on the fixtures and sources specified in this project.*

#### DETAILS

- **PROJECT** UBS Center
- **LOCATION** Stamford, CT
- **OWNER** UBS
- **ARCHITECT** Skidmore, Owings & Merrill LLP
- **LIGHTING DESIGNER** Cosentini Lighting Design—Stephen Margulies, IALD
- **MEP** Cosentini Associates
- **GENERAL CONTRACTOR/CONSTRUCTION MANAGER** Turner Construction Company
- **PHOTOGRAPHER** Esto—Jeff Goldberg
- **LIGHTING MANUFACTURERS** National Cathode Corp. (cold cathode); Kurt Versen (downlights); Winona Lighting (custom pendants); Linear Lighting (custom pendant ceiling lights, asymmetric fluorescent uplights); LSI (downlights); Artemus (custom pendants); Legion Lighting (fluorescent striplights); Philips (lamps)

# Art & Leisure

AT THIS MOUNTAIN RETREAT, VARIED LIGHTING EFFECTS  
ADDRESS FINE PAINTING, FINE ARTS AND FIRESIDE CHATS



BY ALICE LIAO, ASSISTANT EDITOR

In Aspen, CO, the 25,000-sq.-ft. Red Mountain Residence is home to a priceless collection of art, including works by Franz Kline, Willem de Kooning and Jasper Johns. To illuminate the sprawling estate and its treasure trove of fine arts masterpieces, lighting designer Robert Singer, IALD, IES of Robert Singer & Associates created a lighting solution that respects the works of art, accentuates the architecture and infuses the house with a warm and comforting glow.

With its abundance of windows, the residence resembles a transparent light box at night. "Because the site gets 350 days of sunshine a year, we knew that daylighting would be important, but in the evening, the lighting was significant, as the owner likes to entertain," said architect Bill Poss, Bill Poss & Associates, Inc. "We wanted the lighting not only to be inviting, but also to accentuate the transparency of the house and heighten the experience of the interior and exterior spaces as being continuous."

Entry into the house is gained through an archway of glass and metal uplighted by color-corrected fluorescent lamps. These sources were chosen to echo the amber radiance of the interiors and to convey a sense of continuity from exterior to within. Noted Singer, "We tried to match the color temperatures of lamps as closely as possible because we wanted to maintain a consistently warm incandescent glow throughout the entire house." The uplights are concealed in covers which, continued inside, appear to penetrate the windows into the interior. Additional uplights, mounted

at grade, silhouette the columns flanking the front entryway and wash the exterior stone walls.

Inside, textured steel panels, arched and custom finished, form the ceiling of the entry vestibule. Measuring roughly 14 ft. high and 30 ft. long, the copper ceiling is uplighted with incandescent linear sources tucked in black steel covers that span the length of the space. Wall washers recessed in soffits on each of the side of the vestibule wash the stone walls to create a smooth backdrop for a sculpture by Isamu Noguchi. "The wall washers are located equidistant from each other and the wall," explained Singer. "Using a one-to-one ratio in determining fixture position, we were able to produce a clean wash with no scalloping."

Maintaining the ratio and selecting lamps with a high CRI are crucial to lighting a house whose upper and lower-level corridors function as an art gallery. "The client requested a museum-like quality of lighting, which means a consistency in light levels on the walls," said Singer. "Instead of grazing the stone walls, which brings out the character, depth and dimension of the stone, the light flattens out the surface, allowing the art to stand out." Equipped with quartz lamps, the fixtures are focused perpendicular to the wall and work with general downlights recessed in the ceiling to create an illuminance of 50 to 75 fc in the main gallery.

Even illumination of the gallery walls also enables the owner to shift and change his art pieces freely. Singer remarked, "We conducted several on-site mockups, including a more dramatic

# What's the big idea?

*This West Coast Show House provides some answers.*

A COLLABORATION BETWEEN DESIGNERS AND MANUFACTURERS, THE IDEA HOUSE PROGRAM PRODUCES RESIDENTIAL SHOWROOMS FOR EDUCATIONAL AND MARKETING PURPOSES; LIGHTING PRODUCTS USED IN THE SHOWROOM ARE DONATED BY MANUFACTURERS. IN ILLUMINATING THIS IDEA HOUSE IN SILICON VALLEY, CATHERINE NG OF LIGHTSMITHS DESIGN GROUP CREATED THREE LAYERS OF LIGHT—AMBIENT, ACCENT AND TASK—TO BRING FLEXIBILITY, ATMOSPHERE AND COMFORT TO THE RESIDENTIAL SHOWROOM LOCATED INSIDE THE SAN FRANCISCO DESIGN CENTER. "LAYERING LENDS LIGHTING A SCULPTURAL QUALITY," SAID NG. "I WASN'T JUST PUTTING LIGHTING INTO A HOME; I WANTED TO ILLUMINATE THE SPACE SO THAT IT GLOWS." LIGHTING WAS MAINTAINED AT 2W PER SQ. FT. AND AMBIENT LIGHT IN THE KITCHEN WAS SUPPLIED BY FLUORESCENT SOURCES TO COMPLY WITH TITLE 24, CALIFORNIA'S ENERGY CONSERVATION ACT. NG REMARKED, "ALTHOUGH THE IDEA HOUSE IS A SHOWROOM, WE WANTED TO SHOW VISITORS WHAT CAN BE DONE IN A RESIDENTIAL SETTING."

WITH AN ORIGINAL CEILING HEIGHT OF 16 FT., THE FOYER RESEMBLED A "VERTICAL SHOE BOX" AND WAS CLAUSTROPHOBIC. LOWERING THE CEILING BROUGHT THE SPACE DOWN TO A MORE HUMAN SCALE AND ENHANCED ITS FUNCTION AS AN ENTRY TO THE REST OF THE HOUSE. A COVE, CREATED TO HUMANIZE THE SPACE FURTHER, CONCEALS FOUR MONOPOINTS, WHICH THROW SASHES OF LIGHT ACROSS THE CEILING. THE SASHES OF LIGHT INFUSE THE FOYER WITH A MORE RESIDENTIAL FEELING, HIGHLIGHT THE SILVER LEAF OF THE CEILING AND CREATE A STAR-LIKE PATTERN IN THE CENTER OF THE CEILING. ACCORDING TO NG, "LIGHTING THE CEILING EVENLY WOULD HAVE PRODUCED A MORE COMMERCIAL EFFECT AND RESULTED IN LAMP REFLECTIONS ON THE SURFACE."

IN THE LIVING ROOM AND DINING ROOM, LIGHTING IS USED TO DIRECT ATTENTION AWAY FROM THE HIGH CEILINGS AND EXPOSED STRUCTURES WHILE SUSTAINING THE SENSE OF OPEN SPACE. DRAPED LOW-VOLTAGE CABLE LIGHTS WITH MR16 LAMPS FITTED INSIDE RICE-PAPER SHIELDS MIMIC THE CURVES OF TEXTILES AND FURNISHINGS, WHILE ASSUMING A MORE THREE-DIMENSIONAL APPEARANCE. THE CABLE LIGHTS PROVIDE ACCENT LIGHTING AND A SECONDARY SOURCE OF AMBIENT LIGHT. THE PRIMARY SOURCE OF AMBIENT LIGHT, THREE CUSTOM WALL SCONCES FITTED WITH KRYPTON SOURCES, ARE MOUNTED AT EYE-LEVEL TO HUMANIZE THE SPACE. MADE OF TEXTURED GLASS LAYERED AND SLUMPED TOGETHER, THE SCONCES ARE CONE-SHAPED TO COUNTERBALANCE THE HEIGHT OF THE CEILING.

GLASS SCULPTURES INSCRIBED WITH WORDS FORM THE FOCAL POINT OF THE KITCHEN. SUSPENDED BY AIRPLANE CABLES AND GLOWING LIKE FLOATING POEMS, THEY REFLECT LIGHT FROM MONOPOINTS RECESSED IN CEILING ABOVE. "I OFTEN USE THIS TECHNIQUE WHEN LIGHTING A ROOM IN WHICH THE CEILING IS CONCRETE SLAB AND REWIRING IS DIFFICULT," SAID NG. "SUSPENDING THE GLASS AND LIGHTING IT WITH EXISTING FIXTURES CAN CREATE A MORE SCULPTURAL EFFECT." AMBIENT

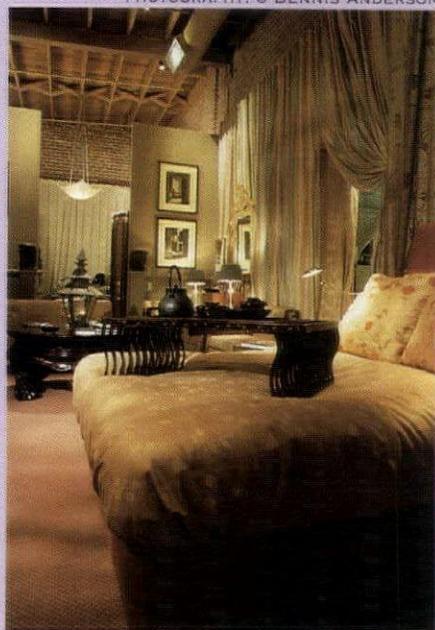
LIGHTING IS SUPPLIED BY SLIM, REMOTE-BALLASTED FLUORESCENT FIXTURES EQUIPPED WITH T8 LAMPS AND MOUNTED ON A 24-IN. COVE ATOP THE CABINETS. LAMPED WITH 20W HALOGEN SOURCES, FIXTURES BUILT-IN AND MOUNTED FLUSH WITH THE BOTTOM OF THE CABINETS PROVIDE UNDERCABINET TASK LIGHTING.

IN THE BEDROOM, LOW-VOLTAGE HALOGEN LIGHT AND HIDDEN MONOPOINTS CREATE A SOFTER ATMOSPHERE IN THE BEDROOM AND HEIGHTEN THE TEXTURE AND COLOR OF DRAPERY AND FURNISHINGS. TASK LIGHTING PROVIDES FLEXIBILITY, ACCOMMODATING THE MOBILITY OF THE FURNITURE IN THE ROOM. "MORE AND MORE I SEE A NEED FOR FLEXIBLE, MULTI-FUNCTIONAL LIGHTING," SAID NG. "TO THAT END, WHEN DESIGNING A LIGHTING SOLUTION, I CONSIDER HOW THE LAYOUT OF LIGHTING, DIFFERENT STYLES OF FIXTURES AND CONTROLS CAN DISTINGUISH AN AREA WITHIN A LARGE, OPEN SPACE, BUT STILL ALLOW IT TO WORK TOGETHER WITH THE WHOLE."

## DETAILS

- **PROJECT** Idea House '98—Silicon Valley
- **LOCATION** San Francisco
- **INTERIOR DESIGNER** Joseph Ruggiero & Associates—Joseph Ruggiero
- **LIGHTING DESIGNER** LightSmiths Design Group—Catherine Ng
- **PHOTOGRAPHER** Dennis Anderson Photography
- **LIGHTING MANUFACTURERS** Pam Morris Designs/Exciting Lighting (custom fixtures); Christina Spann, LightSpann (custom fixtures); Starfire (accent light, uplight); Neoz Lighting (accent light); Estiluz Lighting (task light); Donghia (task light); Legion Lighting Co. Inc. (fluorescent uplight); B-K Lighting (accent light); GE Lighting (lamps)

PHOTOGRAPHY: © DENNIS ANDERSON



option that spotted the artwork, but the client preferred the cleaner, architectural wall wash." Adding architectural interest, a reveal is lighted by a linear incandescent source at 30W per linear foot recessed above the ceiling plane; this gives the illusion that the gallery walls penetrate the ceiling.

## GREAT SOLUTION

Rising 30 ft. high and extending through the great room and dining area to a length of nearly 50 ft., a vaulted ceiling of mahogany strips with 2-in. reveals serves as a key feature in the architectural design. Though impressive in its richness and elegance, the ceiling contributed to the difficulty in the lighting the great room. According to project designer Andy Wosnoffski, Bill Poss Associates, "The great room was one of the tougher aspects of the project, because the ceiling was relatively dark and the owner wanted the spaces to be very architectural with minimal intrusion of decorative fixtures." Other requirements included consistency in lighting technique from the front entry to the living area and limited penetration of the wood ceiling.

In response, Singer's solution illuminates the great room by placing a dozen 500W quartz asymmetrical uplights in the clerestory to reflect light off the barrel vault. A second indirect source,

also concealed in the clerestory, lights the underside of a soffit, creating the impression of a floating roof when viewed from outside. Supplementary lighting is provided by two torchieres that uplight a soffit above an expanse of windows looking out on Aspen Mountain. The only fixtures recessed in the mahogany ceiling illuminate the two-sided fireplace separating the great room from the dining area. A pair of 150W wall washers bathes the metal facade in warmth as two PAR36 narrow beam spotlights graze the stone on either side. To the left of the fireplace, MR16 accent lights sculpt a blue Venus with light. Poss further commented, "Since we're in the mountains, we wanted the fireplace to give out a warm light in both rooms and contribute to the golden glow of the house."

In the dining room, bronze and slumped-glass pendants suspended from the barrel-vault ceiling twinkle with light from tiny stem-mounted MR16s. According to Singer, the illuminated sculptures "add sparkle to the dining table and provide direct lighting to its surface." Shielded to reduce back splash onto the ceiling, the adjustable fixtures are fitted with hex louvers and black Alzak reflectors for an unobtrusive appearance and reduced glare. As in the great room, hidden uplights throw light across the barrel-vault ceiling for general illumination in the dining room. Recessed wall washers show off an Ellsworth Kelly on the wall and guide one down a corridor to the pantry. Part of an interior gallery, the corridor is accented on top by a glowing reveal.



BRONZE AND GLASS PENDANTS, LIGHTED BY STEM-MOUNTED MR16s, ADD SPARKLE TO THE DINING AREA (ABOVE). CRYSTAL PENDANTS, LAMPED WITH 50W MR16s, CREATE POOLS OF LIGHT ON THE COUNTERTOP IN THE KITCHEN (TOP RIGHT). TWELVE 500W QUARTZ ASYMMETRICAL UPLIGHTS ILLUMINATE THE VAULTED CEILING OF THE GREAT ROOM (RIGHT).



#### COOKING LIGHT

While a majority of the fixtures used in the Red Mountain residence are equipped with black Alzak reflectors for glare control, clear Alzak cans were chosen to increase brightness in the kitchen. "In kitchens, it's crucial to have high light output or the potential for high light output at the work surfaces," explained Singer. "We calculated footcandle and room cavity ratios in the space to achieve light levels ranging from 50 to 75 fc." Producing the higher light levels, a combination of recessed downlights and undercabinet lighting illuminates the high-tech kitchen for optimum functionality. In addition, three crystal pendants lamped with 50W EXT MR16s highlight a bar countertop with pools of light. A central island is lighted by integral MR16s retrofitted into a glass and stainless steel hood that doubles as shelving for display items. Over the stove, a second hood also retrofitted with MR16s provides light for cooking, while 50W EXN floods illuminate work surfaces. Atop the cabinets, cove-lighting enlivens displays of jars, vases and containers.

Other highlights of the residence include a lower gallery in which a sculpture of former New York senator Jacob Javits is lighted during the day by sunlight pouring through a glass-block light well and at night by PAR38s hidden behind a ceiling valance. The glowing glass blocks, located in the deck outside the kitchen doors, act as an egress light after dark. In the media room, a floating ceiling of wood ribs and curved black panels of metal mesh is indirectly lighted, while adjustable MR16s recessed between the joists add accent lighting to the seating areas and speakers. Stairs in the media room are illuminated with an indirect fixture concealed behind acoustical wall paneling, and wall sconces provide further uplight. In the master bathroom, a tree outside a window is uplighted to keep the glass from becoming mirror-like. Singer explained, "Placing a light source on the exterior creates a perceived brightness and allows one's eye to penetrate the glass."

This technique also plays a role in the exterior lighting of the Red Mountain residence. To create perceived brightness outside the great room and dining area, an overhang running along the perimeter of the house is recessed with PAR38 downlights, which graze the windows and light the exterior decks. "Without proper illumination, the interior experience of the house at night is like being in a mirrored space," said Wosnoffski. Lighting on the house's exterior is kept subdued and minimal to reduce light pollution. "With large-scale projects, one has to keep in mind covenant issues," explained Singer. "Because this house sits on a ridge, we avoided flood-lighting exterior facades or creating intense sources of light that would be visible from a distance and create light pollution."

For sunlight control, motorized shades hidden in ceiling slots are placed on a control system and can be operated manually or automatically. "Control systems are key in houses like this," said Singer. "We calculated the longitude and latitude of the house, so that the shades are automatically lowered at sunrise and raised at sunset when the owner is absent. This is to prevent the light from deteriorating the furniture and art." Singer usually creates three different environments for his clients—a bright, dim and entertaining environment—providing them with full scene presets of the entire house as well as individual rooms. Further flexibility is offered through the ability to control individual circuits within a room.



"On high-end residential projects, one often deals with very sophisticated and knowledgeable clients who have specific needs, and the key is to listen," said Singer. "We're in a service business and we're trying to create a comfortable environment for our clients. One of the most important things in terms of residential lighting is creating that feeling of being enveloped in a warm glow."

*Turn to page 36 for information on the fixtures and sources specified in this project.*

#### DETAILS

- **PROJECT** Red Mountain Residence
- **LOCATION** Aspen, CO
- **ARCHITECT** Bill Poss & Associates, Inc.—Les Rosenstein, project manager; Andy Wosnoffski, project designer; Bill Poss
- **INTERIOR DESIGNER** Steve Chase & Associates
- **LIGHTING DESIGNER** Robert Singer & Associates—Robert H. Singer, IALD, IES
- **CONTRACTOR** Hansen Construction—Steve Hansen
- **ELECTRICAL CONTRACTOR** B & B Electric
- **AUDIO** Esc/Cello—Dave Daniels, Steve Merrick
- **PHOTOGRAPHER** Dave Marlow
- **LIGHTING MANUFACTURERS** Elliptipar (indirect cove-lights); Lucifer Lighting (linear lighting fixture); Edison Price (wall washers, downlights); Alox (pendants); Regianni (accent lights); (indirect cove-lights); Tech Lighting (pendant); Pam Morris Designs/Exciting Lighting (decorative pendant); Artemide (wall sconce); National (fluorescents); Zumtobel Staff Lighting (decorative fixtures); GE Lighting (lamps); LiteTouch (controls)

NeoSphere®

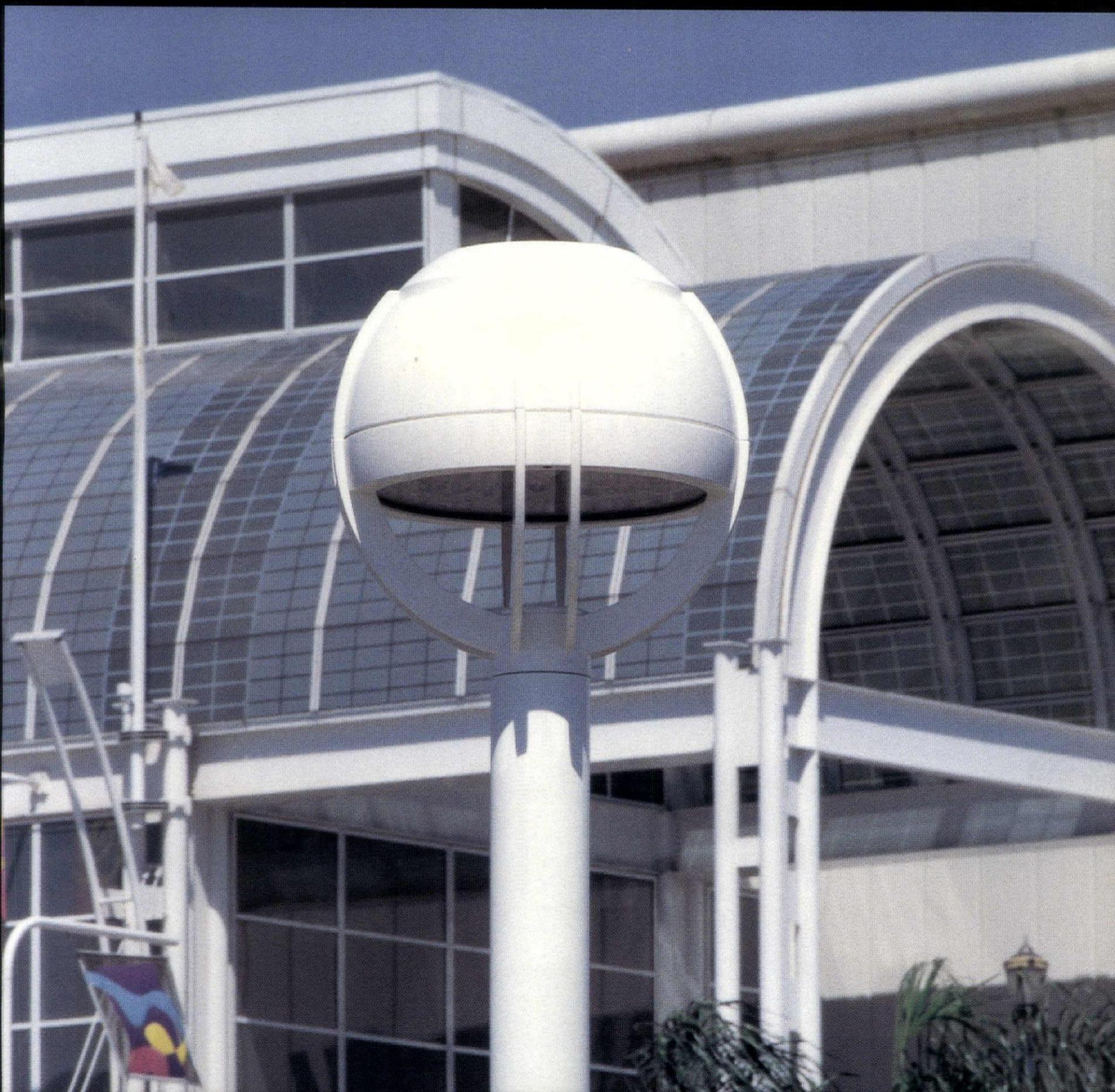


**KIM LIGHTING**

16555 East Gale Avenue  
City of Industry, CA 91744  
626/968-5666

Circle No. 14 on product service card

[www.kimlighting.com](http://www.kimlighting.com)



Over  
80%  
Sold!  
Res  
idences



# Standing Tall

THE LIGHTING OF CHICAGO'S WATER TOWER—ANOTHER CROWNING ACHIEVEMENT FOR THIS CASTLE-LIKE HISTORIC LANDMARK

BY CHRISTINA TRAUTHWEIN, EDITOR-IN-CHIEF

PHOTOGRAPHY: © RON SCHRAMM

The Water Tower, a stately and impressive landmark, has definitely earned its honored place in Chicago's history. In fact, as one of the oldest structures in the Windy City—and one that has fought more than a few times for its survival—it has become what many might call a symbol of the city's persistent spirit and strong will. In addition to its claim to fame as one of only a few buildings to endure the Great Fire of 1871, which in three devastating days brought the city's commercial center and many of its residences to ruin, it has remained victor to battles with the wrecking ball over the years. As history states, in the early 1900s when the standpipe for which the structure was originally built became obsolete, a public outcry saved the tower from demolition. A decade later when the tower obstructed the northward progress of the new Michigan Avenue, preservationists prevailed over planners. And in 1948, a plan for an art center to be constructed on the site was defeated. Today, the Water Tower secures a prominent place and monumental presence on the "Magnificent Mile," whose buildings have now come to dwarf the structure that once stood tall amid the leveled city.

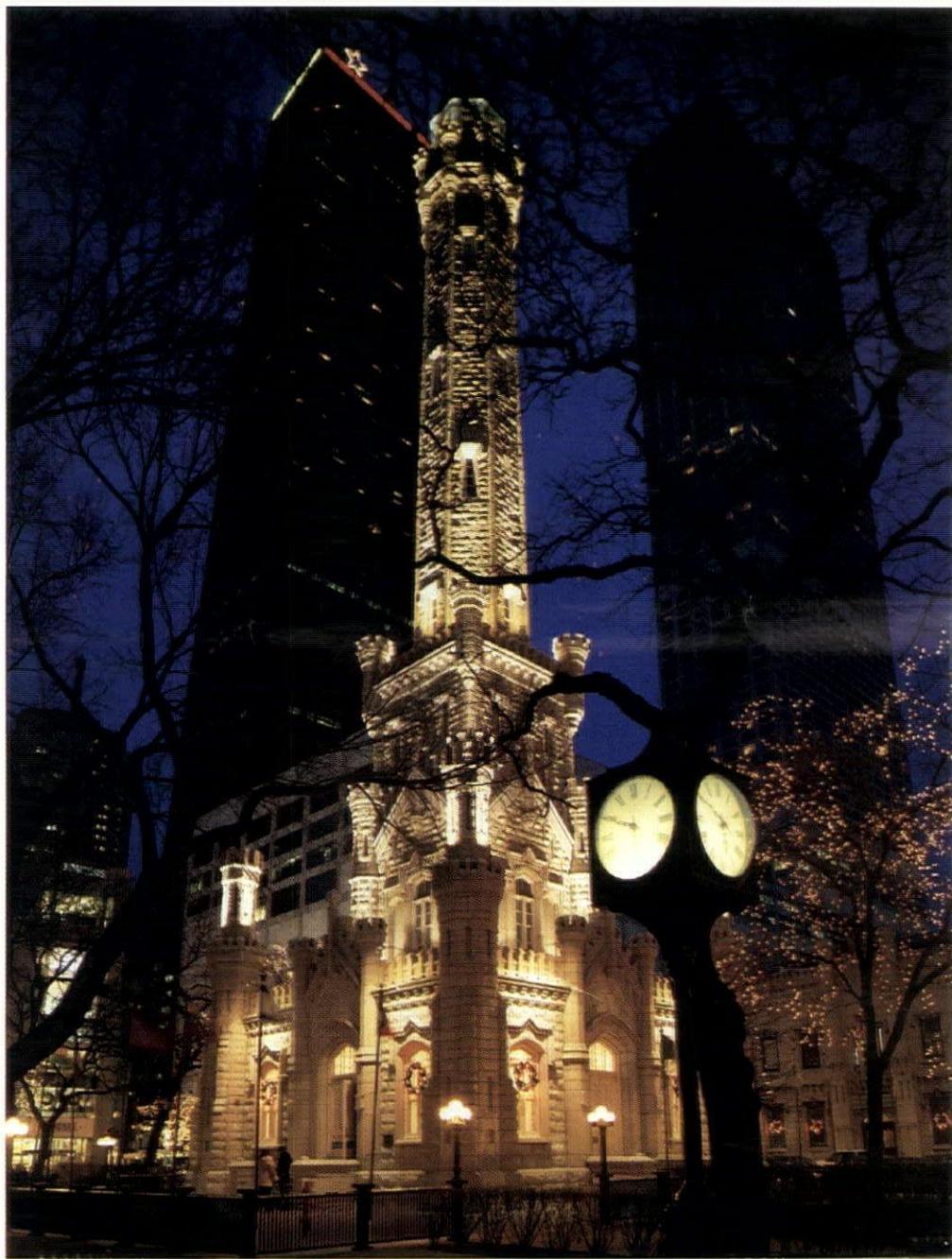
Completed in 1869, the now famous 154-ft. tower was actually a secondary structure—it was built to house a 138-ft.-high, 3-ft.-diameter standpipe that stabilized the pressure of the water distributed from the adjacent pumping station. The Tower, built in a castellated Gothic architectural style to recapture the romance of a medieval castle, is one of only a few surviving buildings by William W. Boyington, a prominent architect who gave shape to Chicago both pre and post fire. Its recent restoration has brought new life to the Water Tower, underscoring its visual impact on Michigan Avenue, one of Chicago's most visited destinations for tourists and residents alike.

"Fortunately, the current Mayor of Chicago—Mayor Daley—is an enthusiastic proponent of exterior lighting," said lighting designer Robert Shook, of the Chicago firm of Schuler & Shook. "So the city is jumping at any opportunity to illuminate public buildings." According to Shook, the primary purpose of this project was to renovate the facade of the Water Tower, designated a historic landmark in 1971, by cleaning and restoring its detailed stonework—locally quarried Joliet limestone. It was decided that while the restoration process was underway, a new lighting scheme be applied so that conduits could be run in conjunction with the exterior work for a cleaner installation.

"The building had been previously lighted, but not professionally," said lighting designer James Baney. "In the existing lighting scheme, the fixtures were somewhat larger and protruded from the building, causing visual disturbance during the day." In addition, the lighting was flat and even, which didn't reveal the distinctive character of the Tower, and was quite a bit brighter—almost too vibrant, according to Baney. "Our lighting plan is not only more subtle, but we concentrated on the nuances of light to play up the multi-faceted textural qualities of the surfaces rather than blasting it head on."

The current lighting plan places all of the fixtures close to the building and in locations that are concealed from view during the day. The lighting design firm was faced not only with the challenge of finding fixture locations that would emphasize the rough texture of the stone, but with selecting light sources that would be sympathetic to the yellowish patina of the limestone facade. "The material was definitely one of the more interesting aspects of the project," noted Shook. "The warm hue of the stone was pointing us in the direction of using incandescent light, but due to the obvious maintenance concerns associated with that source—shorter lifespans, hence frequent relamping—we decided to explore other options."

Due to the relatively short schedule on this project, the lighting designers performed quite a few mock-ups on the building to determine the best solution—a solution carefully considered and critiqued by city officials. "This is a national landmark



structure, and the Landmarks Commission in Chicago is extremely concerned about how buildings are lighted and particularly, how fixtures are attached to buildings that have a historic rating," explained Baney. "Members of city council would visit the site, and we would show them the various effects that could be created. In addition, we worked very closely with the Commission to satisfy their explicit criteria on acceptable fixture mounting."

Several potential sources were site-tested and 3000K ceramic metal halide sources were selected for their energy efficiency and long life, as well as for their ability to render the stone accurately and emphasize the texture of the rough-cut detailing—a welcome change from the cool light of the existing 4000K metal halide lamps. All fixtures were mounted close to the building to graze the surface of the structure and emphasize its castellated styling. "By using a grazing technique, the texture of the material, when illuminated, is more visible," said Shook. "This gives the building a unique character at night and visual distinction not achievable during daylight hours."



1

1) THE FOUR TOURELLES AT THE FIRST SETBACK ARE LIGHT-

ED BY 70W ED17 SPOTS. 2) 150W NARROW SPOT FIXTURES AT THE BASE OF THE SHAFT LIGHT THE OCTAGONAL TOWER. 3) PAR20 FLOODS AT THE TOP OF THE SHAFT ILLUMINATE THE CUPOLA. 4) TURRETS ARE LIGHTED BY PAR20 FLOODLIGHTS.



2



4



3

## THE ART OF CONCEALMENT

Not only did the lighting designers seek fixture locations that were complementary in showing off the limestone-block construction, but those that were particularly respectful of the Landmarks Commission's desire that the lighting not interfere with the detailed architecture of the building. The four 40-ft.-wide facades of the Water Tower are identical and feature a massive arched door flanked by pointed-arch windows surmounted by drip moldings. Small towers with lancet windows, castellated crowns and tourelles frame each level as the base rises to the tower itself, which is surmounted by a crown of eight tourelles and a copper cupola. "The varied and intricate architectural elements easily enabled the fixtures to be concealed," said Shook. "The Water Tower is similar in style to a wedding cake insofar as it has many tiers. The various setbacks allowed for some great lighting locations. We made the decision early on not to illuminate the entire building but to emphasize its most unique features. And by concentrating the light near the corners, it causes the eye to follow the progression of light up the building from base to main tower."

The four tourelles at the corners of the base are illuminated with 70W ED17 spot fixtures buried in the concrete pavers, and serve to visually anchor the building to the ground. The primary walls at the base, including the Gothic arched windows, are illuminated with small 70W ED17 floods with remote ballasts cantilevered slightly from the facade.

The tops of the small towers are illuminated by 35W PAR20 flood accent lights with remote ballasts. At the next level, the four tourelles are illuminated from the deck below by surface-mounted 70W ED17 spots. The final level of tourelles is lighted from the crown of the previous level with 35W PAR20 flood accent lights.

The main octagonal tower is illuminated by eight 150W T6 narrow spot fixtures. All fixtures are securely locked to ensure that the focus will remain intact during

relamping. Fixtures are located so that they can be relamped without a lift, through operable windows on the towers (the long life of the HID sources allow for infrequent maintenance). At the top of the main tower are eight small tourelles, each of which conceal 35W PAR20 floods, which illuminate the face of the copper cupola above, reclad during the restoration.

All lighting fixtures are mounted on stainless steel brackets and custom painted to match the finish of the stone; the fixtures virtually disappear during the day, complying with the Commission's requirement. All of the lighting is controlled by a simple photocell-on/timeclock-off control system. ■

*Turn to page 39 for information on the fixtures and sources specified in this project.*

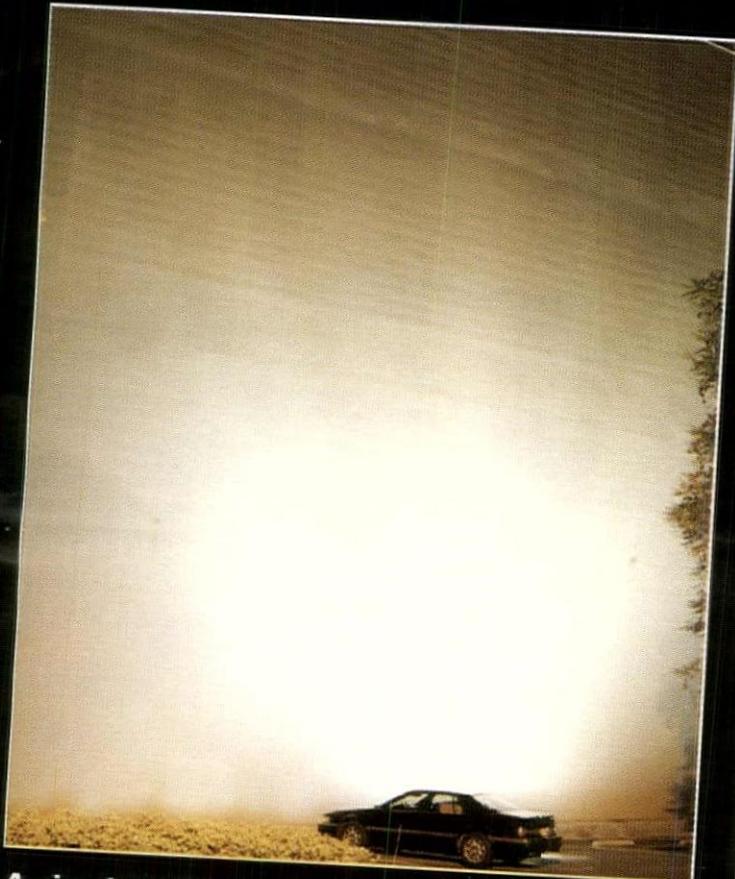
## DETAILS

- **PROJECT** Chicago Water Tower Restoration
- **LOCATION** Chicago
- **CLIENT** City of Chicago
- **LIGHTING DESIGNER** Schuler & Shook, Inc.—Robert Shook, IALD, LC; James Baney, LC; Emily Klingensmith
- **ARCHITECT** Bauer Latoza Studio
- **CONTRACTOR** City of Chicago, Department of Water
- **PHOTOGRAPHER** Ron Schramm Photography
- **LIGHTING MANUFACTURERS** Hydrel (in-grade fixtures); Lumiere (PAR20 metal halide fixtures); North Star (metal halide floodlights); Philips Lighting (metal halide lamps)

# HYDREL

The Hydrel  
9000 Series established  
a new benchmark for  
in-grade lighting

Today's M9000 Series  
Raises the  
**BENCHMARK**



#### The 9 inch M9400

Designed to accommodate the popular new **color corrected metal halide lamps** to 70 watts in a unique housing with a small **nine inch footprint** for an unobtrusive, efficient installation.



#### The 400 Watt M9800

First **in-grade** fixture to accommodate **400 watt** mogul base lamps. Provides a **new alternative for floodlighting** architectural structures with in-grade concealment. Eighteen inch footprint, available in wallwash, spot, and flood.



#### New M9000 Series features:

**Cooler Operation:** new convective design and double lenses reduce surface temperature.

**External Aiming:** aim mechanically and optically without entering lamp module.

**Locked Settings:** indexed and locking components allow relamping without reaiming.

**Rugged Construction:** computer aided design and tough materials surpass drive over requirements.

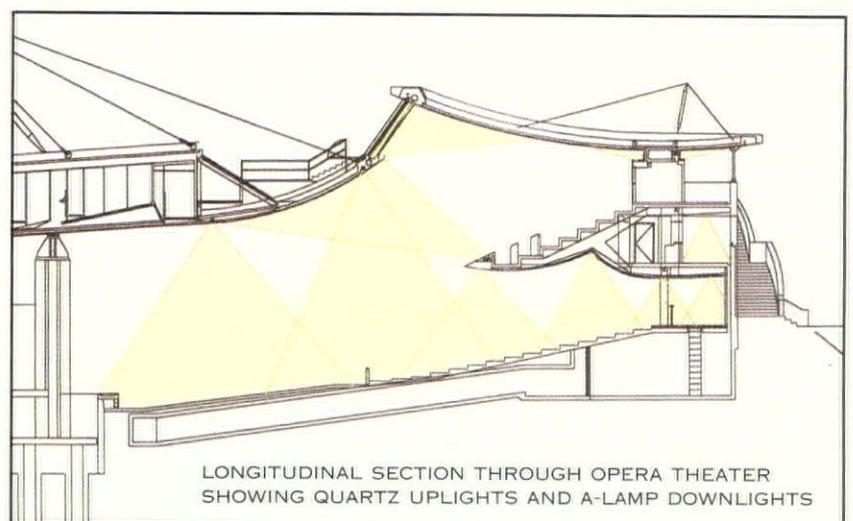
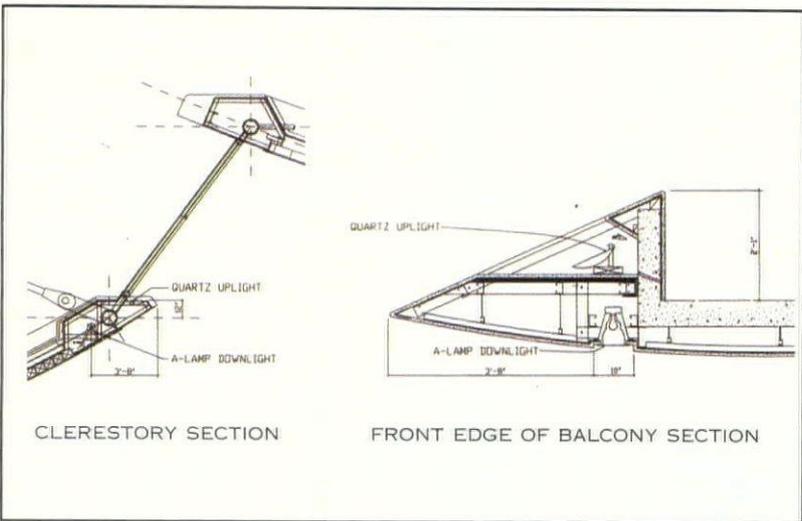
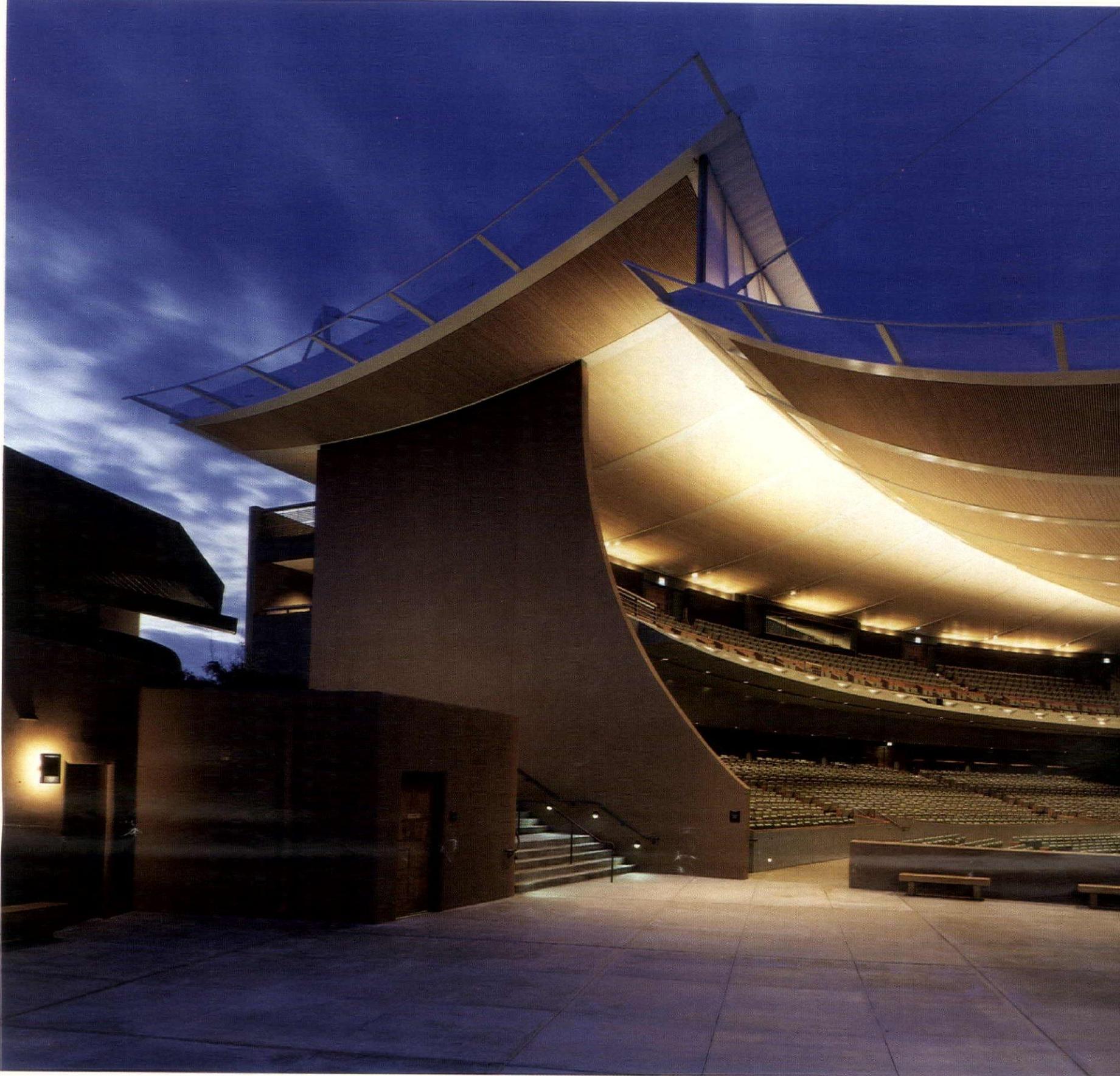
**HYDREL**  
In-grade Lighting

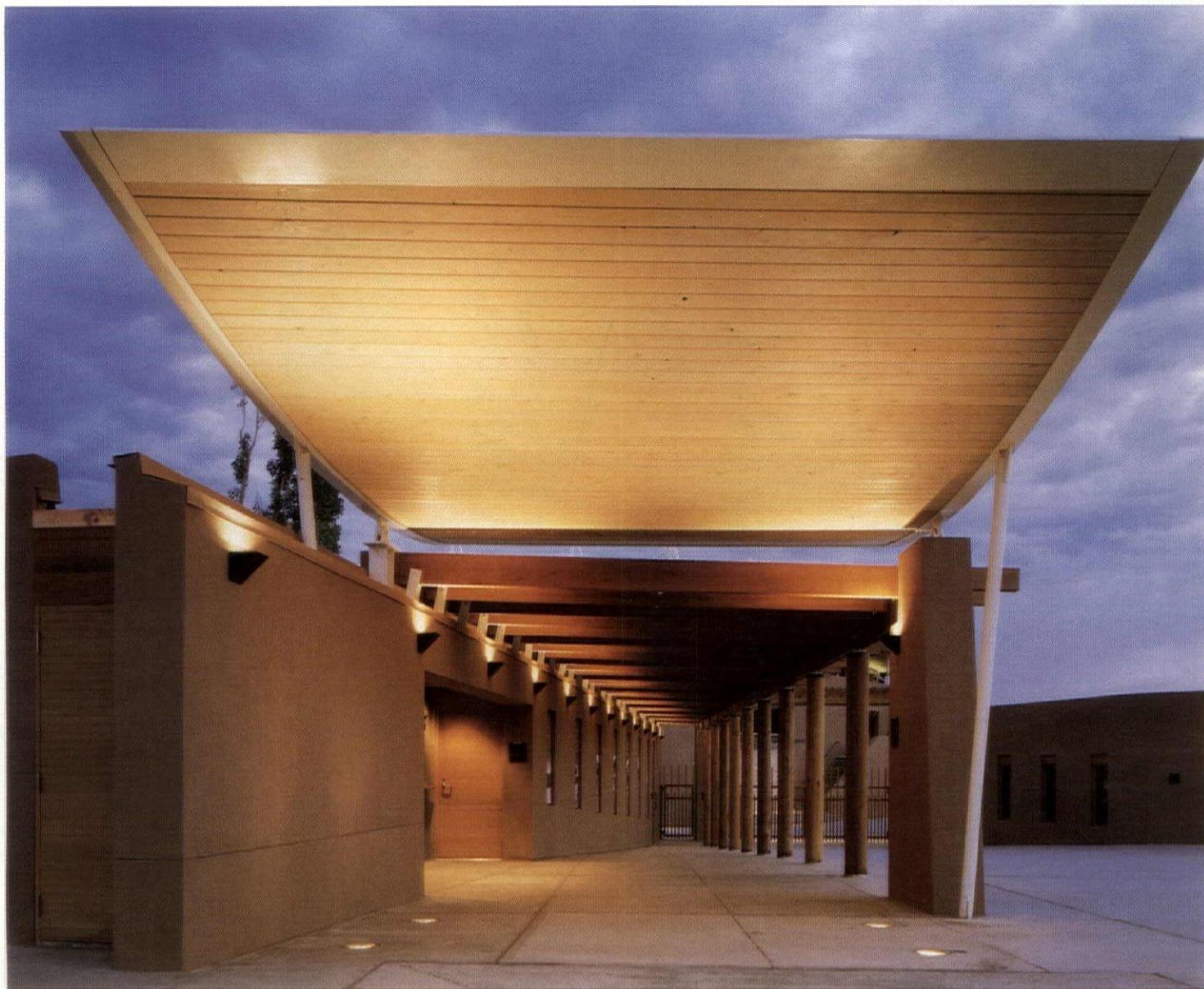
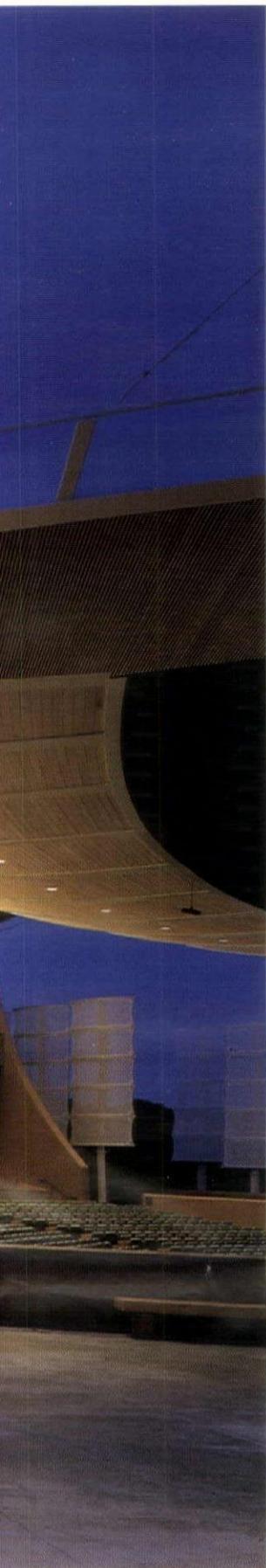
Circle No. 15 on product service card

#### HYDREL

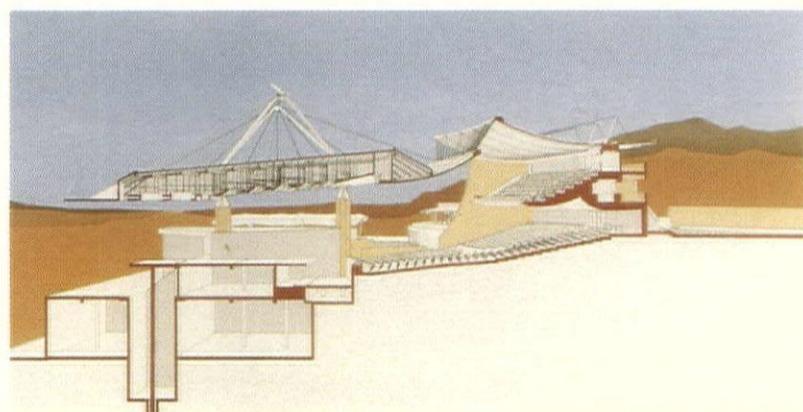
12881 Bradley Avenue, Sylmar, California 91342  
Phone 818-362-9465 Fax 818-362-6548  
Website [www.hydrel.com](http://www.hydrel.com)

HYDREL is a registered trademark of  
Lithonia Lighting.





AT THE ENTRY TO THE SANTA FE OPERA (ABOVE), A CANOPY WASHED WITH THE LIGHT OF PAR LAMPS RECESSED INTO THE GROUND INTRODUCES THE LIGHTING EFFECTS EMPLOYED INSIDE. CUSTOM SCONCES ENHANCE THE INDIRECT LIGHTING SCHEME. OPPOSITE: SINCE THE THEATER IS OPEN ON TWO SIDES, WET-LOCATION FIXTURES HAD TO BE USED INSIDE AND OUT. QUARTZ SCONCES MOUNTED IN A COVE BELOW THE CLERESTORIES AT THE OUTER EDGE OF THE CEILING OVER THE STAGE ILLUMINATE THE CEILING IN THE BACK OF THE THEATER AND PROVIDE SOFT, WARM INDIRECT LIGHT IN THE SEATING AREAS OF THE BALCONY.



# Peak Performance

THIS OPEN-AIR THEATER IN THE FOOTHILLS OF NEW MEXICO MAKES FOR A SPECIAL NIGHT AT THE OPERA

BY JEAN GORMAN, CONTRIBUTING EDITOR

If pure sound had a shape, the Santa Fe Opera House is probably as close to what it would look like as you could find. "The interior of the building is shaped like the horn of a stereo speaker, only much bigger," said Paul Horpedahl, technical director of the Opera. With its bold, sweeping ceilings, this stunning open-air theater, recently redesigned by the Polshek Partnership, at first glance, seems to rival the lead soprano for the opera lover's attention. Yet, the architects have created an opera house that ultimately performs its supporting role—not only in the theatrical experience, but also in the context of the foothills of the Sangre de Cristo Mountains, where it is located—with elegant understatement.

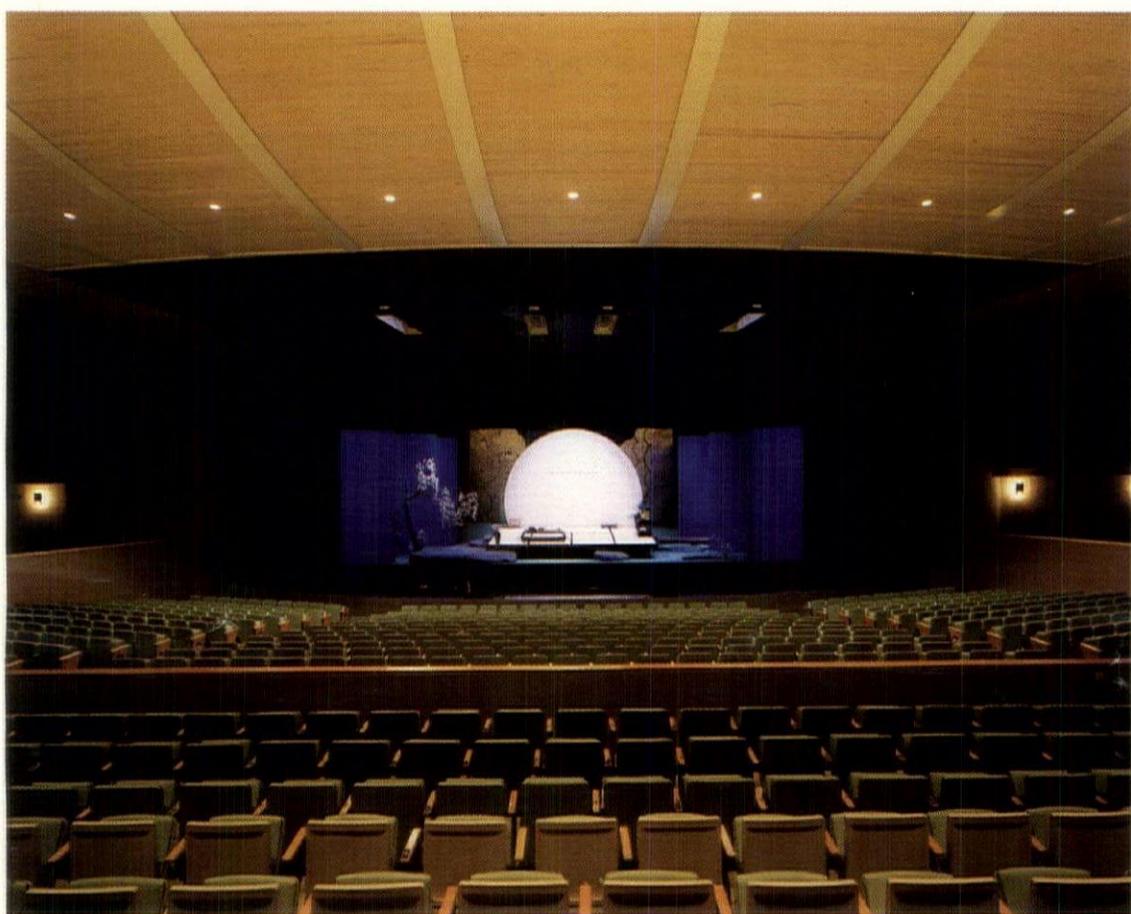
Originally designed by John McHugh and Van Hooker in 1957, the first incarnation of the open-air theater burned to the ground in 1967, then went through a period of ad hoc expansion. The newly renovated \$18-million theater's two massive curved ceiling planes, slicing the air like enormous sails and echoing the low rise of nearby rolling

hills, comprise a dramatic visual statement. Their aesthetic purity also works in tandem with their function of providing protection for the 2,168 seats within the theater, which is open on two sides, and of permitting sound and drama from the stage to be heard and seen without obstruction. The materials of the structure (the interior ceiling planes are constructed of tongue-and-groove wood decking, while the exterior is clad in adobe) blend easily with the rugged, earthy surroundings and existing structures of the region. And the conscientiously integrated lighting system, which was designed by Cline Bettridge Bernstein and won an Edison Award, a NYSIES Lumen Citation, and an IIDA Award of Merit, enhances the integrity of the architecture, both inside and out. It also seamlessly responds to the sequence of events that takes place in and around the theater before, during and after the performance.

The central challenge for the lighting designers in this setting was to devise a solution



TOP: SMALL QUARTZ FLOODS WASH EXTERIOR WALLS SO THAT EVERY SURFACE GLOWS. BOTTOM: TO AVOID PENETRATING THE CURVED CEILING OF THE THEATER, THE WOOD DECKING IS ILLUMINATED WITH QUARTZ SOURCES MOUNTED IN A COVE AT THE EDGE OF THE BALCONY. DOWNLIGHTS ARE MOUNTED BEYOND THE WOOD DECKING TO PROVIDE FILL LIGHT.



that would provide sufficient reading task light and flattering ambient illumination in the theater without puncturing the ceiling planes. "The architecture informs the lighting," said project architect Damu Radheshwar. "We wanted no direct lighting in the ceilings. They are made with 5½-in.-thick wood decking and for acoustic, aesthetic and structural reasons, we didn't want to penetrate these surfaces or have fixtures suspended from them."

As a result, the majority of the fixtures and sources inside the theater are imperceptible and the quality of light they produce maximizes the impact of the architecture by grazing the swooping lines of the ceiling planes and illuminating the 75,000-sq.-ft. space with warm, indirect illumination. While the primary lighting strategy used to produce this effect involved employing a simple, indirect cove technique, the complexity for the designers lay in finding a source and fixture that would produce a wide beam with a long throw to evenly light the ceiling surfaces and provide sufficient reflected task and ambient illumination in the seating area below.

#### ON THE EDGE

After calculating the effects of numerous sources and fixtures and conducting many computer studies to examine the effects of the sources at various angles, the lighting designers ultimately chose to tuck a series of yoke-mounted, adjustable quartz uplight fixtures fitted with 500W T3 lamps within a trough, or cove, constructed along the leading edge of the balcony to illuminate the larger ceiling plane, which curved upward from the stage. They used the same technique to create the same effect on the smaller of the two ceiling planes over the balcony with a smaller fixture and 300W T3 sources mounted in a cove along the back of the theater and along the edge of the roof over the stage below a band of clerestory windows, which permit views from the balcony to the mountains and starry sky beyond. From all seating areas, these sources and fixtures are invisible to the eye, yet the wide beams they produce throw even illumination on the two ceiling planes and provide sufficient illumination (about 8 fc) in the balcony and the lower level area in front of the balcony for reading programs and finding seats

before the performance begins.

"The ceiling planes, in effect, serve as giant reflectors for both sound and light," said Francesca Bettridge, who along with Carroll Cline, was a principal lighting designer on the project. "The uplights we chose have very tight filaments, which, when combined with a well-designed reflector provide a controllable beam pattern." The light is also very flattering because it is indirect and therefore shadow-free. "Even when the light is down to a whisper, it's soft and warm," said Bettridge. A prelude to these glowing planes is encountered outside, where the underside of a winged canopy over the entry is illuminated with 150W halogen PAR lamps that recessed into the wood decking of the walkway. Other lighting is supplied outdoors with custom uplight sconces containing 75W A-lamps, quartz PAR lamps illuminating a fountain and small quartz floods washing exterior walls. "Every surface glows," said Radheshwar. "The light is very even, very balanced and there are no hot spots. It's sort of magical."

Where direct downlight was required to provide fill light inside the theater, the lighting designers installed recessed wide-beam A-lamp downlights in soffits outside the decking zone under the balcony and over the stage. A series of A-lamp downlights are also incorporated into the detail at the edge of the clerestories to provide fill light in the lower level seating area. The lamp life of most of the sources used in architectural lighting fixtures is extended greatly by dimming them. The theater is open only three months of the year, so the lighting designers calculated that the need to change the lamps should occur only about every three to five years. A cherry picker was purchased by the theater for this purpose.

Because the theater is open on two sides and located in a setting with little else around it, the designers were interested in minimizing what Bettridge refers to as "light pollution." To keep light distractions from the stage during the performance while maintaining a sense of connection to the outdoors and the landscape beyond, the lighting designers chose to control the entire lighting scheme with a dimming system that links the system gradually adjusts the light levels in the linked locations to accommodate either the transitions in light as evening falls or the demands of the evening's various events, such as intermission, when the level of the terrace and plaza lights and the house lights are raised simultaneously. In contrast, before the

performance begins, said Horpedahl, "You can look out at the landscape beyond the theater and watch the sun set and the colors change in the valley and basins, and as the sky gets darker the ceiling inside slowly gets lighter. The lighting seems to visually lift the ceiling and make it appear as if it's floating in the night, creating a warm, magical environment that's very inviting for the audience—it draws you into the space and gives the impression that something wonderful is about to happen."

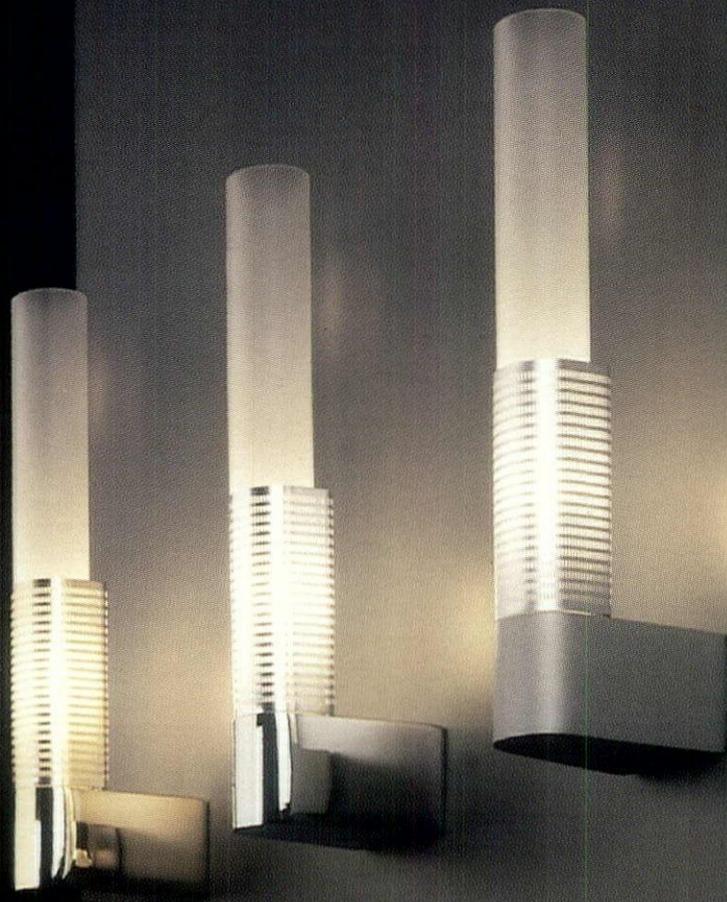
Turn to page 40 for information on the fixtures and sources specified in this project.

#### DETAILS

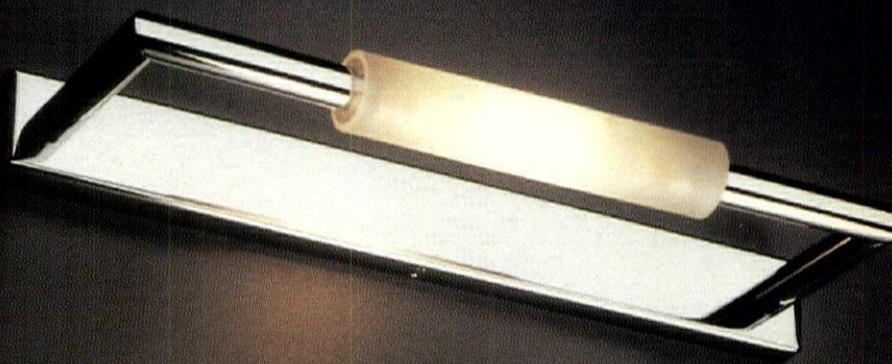
- PROJECT Santa Fe Opera Theater
- LOCATION Santa Fe, NM
- ARCHITECT Polshek Partnership Architects
- LIGHTING DESIGNER Cline Bettridge Bernstein Lighting Design
- CIVIL ENGINEERING Jorge Gonzalez & Associates
- CONSTRUCTION MANAGER Manhattan Construction Company
- STRUCTURAL ENGINEER Ove Arup & Partners—Guy Nordenson
- MEP ENGINEERS Mechanical & Electrical Engineering, Inc.—John Baumgartel
- ACOUSTICS Purcell + Noppe + Associates, Inc.—Jack Purcell
- THEATER Auerbach & Associates—S. Leonard Auerbach
- SOUND CONSULTANT Tom Clark Sound Design Services—Tom Clark
- CURTAINWALL CONSULTANT Heitmann & Associates—John Sturdevant
- PHOTOGRAPHER Robert Reck
- LIGHTING MANUFACTURERS Rambusch; Latigo Lights; Edison Price; Neoray; Norbert Belfer; Bronzelite; H. E. Williams; C.W. Cole & Co.; Stonco; Capri Lighting; Bega; Legion Lighting; Progress Lighting; McPhillben;

NO

BETTY

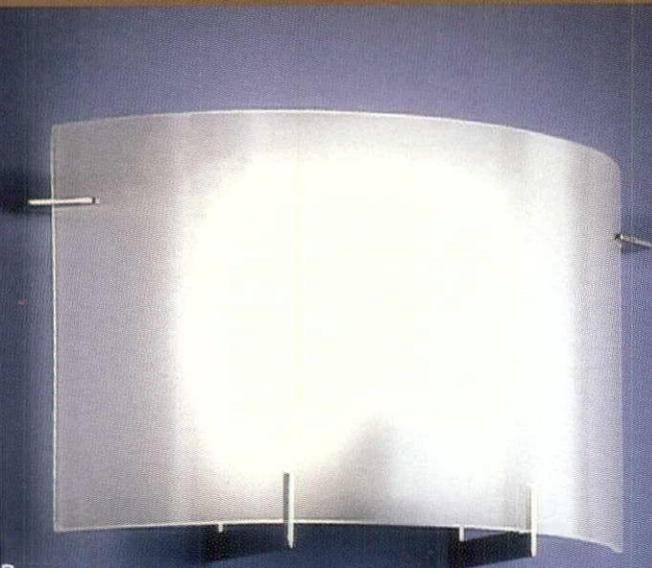
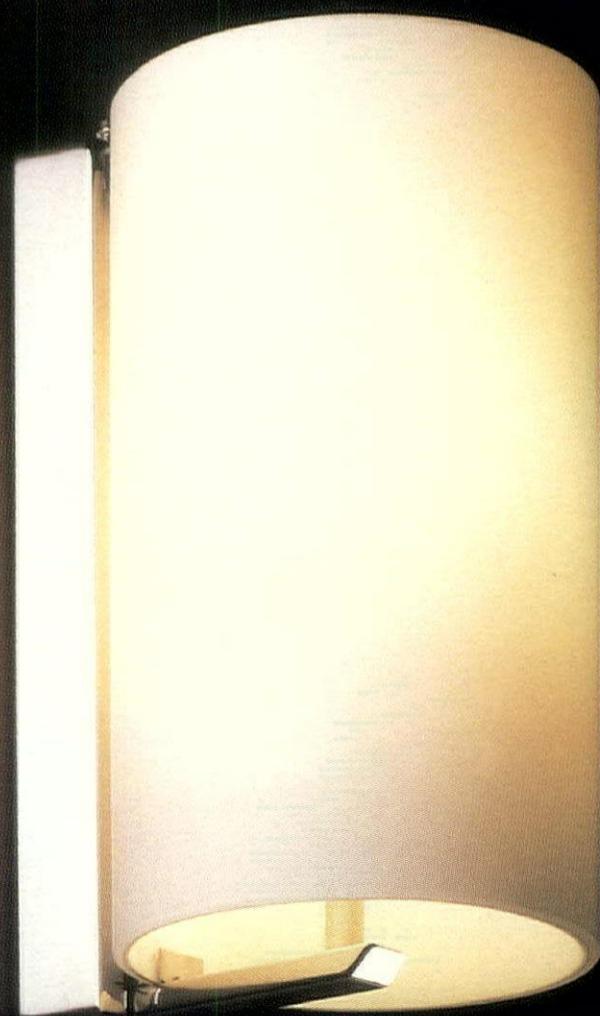
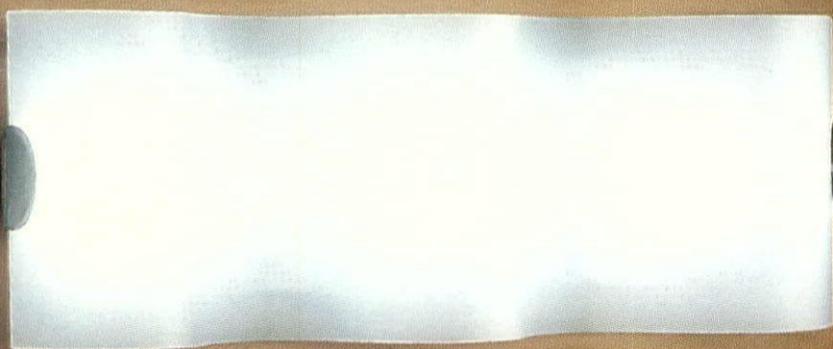


BETA



TAN.GO  
.lighting

Ris 3



BERTA

SILO



TEL: 201-662-7012

FAX CATALOG REQUESTS TO 201-662-7013

207 75TH STREET, NORTH BERGEN, NJ 07047

Circle No. 16 on product service card

# Perfect Fit

AT THIS UPSCALE CLOTHING BOUTIQUE, THE LIGHTING IS CONSCIOUS OF SIZE, PROPORTION AND SHAPE

BY ALICE LIAO, ASSISTANT EDITOR

In creating a lighting solution for the L Collection in Leawood, KS, lighting designer Derek Porter's objectives were two-fold. The first, to achieve a certain level of ambient light for the main display floor and to provide accent lighting that would accentuate the perimeter displays. Secondly and of a more aesthetic nature, the lighting would complement the clean, minimal architecture and contribute to the more intimate and personal atmosphere of this high-end women's apparel store.

"Although the client keeps the store displays relatively sparse, the idea was to provide enough ambient light to accommodate denser arrangements without requiring that someone go into the ceiling to change lights," said Porter. To provide a flexible solution that also supports the identity of the store, Porter considered the geometric arrangement of light fixtures to each other as well as their physical qualities—as apertures—in the space. "Because much of the design work we do engages some type of recessed downlight, we're always conscious of the proportion of the aperture and the composition of the various light fixtures so that they work together and tie with each other and the architecture."

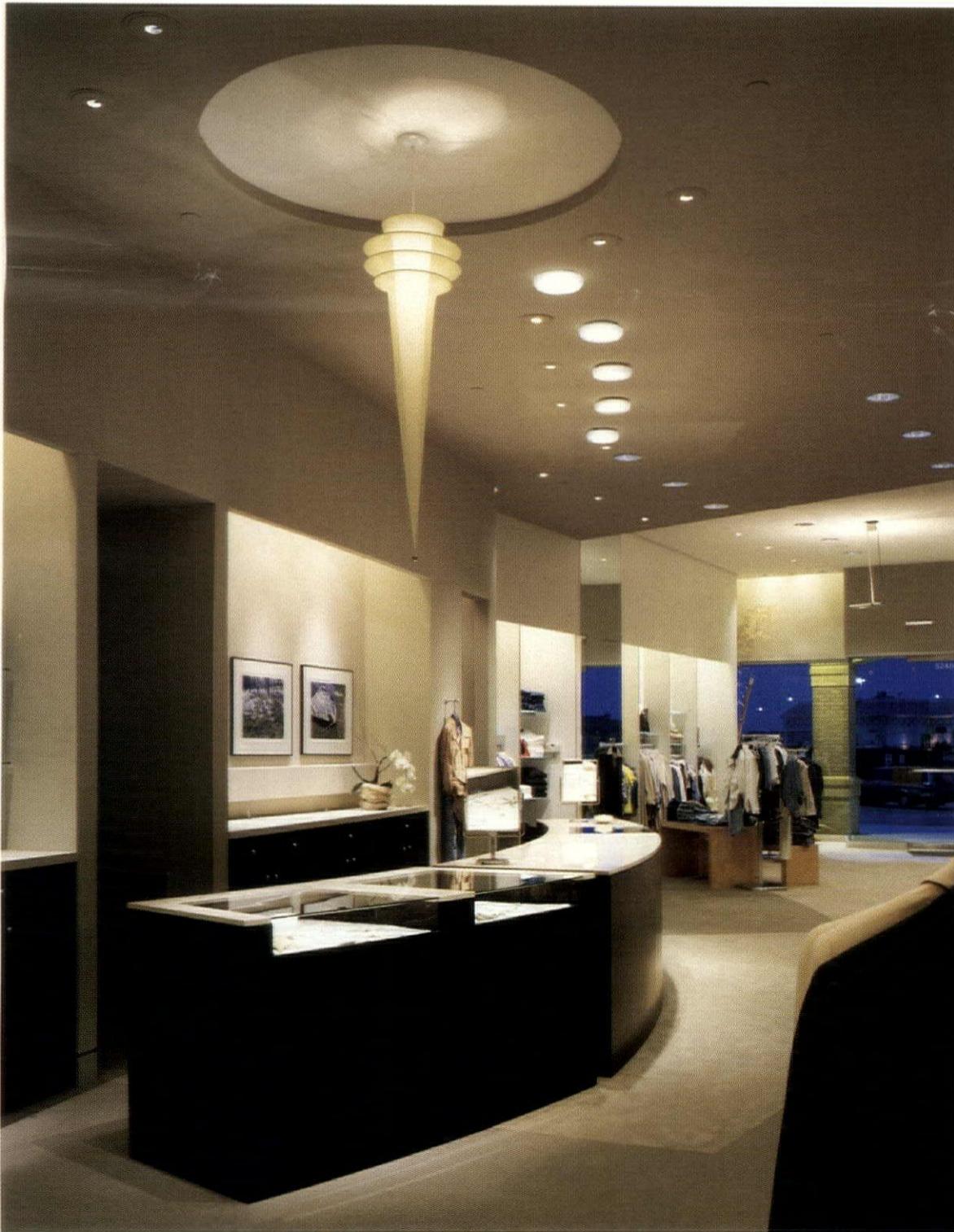
Porter described the process by which he arrives at a design as being of a "backward

sensibility." "Typically, an engineer will try to target a light level and a light source to be used and then figure out how to arrange it," he explained. "I'm looking at the arrangement first, the way in which the fiber of the lighting is woven into the architecture. I want to make sure that when everything is finished, the lighting feels integral to the architecture."

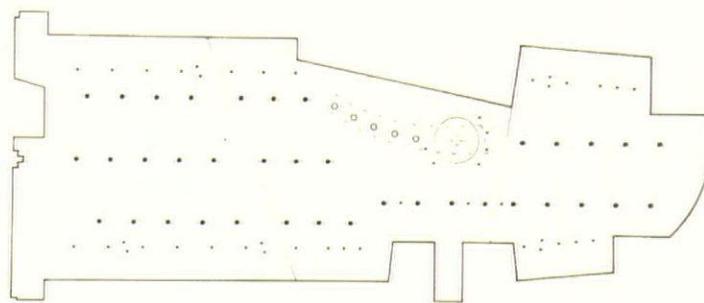
To integrate the ambient light fixtures with the architecture, Porter arranged compact fluorescent downlights in a series of rows, which acknowledges a ceiling drop in the center section of the store. The dropped area is trapezoidal in shape and the rows of downlights are canted to echo the diagonals of the trapezoid. Longitudinally, the recessed downlights also run in parallel rows from the front of the store to the back. "To allow for changes in the central displays, we were shooting for 40 fc of even, diffuse light on the main display floor," said Porter. "The tidying up of geometries did not affect the even veil of light we wanted throughout the space."

Porter chose to use compact fluorescent downlights with 8-in. apertures to minimize ceiling clutter and sustain the intimate boutique-like atmosphere. "We didn't want 2 x 4 troffers on the ceiling because we didn't want the space to feel like a department store," said Porter.

PHOTOGRAPHY: MICHAEL SPILLERS



"THE REFLECTIVE CEILING PLAN REPRESENTS A STRONG COMPONENT OF OUR IDEA," SAID PORTER. "THE DRAWING, WHICH IS QUITE ABSTRACT, IS A VEHICLE TO COMMUNICATE THE IDEA." NOT A LITERAL DESCRIPTION OF THE SPACE, THE PLAN (RIGHT) SHOWS THE GRAPHIC INTENT AND COMPOSITION OF THE LIGHTING FOR THE RETAIL STORE (BELOW).



However, because ceiling heights measure roughly 12 ft., using a compact fluorescent source with a round aperture instead of a linear fluorescent light required a higher wattage and larger aperture to supply ample illumination. "Many retail market places that use a recessed downlight will go with a PAR downlight," said Porter, "but we were conscientious of energy considerations, heat gain, lamp life and fixture maintenance, so we decided on a compact fluorescent source over a halogen source." To reduce glare, the downlights are finished with clear Alzak, which also seemed appropriate to the modern nature of the space.

#### FIT & TRIM

The various fixtures used in the L Collection are differentiated not only by function, but also by proportion and trim. "When we change function from ambient downlight to an accent spotlight, the aesthetic of that trim and the identity of the fixture also change," said Porter. "One feels the scale shifts in moving from the center of the space to the perimeter." Adjustable pinhole fixtures lamped with 75W MR16s provide accent lighting to the perimeter of the space, while a combination of T8 fluorescent striplights and track

lights adds punch to the display niches. "We wanted to have 100 fc of accent light in the wall niches, so that the displays pop out in contrast to the ambient level of the space." Measuring roughly 3 ft. to 4 ft., each niche conceals a single T8 striplight and track lights, which are mounted inside a cavity. "The idea is to call attention to the illumination of the cavity and not the lighting products and hardware." The same combination of fluorescent striplight and track lights also illuminates the display area behind the check-out counter and a back wall textured with beeswax and plaster.

In the front windows, a fluorescent cove washes a wall in light while a larger-scaled track fixture equipped with PAR38 sources highlights the displays. Once again, the fixtures are regressed into a cove cavity for concealment. To add further visual interest, white-stemmed pendants located periodically throughout the store create pools of light on the ceiling.

Although only two decorative fixtures can be found in the entire space, Porter uses them to mark special features in the store. Above the check-out counter, a large pendant formed of nylon layers stretched tautly over steel rings and weighted by a steel ball is suspended from what Porter terms, "an architectural oculus." The "oculus," a circular area inset in the ceiling, draws one's attention to the suspended fixture, which measures approximately 6 ft. long. To further emphasize the cashier area, an arc of downlights with glass trims mimics the curve and contour of the checkout counter. "The checkout counter obviously needs to stand out and be understood as being unique from the display floor; both of these elements act as a kind of exclamation point to this special interest area," remarked Porter. The arc of downlights deviates from the more orthogonal grid pattern of ambient lights.

In the dressing room area, a decorative wall sconce in the central corridor contributes to the sense of a more intimate space. Field-adjusted, the sconce is mounted above eye-level to accommodate the 12-ft. ceiling height and a sitting bench located below. Porter chose to use a wall sconce instead of a downlight in the ceiling, which would have produced a distracting scallop on the walls and have been repetitive. "We wanted a shift," said Porter. "When someone steps back into that corridor, we want them to feel a transition from the display floor to a more personal space."

To create the atmosphere of a high-end boutique, Porter keeps the coloration of light in the store warm and the light levels low to allow for contrasts. "We didn't want the space to feel like a department store or corporate space," Porter explained. "The quality of light reflects the nature of the service and the merchandise that is sold in the store—that's a very important issue. A lighting designer needs to look at the complete program of the store—its services, merchandise and palette of colors—in order to build a concept and a body of products that supports the store's identity. The lighting becomes a unique application to each store."

As to retail lighting in general, Porter advised, "The main thing I would emphasize is that the lighting should be based on a strong idea relative to the architecture; it should consider and support the nature of the architecture." ■

*Turn to page 40 for information on the fixtures and sources specified in this project.*

#### DETAILS

- PROJECT L Collection
- OWNER David Levin
- LOCATION Leawood, KS
- ARCHITECT Feingold Associates Architecture & Design
- LIGHTING DESIGNER Derek Porter Studio—Derek Porter, IALD
- MEP ENGINEER West Davidson Reynolds, Inc.
- GENERAL CONTRACTOR Bob DeGeorge Associates, Inc.
- PHOTOGRAPHER Michael Spillers
- LIGHTING MANUFACTURERS Edison Price (downlights); Lightolier (accent lights); Zumtobel (downlights); Lithonia (fluorescent striplights); Juno Lighting (track lights); Leucos (wall sconce); Italiana Luce (wall sconce, pendant); Mantis Design Inc. (decorative pendant); GE (lamps)





THE VOLUMINOUS ROTUNDA SPACE (ABOVE & BELOW) AT BOSTON UNIVERSITY CENTER FOR PHOTONIC RESEARCH IS ILLUMINATED BY PAR30 HALOGEN SOURCES. A DISTINCTIVE FEATURE OF THE EXTERIOR (RIGHT) IS THE 80-FT. LIGHT PIPE, WHICH SYMBOLIZES THE CENTER'S MISSION FOR CUTTING-EDGE RESEARCH. CLASSROOMS, LIKE THE ONE OPPOSITE, FEATURE DIRECT/INDIRECT FIXTURES.



# Research Project

A HIGH-PROFILE EDUCATIONAL FACILITY USES LIGHT TO REFLECT ITS HIGH-TECH IMAGE AND TO PROVIDE A QUALITY FUNCTIONAL ENVIRONMENT FOR RESEARCHERS

BY WANDA JANKOWSKI, CONTRIBUTING EDITOR

"It's a business incubator as well as an academic facility," said lighting designer Mark Loeffler about the Boston University Center for Photonic Research. Photonics is the use of light in technology, such as lasers, LEDs and scanners for CD players and cash registers. "The lab space is available to businesses, and the University shares in profits that come as a result of research and development," explained Loeffler.

As with many high-profile educational institutions today, Boston University's management wanted the new structure to express in its architecture, lighting and high-tech systems its dedication to cutting-edge photonics research and education. "The client wanted the building to create a unique appearance in the skyline and externally symbolize the state-of-the-art processes that were going on inside," said Loeffler. "The facility functions as a high-end business attractor, but at the same time needed to be extremely functional and maintainable." As in any educational facility, the lighting played a significant role in creating image and enabling high-level tasks to be accomplished efficiently.

The nine-story, 270,000-sq.-ft. facility includes a rotunda, a skylighted atrium, research laboratories, classrooms, an auditorium, administrative offices and gathering areas for both academic and entrepreneurial use. "The client was interested in the energy

efficiency of the fixtures and wanted an appropriate quantity and high quality used, rather than less expensive, low-performance lamps," said Loeffler. "We used the funds budgeted to achieve good value. We centered on a set of compact and linear fluorescent lamps in fixtures that are mostly standard units with some custom touches."

The lower floors, which include the main entries, classrooms and auditorium, are connected by a central rotunda distinguished with a band of cold-cathode installed in a perimeter reveal. A combination of clusters of compact fluorescent downlights with etched glass diffusers and sconces with translucent globes and brushed metal housings illuminates the main lobby. The rotunda stairway is highlighted with PAR30 halogen fixtures mounted on a mast at the landing.

The main second-level elevator lobby is lighted with lensed fluorescent fixtures suspended in a custom, perforated metal housing.

## LAB RESULTS

The lighting for the public corridors uses compact fluorescents in downlights fitted with plates of brushed glass that hang below the ceiling plane. The plates splash light

PHOTOGRAPHY: © STEVE ROSENTHAL





ABOVE: LAB SPACES EMPLOY DIRECT/INDIRECT FLUORESCENT FIXTURES TO ILLUMINATE THE SPACE, WHICH IS DESIGNED FOR RESEARCH ACTIVITIES. THE CENTER IS DEDICATED TO EXPLORING THE USE OF LIGHT IN TECHNOLOGY, SUCH AS LASERS, LEDs AND SCANNERS.

from the 18W fluorescent quads back to the 12-ft. 6-in. ceiling.

Ted Fowler of Cannon Architects designed the lighting for the labs. The scheme consists of direct/indirect fluorescent pendants that use two F32T8 lamps each. Lab corridors use wraparound fluorescents mounted to the exposed ceiling grid.

"Fowler's lighting for the labs and corridors corresponded with my designs for the other spaces. We played off them regarding the lamping and color temperature," said Loeffler. Classrooms, administrative spaces and the auditorium also are illuminated with direct/indirect fluorescent pendants. Fluorescent fixtures with custom perforated metal shields are used above the doorways at the classroom entrances.

The administrative offices on floors seven through nine are connected by a skylighted atrium that looks down on a dichroic sculpture. Gathering and library spaces at the east and west ends of the upper floors are softly lighted with indirect pendants and wall washers to preserve the views and contribute to the exterior lighting effect.

#### EXTERIOR IMAGE

Due to the precise nature of the work done in the labs, an interior environment had to be created that is free from significant noise and vibrations. Since the structure is wedged against the Massachusetts Turnpike, structural protective measures have been taken, such as triple-pane window glazing on one side of the building, to ensure quiet.

The building at night glows from within. Illumination at the east and west ends of the upper floors is created with indirect pendants. A two-story high clerestory on the west elevation is indirectly lighted with metal halide floodlights. North and south elevations are punctuated with narrow-beam metal halide fixtures that streak light up the bays. Base-mounted fluorescent signlighter fixtures graze the louvered penthouses.

The main entry and the most distinctive lighting features are located on the western facade. An 80-ft. vertical "light mast" is attached to the west facade. The internally illuminated light pipe symbolizes the structure's lighting science purpose. The pipe is lit with three 400W metal halide lamps.

The parapet railings above the glass canopy at the main entry are backlit from below. Large, translucent, internally lighted lanterns perched on the ends of the parapet

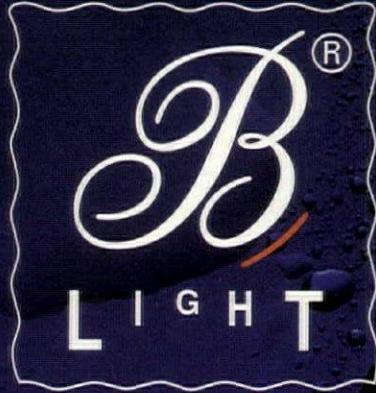
are repeated in miniature below, topping columns flanking the steps from the street up to the second-level entry. The stainless steel signage at the main entry is illuminated with edge-lighted fiber optics concealed behind horizontal banding.

"This was a fun, collaborative project with Cannon and everyone else. The sign of a good collaboration is when it becomes difficult to know where one person's ideas stop and another's pick up," said Loeffler. "That's the way it was on this project. No one was dictating to everyone else."

*Turn to page 44 for information on the fixtures and sources specified in this project.*

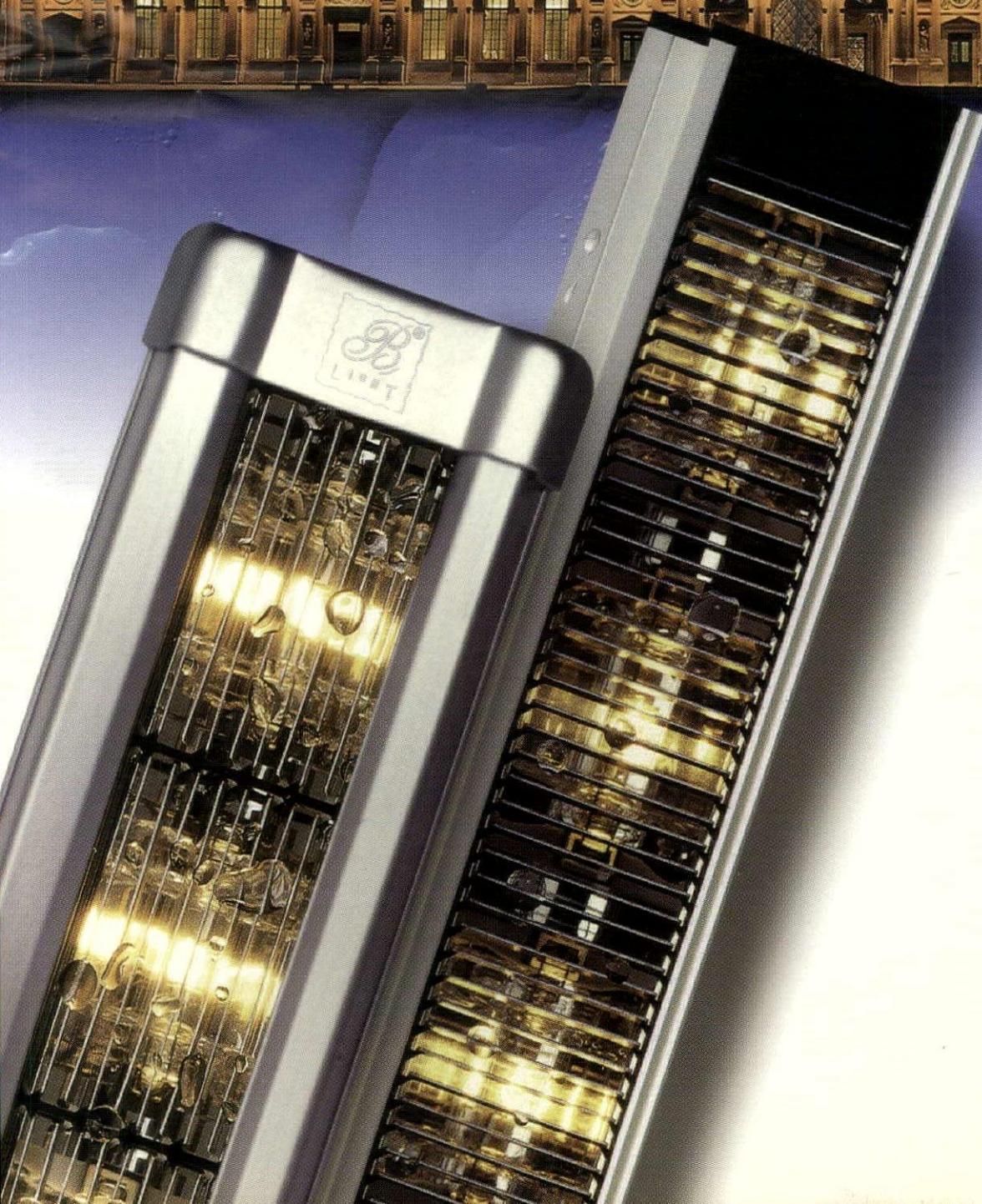
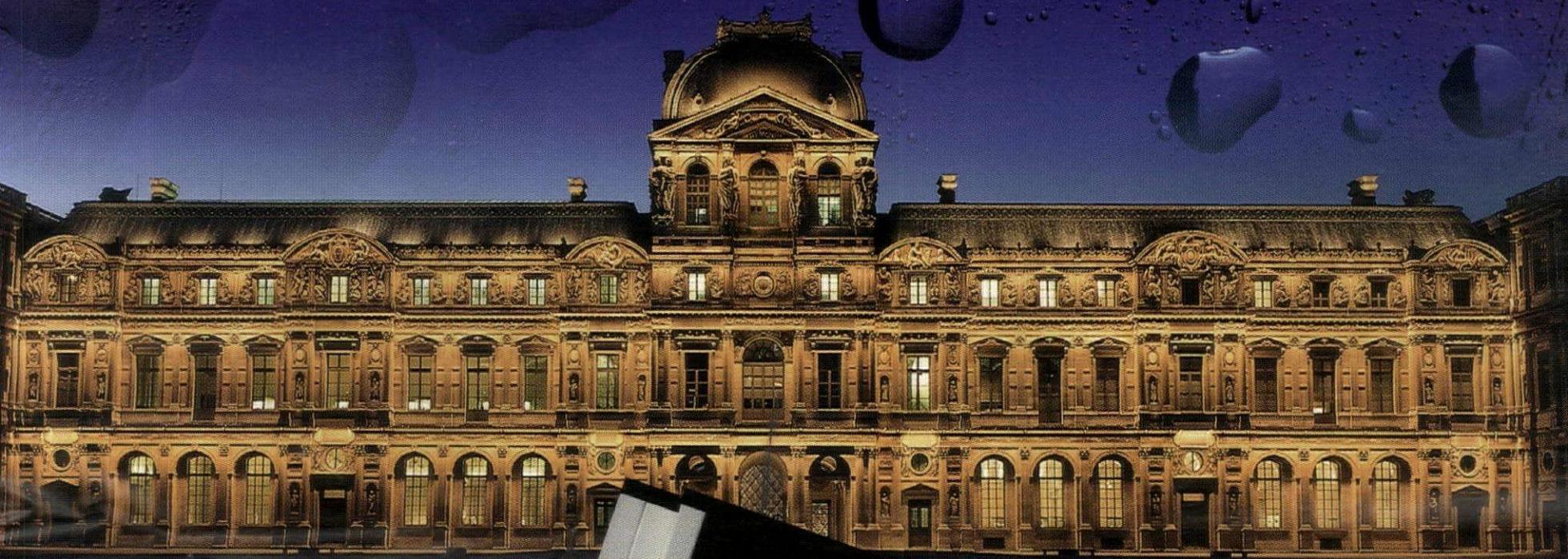
#### DETAILS

- **PROJECT** Boston University Center for Photonics Research
- **LOCATION** Boston, MA
- **ARCHITECT** Cannon—Robert Peterson, senior VP; John McDonald, senior associate; Edward Duffy, associate; Ted Fowler, senior VP
- **LIGHTING DESIGNER** ThermoRetec Corporation, Resource Planning and Management Systems—Mark Loeffler, LC
- **PHOTOGRAPHER** Steve Rosenthal
- **LIGHTING MANUFACTURERS** Exterior: TIR Systems; Fiberstars; Columbia; Sterner; Kirlin; Stonco. Interior: Louis Poulsen; Focal Point; Litecontrol; Zumtobel Staff Lighting; Elliptipar, Lutron



# THIS IS THE LIGHT THAT LIT THE LOUVRE

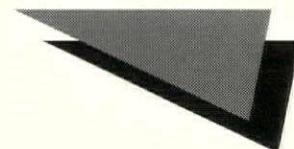
*What architectural masterpiece do you need to light?*



Now this revolutionary fixture is available in the US. Utilizing a Xenon 20,000 hour lamp, this tiny fixture virtually disappears from sight when mounted to the face of a building. No more hot spots, no more blinding flood lights. At last, you can highlight the true architectural detail of a building with the perfect amount of light.

Distributed in the USA by

**LIGHT-PROJECT** INTL  
INC.®

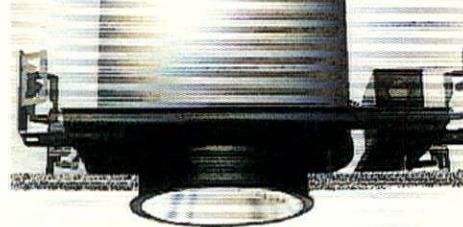


105 Executive Drive #210  
Sterling, VA 20166-9558  
Phone (703) 471-6411  
Fax (703) 471-0312

Visit our web page at <http://www.lightproject.com>

Circle No. 17 on product service card

**Kurt Versen's** E7529 wall washers provide additional general lighting in the training rooms. The fixture features a shovel kicker reflector that redirects spill light through a proprietary prismatic spread lens. Part of the lens is clear and part is diffused for pattern uniformity. The adjustable lampholder enables exact focal point positioning for the PAR38 lamp. The revolving lampholder and the lens-cone assembly can be rotated. Torsion springs hold the parabolic low brightness shielding cone assembly against the ceiling with constant pressure. Specular clear Alzak finish is standard. Optional colors are available. **Circle No. 40**



H7824 downlights by **Kurt Versen** were recessed in the center of the custom ceiling pendants in the lobby. The H7824 series features a 5½-in. square-ridged baffle trim made of extruded heavy wall aluminum. The ridged baffle traps stray light and reduces aperture brightness at normal viewing angles. Eight precisely cut ridges per inch break up spill light and are seen as a soft side wall glow. The ridged baffle is finished in optical matte black. The fixture uses 45W, 90W and 250W PAR38 lamps. **Circle No. 41**

In the trading area, downlights from **Lighting Services Inc's** Metal Halide Series reduce the flattening effect of a completely indirect lighting system. Composed of spotlight and cylinder fixtures, the Metal Halide series is designed to accommodate all PAR20, PAR30 and PAR38 metal halide screwbase lamps. Available finishes are LSI black, white, silver, graphite and platinum. A variety of lenses and accessories is also available. **Circle No. 42**



**Philips' MasterColor** lamps were used inside downlights to add direct lighting to the trading floor. MasterColor metal halide lamps feature lamp to lamp consistency over life; high color rendering (82 to 85 CRI for 3000K; 90 to 93 CRI for 4000K); high lamp efficacy (up to 95 LPW) and ALTO lamp technology, which passes the EPA's TCLP test for non-hazardous waste. **Circle No. 43**



Accentuating the linear nature of the lobby space, **National Cathode's** RR-V-SS-24-C cold cathode lighting system was recessed in a ceiling soffit on the underside of the pedestrian bridges. The system's transformer features an internal disconnect switch and removable cover and operates with a normal power factor of 240 mA. The lampholder produces a continuous line of light and utilizes 25-mm (1-in.) diameter lamps. Lumen output for tri-phosphors ranges from 717 to 768 lumens per sq. ft. **Circle No. 44**

Uplighting the canopy in the front entrance, **Elliptipar's** Style 151 features a reflector made of extruded high purity aluminum with clear anodized specular finish. All hardware and components are non-corrosive stainless steel or aluminum. The door is secured with captive tamper-resistant screws in stainless steel threaded reflector inserts to prevent seizing. The yoke is attached with recessed hex socket screws. Exterior surfaces are finished with electrostatically applied thermoset polyester powder coat. A selection of semi-gloss colors is available. **Circle No. 45**



Suspended from the ceiling like giant nautilus, custom pendants from **Artemus Lighting** supply indirect lighting to the conference rooms on the thirteenth floor. The fixtures are composed of three tiers, with the top spinning measuring 60 in. in diameter. Eight 50W biax uplights in a specially designed indirect reflector system and four 39W biax body lights provide illumination. A 250W incandescent PAR38 downlight is located in the center of the fixture. All parts were custom built to the specifications of Cosentini Lighting Design. **Circle No. 46**

# The Jewish Museum in Berlin



Jewish Museum Berlin · Architect: Daniel Libeskind, Berlin · Lightplanning: Dinnebler Licht, Berlin

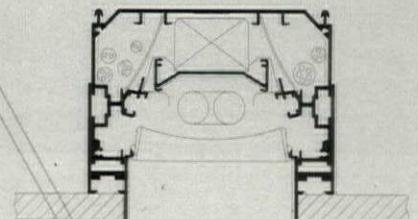
## Daniel Libeskind

"Between the lines", is the way Daniel Libeskind describes the principal behind his architectural concept for the Jewish Museum in Berlin. The ground plan is characterised by a variety of reference axes and is symbolic of the broken star of David. The idea behind this structure is to create a series of voids. A symbol of the Jews now missing from German society. These spaces, which are filled with an atmosphere of oppressive emptiness, are located along an imaginary line that runs the length of the ground plan of the Jewish Museum.

In accordance with Daniel Libeskind's design concept, a lighting system has been developed that reiterates the structure of the ground plan and the facade design on the ceiling. 6.500 feet of lines of light have been recessed into the ceiling at a depth of 1 3/16 inches. Apart from the lighting inserts, the profiles also take power tracks for the accent lighting, the smoke alarm system, the loudspeakers and the antennas for the radio-controlled security system.

If you would like to know more about this or other se'lux products, please visit our website or request our product binder.

e-mail: [seluxus@selux.com](mailto:seluxus@selux.com)



**se'lux®**

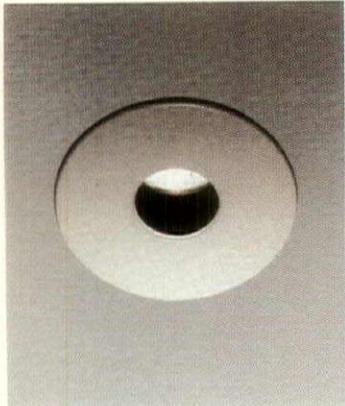
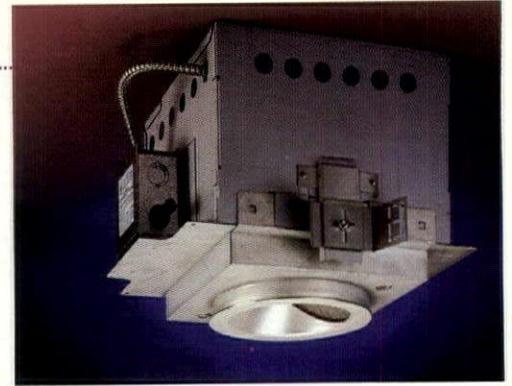
Light. Ideas. Systems.

[www.selux.com](http://www.selux.com)

Australia · Austria · Benelux · France · Germany · Great Britain · Italy · Singapore · Sweden · U.S.A.

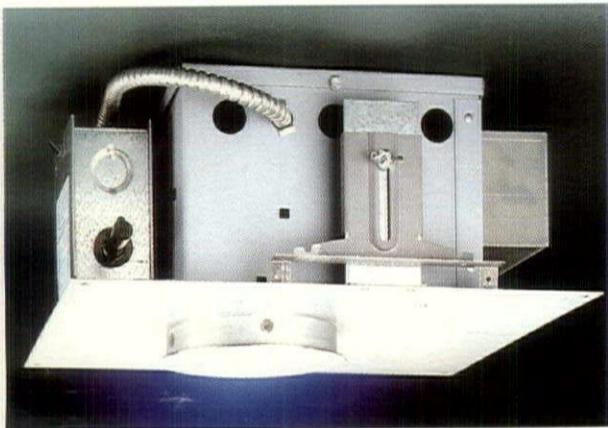
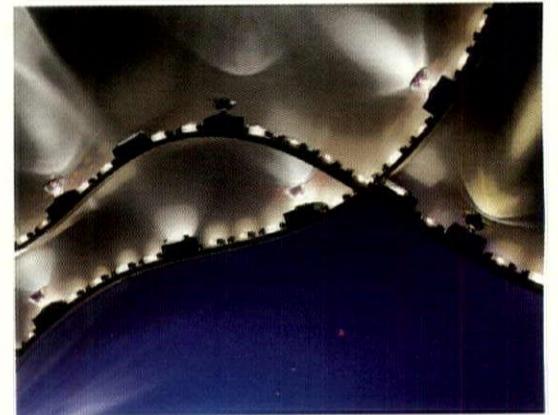
Circle No. 18 on product service card

From **Edison Price**, the Darklite Washlite 39 bathes the gallery walls in light, providing the smooth backdrop for the house's masterpieces. The Darklite Washlite uses Q250 PAR38 flood lamps or R40 spots. The lamp position may be adjusted to produce two distinct wall-wash effects. The standard position provides uniform illumination on vertical surfaces up to the ceiling line. The alternate lamp position provides an area of maximum illumination at eye level. The optical assembly consists of an internal reflector and a 55-degree glass spread lens. Reflectors are available in clear natural aluminum, champagne gold or black Alzak. **Circle No. 47**



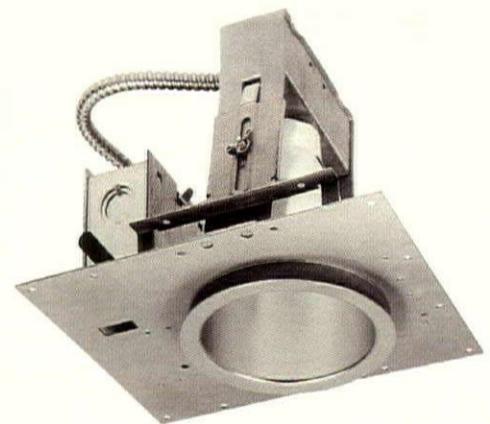
Recessed MR16 low-voltage fixtures by **Reggiani, U.S.A. Illumination** accent artwork in niched areas. The fixtures feature a fully adjustable lamp holder for ceiling adjustment and use a 12V MR16 lamp. The trim is available in a range of plated and painted finishes. Accessories are available to tailor the light beam to the interior application. **Circle No. 48**

Recessed in reveals above the ceiling plane, **Lucifer Lighting's** Series 2000 Light Strip creates the illusion of the walls penetrating the ceiling. Approximately 1 in. wide, the Series 2000 uses 12V or 24V incandescent, xenon and quartz halogen lamps. The fixture accommodates straight or radiused applications. The Light Strip is made of polyether-sulfone thermoplastic with solid brass conductors and comes with double-sided foam tape. Additional attachment made with #4 screws installed through pilot holes provided. **Circle No. 49**



**Edison Price's** Anglux AR/4 is an adjustable accent light used to highlight art in the Red Mountain Residence. Anglux AR/4 has a 4-in. aperture and uses a 12V quartz halogen AR70 lamp. A conical reflector design minimizes aperture brightness. The fixture has a 0- to 35-degree angular lamp adjustment with a 358-degree horizontal rotation. Recess depth is 6 3/4 in. Three kinds of lenses, a UV filter and six glass color filters are available. **Circle No. 50**

The Darklite A19/5 by **Edison Price** is used for general downlighting and wall washing in the hallways, kitchen and entry vestibule. Designed for use with frosted A19 lamps, the fixture features a 5-in. aperture and provides a shielding angle of 40 degrees. Precise reflector design minimizes aperture brightness. One basic housing allows interchangeable use of the downlight and wall wash reflectors. This permits housings to be installed first and reflectors to be changed at any time. A variety of wall wash reflectors are available. **Circle No. 51**

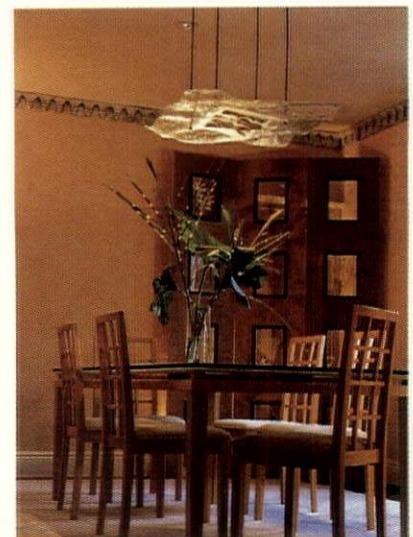


Concealed in the clerestory, **Rambusch's** PAL quartz architectural uplights project light onto the mahogany ceiling to provide general illumination for the great room. Designed for use in architectural elements, such as coves or niches, the fixture is suited for spaces that are as high as they are wide. The PAL uplight is offered in quartz or HID versions with an assortment of reflectors. The indirect reflector is crafted of specular electro-brightened anodized extruded aluminum. The ellipsoidal-shaped reflector allows for precise control of light distribution. **Circle No. 52**

**Tech Lighting's** Joshua Picture Lamp lights Pam Morris' Wave pendant in the dining room. The unobtrusive fixture is designed to illuminate without detracting from the artwork and can light an area as small as 4 sq. in. or as large as 4 sq. ft. Available in either a plug-in or junction-box mount, Joshua extends 18 in. from the wall with a 10-in. height of arc. Joshua is offered in chrome, gold or black. **Circle No. 54**



Lighted by MR16s, the Wave pendant from **Pam Morris Designs/Exciting Lighting** adds sparkle to the dining table. The pendant measures 33 in. x 33 in. and is made of slumped glass and mixed metals. **Circle No. 53**



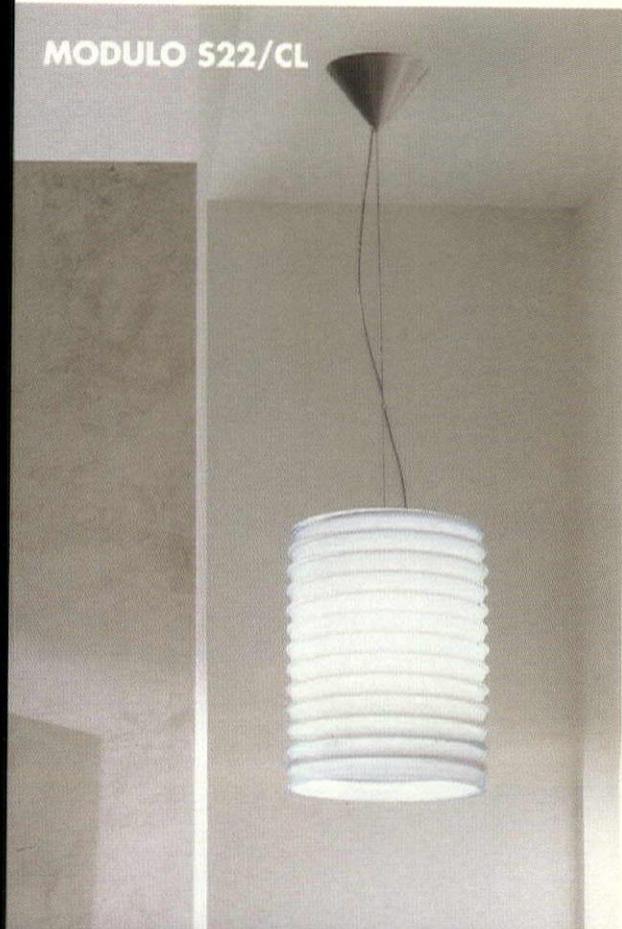
BRINGING ARTISTRY TO LIGHT

MODULO T31

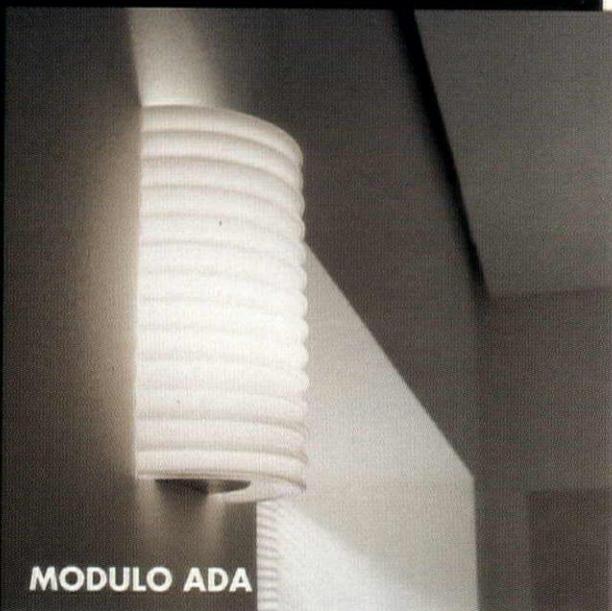


LEUCOS LIGHTING

MODULO 522/CL



MODULO ADA

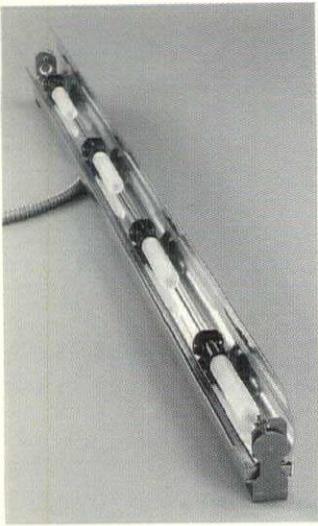


**MODULO**

design by R. Toso, N. Massari and Associates

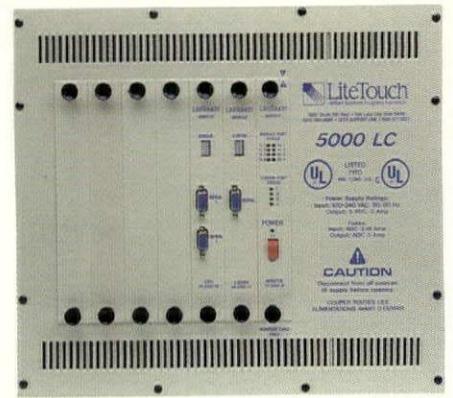
**LEUCOS USA INC.**

11 MAYFIELD AVENUE EDISON N.J. 08837  
TEL (732) 225-0010 FAX (732) 225-0250



Tucked in the clerestory, **Elliptipar's** Style 301 linear incandescent fixture illuminates a soffit to create the illusion of a floating ceiling. Constructed of extruded high purity aluminum with a clear anodized specular finish, reflectors can be mounted in a continuous row; joiner screws lock reflectors together and allow all in the row to be aimed together. Mill finished aluminum L-shaped mounting brackets can be base-, wall- or ceiling-mounted. **Circle No. 56**

To prevent sunlight from deteriorating the art and furniture, a control system by **LiteTouch** provides automatic and manual operation of motorized shades. The LiteTouch 5000 LC is an advanced lighting control system designed to build on existing LiteTouch systems and features a "rack mount design" for future upgrades. Built-in terminal blocks enable the installer to set up the control station and wiring outside dusty work areas, and an integrated power supply facilitates installation. Other features include power outage battery back-up for extended current status and two serial ports for connection to other manufacturer's devices. **Circle No. 55**



Lighting the gallery walls, **GE Lighting's** halogen PAR38 lamps provide crisp, white light with a color temperature of 2750K. Available as a spotlight or floodlight, the lamp has a rated average life of 2,000 hours. **Circle No. 57**



Used throughout the house to provide accent lighting, **GE Lighting's** ConstantColor Precise series of MR16 lamps features precise beam control and no color shift. The series is available in a range of spotlight and floodlight versions. Average rated lamp life is 3,000 to 6,000 hours, depending on the model. **Circle No. 58**

Idea House—page 17

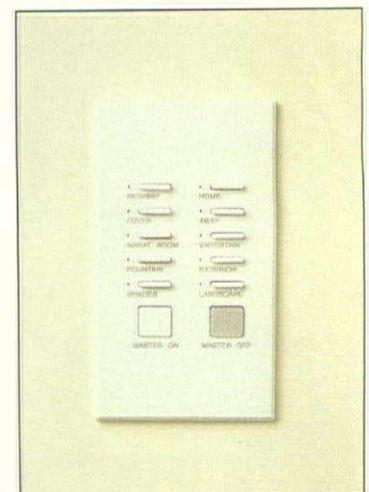


**Starfire's** Xenflex low-voltage lighting strips provide uplighting in the bedroom and create a softer, more intimate atmosphere. Offered in lengths of up to 75 ft, Xenflex uses 5W xenon lamps and provide near-halogen color temperature. Lower bulb-wall temperatures present no shattering danger, require no shielding and enhance long operating life. Standard operating voltage is 24V with 12V optional. Xenflex is dimmable and strips can be cut to any length, formed into true angles or curved to a 12-in. radius. **Circle No. 60**



Used throughout the showroom to provide accent lighting, **GE Lighting's** ConstantColor Precise series of MR16 lamps features precise beam control and no color shift. The series is available in a range of spotlight and floodlight versions. Average rated lamp life is 3,000 to 6,000 hours, depending on the model. **Circle No. 61**

**B-K Lighting's** Nite Star IITM monopoints contribute to the softer atmosphere of the bedroom. Nite Star allows the MR16 lamp to be recessed into the machined aluminum housing, providing deep cutoff for brightness control. The lens is flush with the end of the fixture so that dirt and debris cannot collect inside. A variety of optical accessories is available. **Circle No. 63**



Adding visual interest to the foyer, **LightSpann Illumination Design's** Tuscany Wall Sconce is made of hand-forged iron wrapped across a glass cone. The glass cone colors can be custom blown and combined with a complementary metal patina to match any interior. The color combination for the Idea House '98 was developed and designed from the wall fabric. Winner of the Adex Award '98. **Circle No. 62**

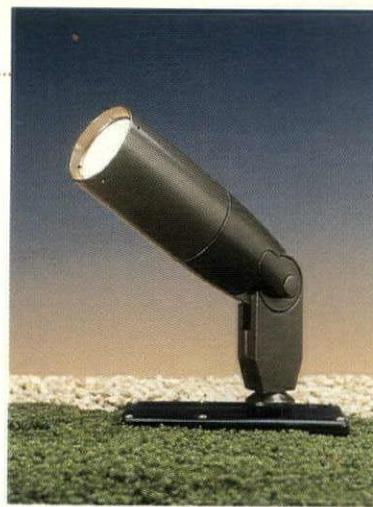
Lighting for the Idea House was placed on **Lutron Electronic's** HomeWorks Interactive Lighting Control System. HomeWorks Interactive features a design that makes the system easy to change or expand to additional areas in the home. The decentralized intelligence allows simultaneous remote and local operation of dimmers and switches throughout the home. The HomeWorks Interactive processor is capable of controlling 256 lighting zones. A maximum of 16 processors can be used in a system. Other features include an astronomic timeclock, security system integration capability and an optional telephone interface for access and control through any touch-tone phone. **Circle No. 64**



Hydrel/SILL 7800 Series Architectural Floodlights are located at the first setback of the Tower. These fixtures are designed to withstand extremes in temperature, moisture, dirt, mishandling and vandalism. These high-performance, low-glare fixtures in low-profile, compact housings provide eight light distributions and vertical or horizontal mounting. Model 7800 accepts specified HID lamps to 100W, model 7801 to 400W. **Circle No. 67**



Hydrel's 9000 Series In-Grade Lights, located at the base of the historic landmark, feature a watertight modular design, meaning all critical components—lamp, ballast and connectors—are installed as pre-sealed modules to eliminate water penetration. The 9000 Series container, designed to drain, allows water to run right through it without damage to the components. Furthermore, moisture will not enter during relamping—unplug the sealed lamp module and move to a clean, dry environment to replace the lamps and silicone gasket. **Circle No. 65**



The turrets of the Water Tower are illuminated by Lumiere's Coronado 720 fixtures for metal halide lamps. In addition to its patented design, the Coronado Series features a patented mounting stem with a locking mechanism that ensures aiming of the fixture. The fixture's locking mechanism allows for vertical adjustment; a setting swivel ensures horizontal adjustment and fastening. Coronado is available in 35W PAR20 (#720), 35W and 70W PAR 30 (#730) and 70W and 100W PAR38 (#740). The series is constructed of both cast and machined corrosion-resistant aluminum alloy with a tempered glass lens secured in place by a high-temperature adhesive. All hardware is stainless steel. Standard finishes are Architectural Bronze, Black, White, Verde and City Silver. Other colors and plated finishes can be custom ordered. **Circle No. 66**



The main tower features North Star Lighting Inc.'s Sunspot 150W metal halide floodlight fixture. Sunspot features a high-intensity white light in narrow, medium and wide distribution patterns. Features include a two-section, matte black, epoxy-finished, cast aluminum lamp and component housing; three stainless steel latches that fasten the front and rear lamp housing; silicone gaskets to seal the fixture and lens from dirt and moisture; and a matte anodized aluminum lens ring that holds a borosilicate glass lens in the front housing compartment. The lens can be changed to offer five different photometric patterns (clear, stippled, prismatic, wide, extra wide). Various accessories are available. **Circle No. 68**



All lamps for this project are from the Philips MasterColor series. MasterColor metal halide lamps feature lamp to lamp consistency over life; high color rendering (82 to 85 CRI for 3000K; 90 to 93 CRI for 4000K); high lamp efficacy (up to 95 LPW) and ALTO lamp technology, which passes the EPA's TCLP test for non-hazardous waste. **Circle No. 69**

1      2      3      4      5

# HERE'S THE PLAN...

N

## TOTAL HOME CONTROL

1

2 "WE HAVE CHOSEN THE VANTAGE SYSTEM OVER THE OTHERS BECAUSE IT IS SIMPLER TO PLAN, EASIER TO INSTALL, MORE POWERFUL, AND ROCK SOLID!"  
-STEVE FOLWELL, INSTALLER, SAN DIEGO, CA

INTEGRATION OF EVERY HOME SYSTEM	
LIGHTING	AUDIO/VIDEO
SECURITY	CLIMATE CONTROL

# VANTAGE

345 EAST 800 SOUTH OREM, UT 84097 · 1-800-555-9891 WWW.VANTAGEINC.COM

1      2      3      4      5

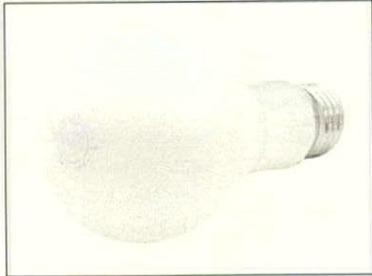
**Circle No. 20 on product service card**

## Santa Fe Opera Theater—page 24

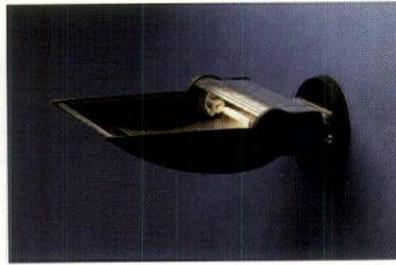
Recessed in a balcony, **Edison Price's** Darklite A21/6 supplies fill light inside the theater. The Darklite A21/6 is a 6-in. aperture downlight designed for use with frosted A21 lamps. The fixture provides a shielding angle of 40 degrees. One basic housing allows interchangeable use of the downlight and wall wash reflectors. This permits housings to be installed first and reflectors to be changed at any time. Reflectors are available in clear natural aluminum or champagne gold Alzak. A selection of wall wash reflectors is offered. **Circle No. 71**



Recessed in the balcony, downlights supplying fill light to the interior of the opera theatre are lamped with **GE Lighting's** Watt-Miser A-Line Bulbs. The series, available in 34W to 135W, can replace 40W to 150W standard lamps. The Watt-Miser Plus line has a lamp life of 2,500 hours. **Circle No. 73**



Illuminating the larger ceiling plane, **Rambusch's** PAL quartz architectural uplights are concealed in a metal trough constructed along the leading edge of the balcony. Lighting a ceiling plane over the balcony, 300W PAL uplights are tucked in a cove along the back of the theater and along the edge of the roof over the stage. Designed for use in architectural elements, such as coves or niches, the PAL uplight is offered in quartz or HID versions with an assortment of reflectors. The indirect reflector is crafted of specular electro-brightened anodized extruded aluminum. The cylindrical-shaped reflector allows for a controlled, soft, even wash of light. **Circle No. 70**



**Bronzelite's** G1001 uplights are recessed in the ground to illuminate the canopy. The G1001 grade-mounted uplight provides flexibility in lamping with low-wattage mercury vapor, metal halide and high pressure sodium options. The fixtures are constructed of heavy cast bronze or aluminum housings, fully gasketed for leak-free performance and a long life of reliable operation. A variety of accessories such as shrouds and louvers is available. **Circle No. 72**

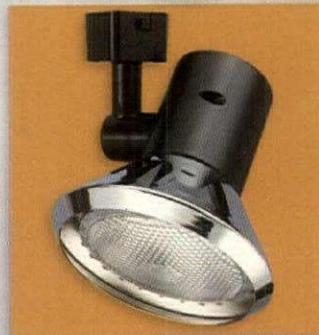


## ultimate universal™

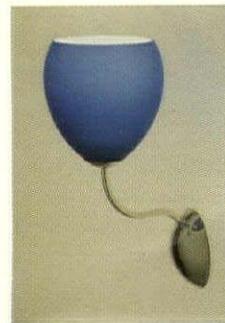


A versatile new performer from Con-Tech, the **ultimate universal™** track light features a low profile side swivel design, and modular component flexibility. The compact lampholder and swivel are molded of durable, lightweight, high temperature Lexan™. Designed for the brilliant color and energy efficiency of 120 volt PAR 16, 20, 30 and 38 halogen lamps. Ask about our *speed of light™* shipping service.

Choose a matching black or white shade – add a design accent with polished brass or chrome – or present a minimalist look with the lamp unshielded.

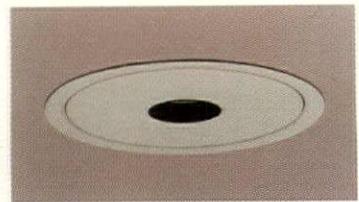


## L Collection—page 28



In the dressing room area, **Leucos' Golf/P2 Wall Sconce** eases the transition from main display area to more intimate space at the L Collection. Soft, curved lines and simple hand-blown glass characterize the Golf series designed by architects Renato Toso and Noti Massari. The sconce can be mounted in the up position or turned upside-down, and the backing and curved arm are available in polished chrome or a 24K gold plated finish. The layered glass diffuser is offered in five colors: satin white, cobalt blue, vivid red, Nile green and soft amber. Golf/P2 uses one 100W A19 incandescent. **Circle No. 75**

The backing and curved arm are available in polished chrome or a 24K gold plated finish. The layered glass diffuser is offered in five colors: satin white, cobalt blue, vivid red, Nile green and soft amber. Golf/P2 uses one 100W A19 incandescent. **Circle No. 75**



MR16 Pinhole accent lights by **Lightolier** illuminate the perimeters of the space and provide a fixture scale shift to complement the architectural design. The pinhole accent lights feature an inner matte black shield to absorb stray light. **Circle No. 81**

Used to provide accent lighting in perimeter and niched areas, the ConstantColor Precise series of MR16 lamps from **GE Lighting** features pre-



precise beam control and no color shift. The series is available in a range of spotlight and floodlight versions. Average rated lamp life is 3,000 to 6,000 hours, depending on the model. **Circle No. 82**



3865 Commercial Ave. Northbrook, IL 60062

Phone: 847.559.5500 1-800-728-0312

Fax: 847.559.5505

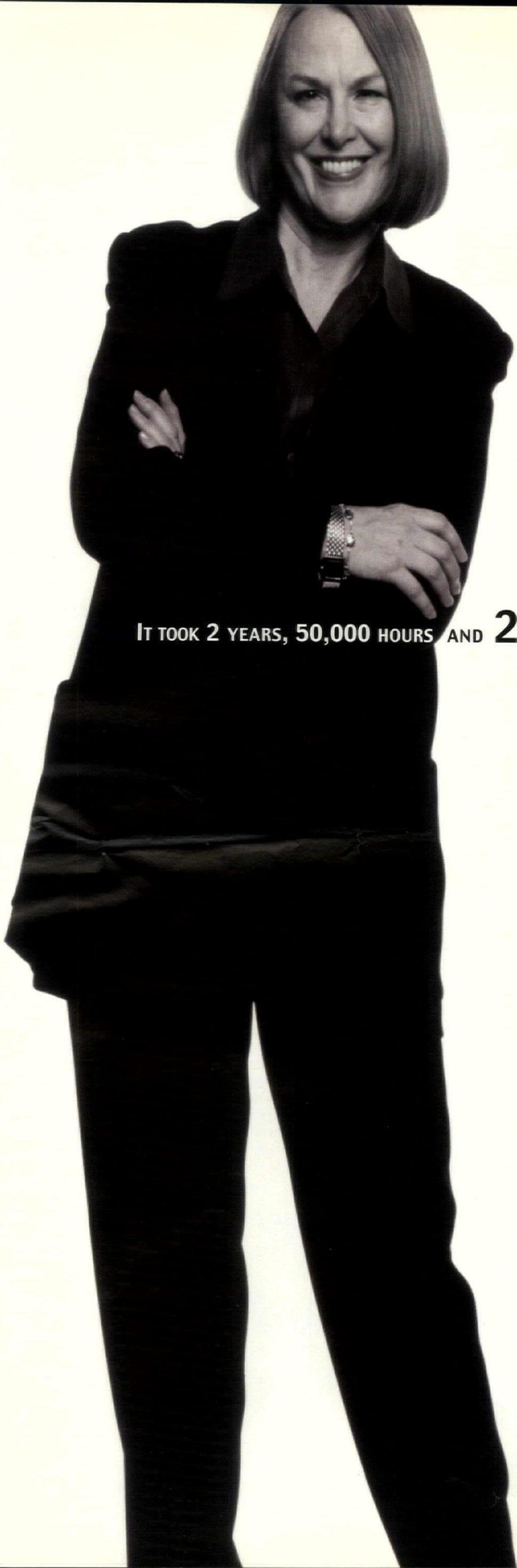
www.con-techlighting.com

Circle No. 21 on product service card



© Copyright 1999 Conservation Technology Ltd. Lexan™ is a trademark of General Electric Co.

ARCHITECTURAL LIGHTING/www.lightforum.com



**“FINALLY SOMEONE HAS SEEN THE LIGHT.”**

*JoAnne Lindsley, IALD  
Architectural Lighting Designer  
Lindsley Consultants Inc.*

For JoAnne Lindsley, lighting is one of the most important aspects of a building's design. The way she sees it, proper lighting is a tool to help people do their job more effectively. Which is why when it comes to making her job a lot easier, she really appreciates a formatted comparison tool like c-z.com.

**IT TOOK 2 YEARS, 50,000 HOURS AND 287 ARCHITECTS TO BUILD.**

Built by design professionals like JoAnne, c-z.com boasts an ever-growing inventory of product information. Detailed, uniform product data – it's the kind of quick access to information you'd expect from a resource that was built to be online from the beginning. So when it comes to researching your next project, turn on c-z.com.



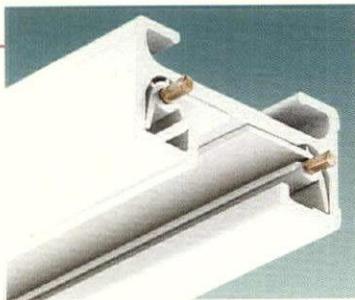
WWW.C-Z.COM

*The way to get work done.*

Circle No. 22 on product service card

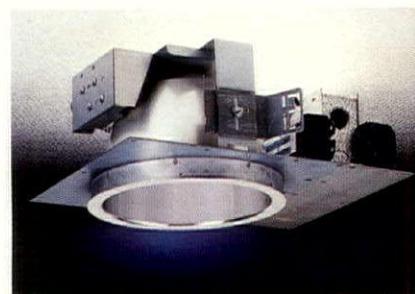
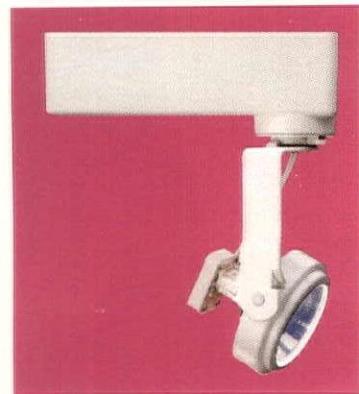


An arc of downlights lamped with **GE Lighting's** 100 W PAR38 HIR sources echoes the curve of the checkout counter. The lamps feature an IR film, which recycles wasted energy. Available as a spotlight or floodlight, the lamp has a rated average life of 3,000 hours and a color temperature of 2900K. **Circle No. 83**



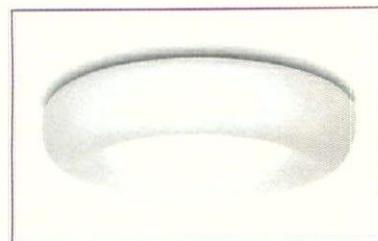
Lighting the display niches, **Juno Lighting's** One-Circuit Trac-Master System, T8-WH, offers One-Circuit Trac-Master sections that can be surface-mounted or suspended from ceilings with pendant accessories. One-Circuit Trac sections feature an extruded aluminum channel, General Electric Noryl 265 insulator, debossed polarity line, No. 12 solid copper conductors and concealed wireway on top of the Trac section. **Circle No. 77**

The V696-WH Low Voltage Gimbal Ring from **Juno Lighting** was used to light display niches. The Low Voltage Gimbal Ring is a track lighting system featuring one-hand installation and removal. High-tech in appearance and compact in size, the fixture uses MR16 lamps to provide beam control for accent lighting. The Low-Voltage Gimbal Rings are designed for shipment as one complete unit with an integral 50W 12V electronic transformer and optic assembly for easy installation. **Circle No. 78**



Arranged in an orthogonal grid pattern, **Edison Price Lighting's** Duplux 8 downlights provide 40 fc of diffuse ambient light to the main display floor. The Duplux 126/8 and 226/8 are low-brightness downlights with an 8-in. aperture for use with one or two 26W compact fluorescent lamps. Duplux 226/8 provides shielding angles of 35 degrees parallel to and 40 degrees perpendicular to the lamps. Recess depth is 6<sup>9</sup>/<sub>16</sub> in. Reflectors are available in clear natural aluminum or champagne gold Alzak with Color-Chek anodizing to reduce iridescence. Wall wash reflectors are also offered. **Circle No. 79**

To highlight the checkout area, an arc of **Zumtobel Staff Lighting's** Optos downlights echoes the curve of the counter. Optos downlights are offered in 6-in and 8-in apertures with a variety of glass accessories. The downlights can be used with compact fluorescent, metal halide, incandescent and PAR lamps. Faceted reflectors are available in clear (specular silver) and white finish. Housings are made of 20-gauge galvanized steel and the mounting frame is made of 14-gauge die-cast aluminum. **Circle No. 80**



The Ceiling Duna from **Italiana Luce** adds visual interest to the L Collection by creating pools of light on the ceiling. The pendant fixture features an adjustable painted metal arm and shade. Ceiling Duna provides uplight and uses a 300W RSC, 41<sup>1</sup>/<sub>16</sub>-in. linear halogen lamp source. The arm is available in two lengths, 40<sup>1</sup>/<sub>2</sub> in. and 23<sup>3</sup>/<sub>4</sub> in. **Circle No. 76**



**DESIGN EXCELLENCE  
IN LIGHTING**

■ OUR NEW MINIATURE LINEAR SYSTEM IS IDEAL FOR UNDERCABINETS, COVES, IN CABINET, TOE SPACE, DISPLAYS AND WHEREVER A SMALL LIGHT SOURCE IS REQUIRED.

■ CORPORATE OFFICES  
615 SOUTH STREET  
GARDEN CITY, NEW YORK 11530  
TEL: (800) 526 • 2588  
FAX: (800) 526 • 2585  
Email: sales@wacighting.com  
Web site: www.wacighting.com

■ DALLAS SHOWROOM  
DALLAS TRADE MART #3321  
2100 STEMMONS FRWY  
DALLAS, TX 75207





**ENGINEERED  
AT NEUEN  
HAUS 4-10  
LÜDENSCHIED,  
GERMANY.**

**TO BE  
PRECISE.**

**INTRODUCING HOFFMEISTER®**

For years, Hoffmeister luminaires have been at the forefront of European lighting design. They've been a top choice of leading European architects and electrical engineers. They can be seen in the most prestigious European retail applications. And now, they're available in America.

Utilizing state-of-the-art light sources and reflector technology, Hoffmeister is able to combine radical functionality with ultra-high photometric efficiency. With their coordinated collections of spotlights, tracks, ceiling-recessed, and surface-mounted



fixtures, plus a complete line of matching accessories, you'll find the precision solution for every conceivable lighting task.

For your most prestigious projects, choose the Hoffmeister product line from Alkco. They'll illuminate merchandise like nothing else. But you'll probably find yourself staring at the lights.

**GERMAN ENGINEERING.  
AT ITS MOST BRILLIANT.**

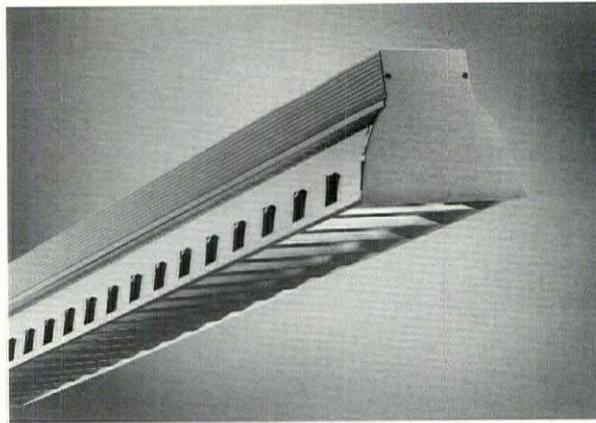
**ALKCO** 

**where quality comes to light™**  
*A JJI Lighting Group Company*

11500 Melrose Avenue  
Franklin Park, Illinois 60131-8389  
Phone: (847) 451-0700  
Fax: (847) 451-7512  
[www.alkco.com](http://www.alkco.com)

Circle No. 24 on product service card

An 80-ft. vertical "light mast" attached to the west facade, the internally illuminated TIR Series 4000 light pipe symbolizes the structure's lighting science purpose. The Series 4000 fixture uses 70W and 150W metal halide lamps for indoor and outdoor applications and is offered in various anodized or painted colors. The fixture features a specially designed reflector maximizing the amount of light entering a 4-in. light guide, easy relamping and a simple mounting system. When used with TLP4 light guides, up to 32 ft. of continuous light can be achieved. **Circle No. 84**



Providing indirect illumination in the auditorium and classrooms, **Focal Point's** Evolution I is composed of a one-piece extruded aluminum channel. A perforated area on the reflector provides soft uplight, and a parabolic louver delivers glare control for VDT environments. For continuous row installations, louvers join together to create a clean connection. **Circle No. 86**



Providing general illumination to the laboratories, **Litecontrol's** LC-90 has a coefficient of utilization of .85 with 80/50/20 reflectances at RCR 1 for a large space. The fixture produces a 60-percent indirect and 40-percent direct distribution of light. Specular reflectors are angled to direct light rays at low angles for even, controlled luminances on the ceiling. Low brightness, low-iridescence parabolic baffles made from high-reflectance semi-specular anodized aluminum give the LC-90 its direct batwing distribution. A vertical grain on the cross baffles helps to eliminate lamp images. **Circle No. 87**



**Zumtobel Staff Lighting's** Optos downlights were used throughout the research center to provide downlighting for general illumination. Optos downlights are offered in 6-in and 8-in apertures with a variety of glass accessories. The downlights can be used with compact fluorescent, metal halide, incandescent and PAR lamps. Faceted reflectors are available in clear (specular silver) and white finish. Housings are made of 20-gauge galvanized steel and the mounting frame is made of 14-gauge die-cast aluminum. **Circle No. 85**



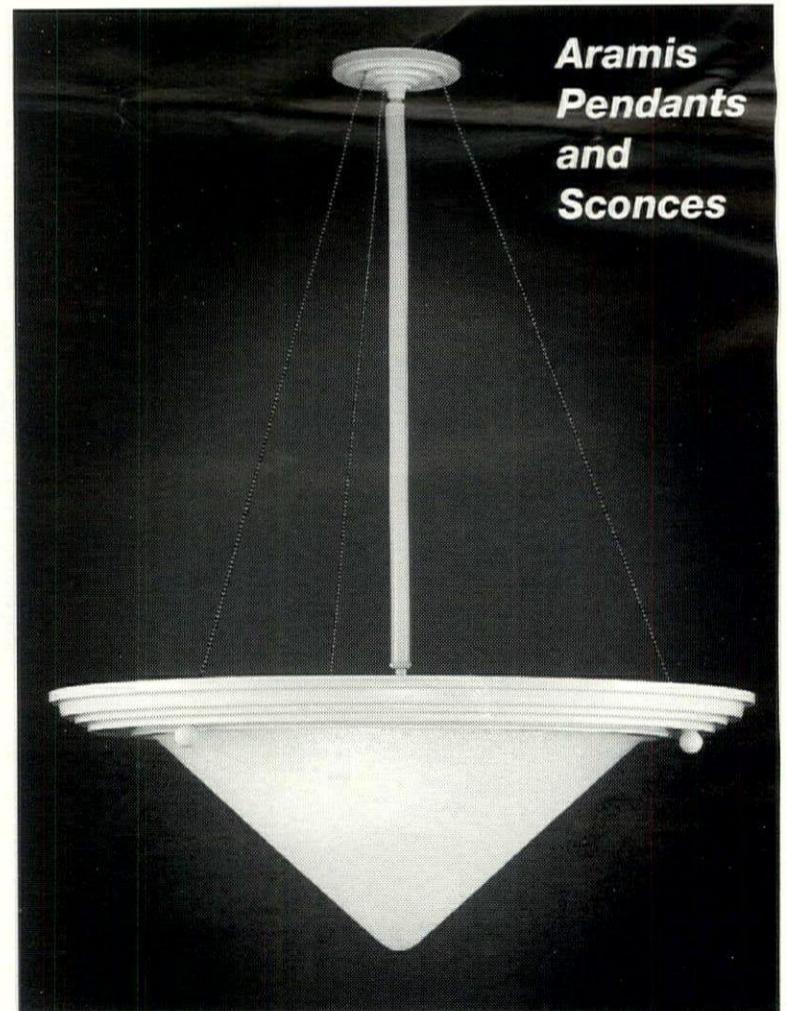
## CLASSIC STYLE IN ENERGY-EFFICIENT LIGHTING

Pendants offered in eighteen unique metal finishes. Illuminated with up to 52 watts of compact fluorescent light. One of many styles made to order to suit your specification. Request your catalog today.



**CLASSIC ILLUMINATION INC.**  
2743 NINTH ST., BERKELEY, CA. 94710-2632  
(510) 849-1842 FAX (510) 849-2328  
[WWW.ClassicIllumination.Com](http://WWW.ClassicIllumination.Com)

Circle No. 26 on product service card



**Aramis  
Pendants  
and  
Sconces**

**THE ORIGINAL CAST™ LIGHTING**

6120 DELMAR BLVD • ST. LOUIS, MO 63112  
314.863.1895 • FAX 314.863.3278  
[www.theOCL.com](http://www.theOCL.com)

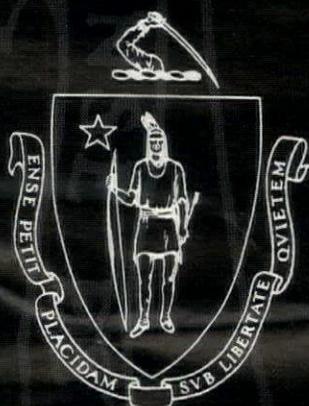
Circle No. 25 on product service card

ARCHITECTURAL LIGHTING/[www.lightforum.com](http://www.lightforum.com)

# Code Change to Affect All Commercial Construction in Massachusetts

The Massachusetts Board of Building Regulations and Standards (BBRS) has adopted **NEW ENERGY CONSERVATION REQUIREMENTS** into the State Building Code (780 CMR, Chapter 13.) The new provisions will take effect on **JANUARY 1, 2001**, and will cover all new commercial and high-rise residential construction in the state.

BBRS, in cooperation with the U.S. Department of Energy, the Massachusetts Division of Energy Resources, and the state's gas and electric utilities, will be offering **FREE SEMINARS** on the new Energy Code throughout 2000. Lighting designers, architects, engineers, contractors, and others are encouraged to attend. The following schedule is for **LIGHTING/POWER** seminars. (Sessions on Envelope and on HVAC requirements will also be offered.) Registration is required at least one week in advance. Please register by e-mail at [www.state.ma.us/bbrs/register.htm](http://www.state.ma.us/bbrs/register.htm) or call 617-951-1433 x323. AM sessions run from 8:30 to 12:00, PM sessions from 1:00 to 4:30. Directions will be sent with confirmation.



## FREE LIGHTING/POWER SEMINARS

CITY	DATE	TIME
Peabody	2/2/00	8:30 AM
Boston	2/10/00	1:00 PM
Andover	2/23/00	8:30 AM
Northborough	3/2/00	1:00 PM
Swansea	3/15/00	8:30 AM
West Springfield	3/21/00	1:00 PM
Cambridge	4/6/00	8:30 AM
Boston	4/12/00	1:00 PM
Northampton	4/26/00	8:30 AM
Needham	5/4/00	1:00 PM
Cambridge	5/16/00	8:30 AM
Boston	5/24/00	1:00 PM
Northborough	6/7/00	8:30 AM
Boston	6/13/00	1:00 PM
Newburyport	6/27/00	8:30 AM
Andover	7/12/00	1:00 PM
Wareham	7/26/00	8:30 AM
Yarmouth	8/1/00	1:00 PM
Cambridge	8/22/00	8:30 AM
Northborough	9/12/00	1:00 PM
Boston	9/26/00	8:30 AM
Billerica	10/2/00	1:00 PM
West Springfield	10/18/00	8:30 AM
Boston	10/24/00	1:00 PM
Boston	11/9/00	8:30 AM
Andover	11/15/00	1:00 PM
Boston	12/6/00	8:30 AM

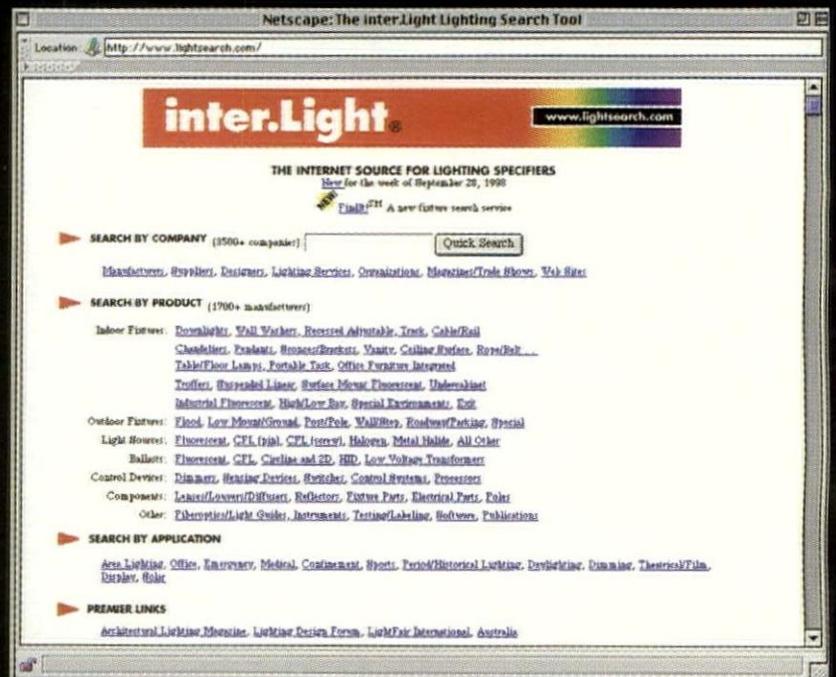
# www.lightsearch.com

Why do more lighting specifiers make inter.Light® their first stop on the web?

No other search tool puts over 3400 lighting companies at your fingertips.

No other search tool gives you a database with query options designed for professional specifiers.

Nowhere else can you view products and order literature directly from search results.



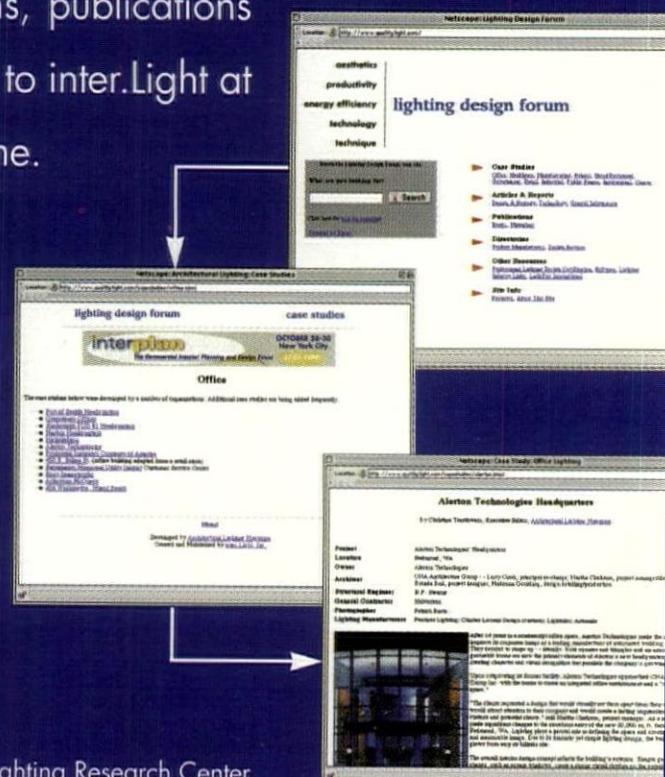
*It's free. It's fast. It's the way the web should be!*

Also, check out the leading lighting design site at [www.qualitylight.com](http://www.qualitylight.com)

## Meet Your New Lighting Library

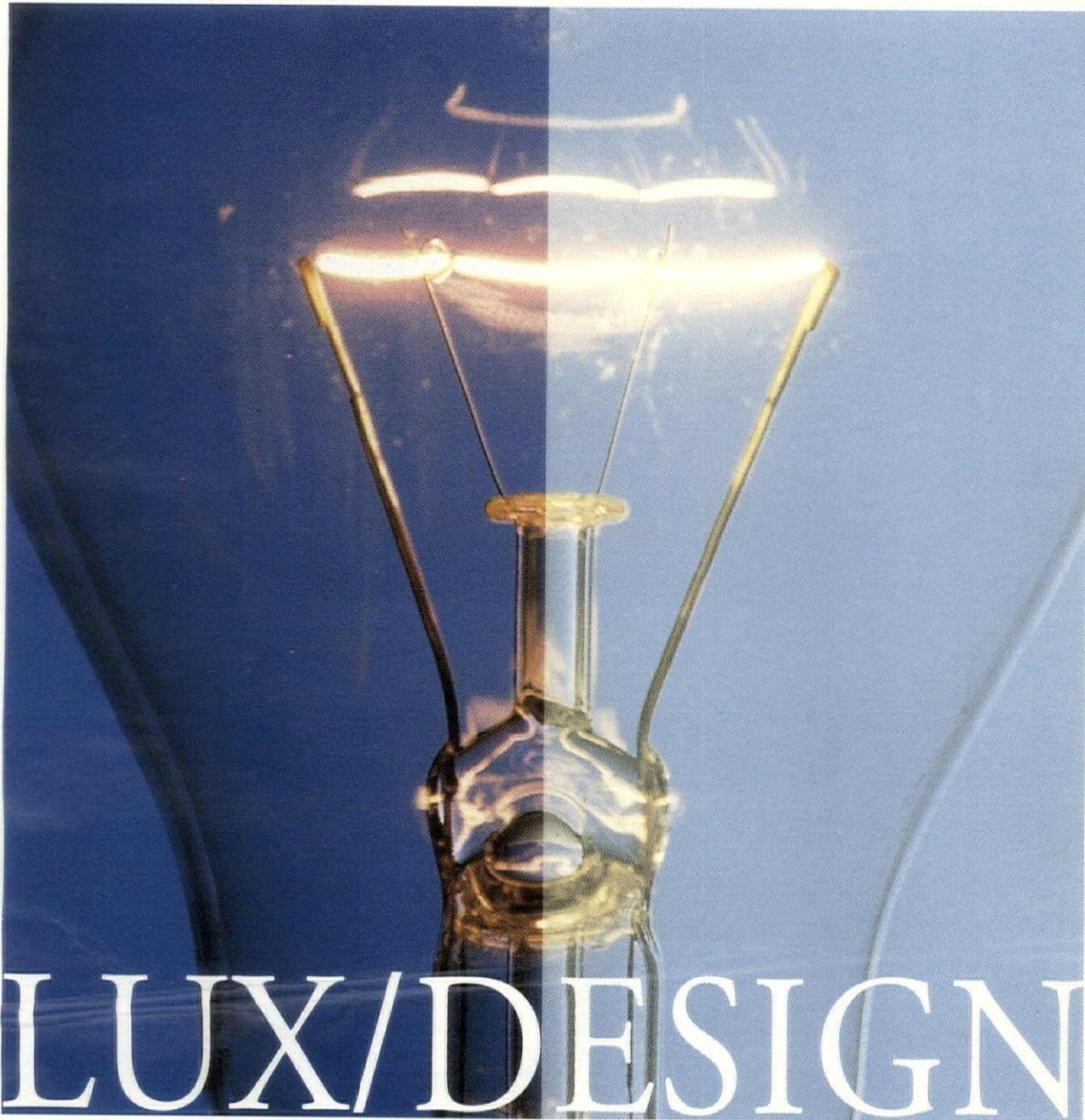
The sponsors of the Quality Lighting Campaign bring you the Lighting Design Forum at [www.qualitylight.com](http://www.qualitylight.com), an on-line library of articles, links and resources. You'll find projects, articles on technique and technology, links to other organizations, publications and many other resources. The Lighting Design Forum is linked to inter.Light at [www.lightsearch.com](http://www.lightsearch.com), the on-line lighting product search engine.

# www.qualitylight.com



The Lighting Design Forum is sponsored by Architectural Lighting Magazine, inter.Light, the IALD, Lighting Research Center, Lighting Design Lab, Northwest Energy Efficiency Alliance, National Lighting Bureau, Lightfair International, Ardee Lighting, Columbia Lighting, GE Lighting, JJI Lighting Group, Litecontrol, Luxo Corporation, Prescolite Lighting, Targetti USA, Tivoli Industries and Wide-Lite.

# For the 40 years of BATIMAT "Lux/Design...40 years later".



A design confrontation of lighting products, selected from the 60's era and today, will take place at BATIMAT '99. Lux/Design will showcase the best in lighting solutions from the 1960's and Year 2000. All products will be carefully selected by a panel of French and Italian architectural experts.

A presentation organized by BATIMAT and ARCA.

**To visit Lux/Design at BATIMAT '99**

International Trade Exhibitions in France, INC.  
Call toll free: (888) 522 5001  
E-mail: [tradeshows@itef.com](mailto:tradeshows@itef.com)  
Washington Office  
1611 N. Kent St. - Suite 903 - Arlington, VA.22209  
Fax: (703) 522 5005

**To participate in the Lux/Design presentation**

Laurent Waessa  
Miller Freeman Inc.  
11<sup>th</sup> floor, One Penn Plaza, New York, NY 10119  
Phone : (212) 615 29 25  
Fax: (212) 643 48 03  
E-mail : [lwaessa@mfi.com](mailto:lwaessa@mfi.com)



Paris expo-Porte de Versailles - France  
From the 8<sup>th</sup>\* to the 13<sup>th</sup> of November 1999 - In partnership with

**l'ARCA**

\* The 8<sup>th</sup>, preview day reserved for the Press and on invitation

ADVERTISER	PAGE	CIRCLE NO.
Alkco Lighting	10, 43	11, 24
Architectural Landscape Lighting	11	13
Ardee Lighting	11	12
Classic Illumination Inc.	44	26
Construction Zone	41	22
Con-Tech Lighting	40	21
Cooper Lighting	8	8
Davis-Muller	Cov. 3	28
Elliptipar Inc.	5	5
Hydrel/Lithonia	23	15
Kim Lighting	19	14
Kramer Lighting Inc.	3	3
Lam Lighting	10	10
Leucos USA, Inc.	37	19
Light Project International	33	17
Lighting Services Inc	9	9
Litecontrol Corp.	Cov. 2	1
Lithonia Lighting	Cov. 4	29
Lumière	6	6
Lutron Electronics Co., Inc.	1	2
The Original Cast Lighting	44	25
Se'Lux Corp.	35	18
Tango Lighting	27	16
Times Square Lighting	4	4
Vantage Controls Inc.	39	20
Visa Lighting Corp.	7	7
W.A.C. Lighting	42	23

*Publisher is not liable for omissions*

## CLASSIFIEDS

### POSITIONS AVAILABLE

Schott-Fostec LLC, a joint venture company between Schott Corporation and Sylvania Lighting International, seeks a Product Manager, Illumination & Traffic Systems.

The Product Manager will be commercially and technically responsible for fiber optic products and market segments covering illuminated signage and assemblies, architectural lighting, automotive lighting, and fiber optic & LED aviation lighting, and will work with customers to define and resolve all product requirements.

This position requires a Bachelor's degree in physics or engineering and 3-5 years experience with lighting products for architectural, automotive, signage and aviation industries, plus experience in the sale of products and components in these markets. We offer a competitive salary and comprehensive benefits package. Send resume (including salary history) to: Schott-Fostec LLC, Human Resources Department, 45 Bartlett Street, Marlborough, MA 01752

### A LIGHTING INDUSTRY VP, MARKETING/SALES

Entrepreneurial, experienced executive sought for innovative, independent and well-respected lighting fixture manufacturer. Progressive skills required in sales management (of RSM, Quotations and international manufacturer representatives) and marketing (electronic/print catalogs, pricing, promotions, technical training). Showroom & budget responsibilities.

Mail/fax resume with salary history and references to:  
CEO, The Kirlin Company, 3401 East Jefferson Avenue,  
Detroit, MI 48207-4232, Fax 313-259-7923 or 313-259-9409

### Position: Associate Lighting Designer

MOVE TO ASPEN!! A great opportunity to learn by working closely with the principal of the company. Award winning Aspen Based Architectural Lighting Design Firm specializing in High End Residential & Commercial Projects seeking Jr. Associate Level designer. A self motivator with excellent organizational & communication skills. Applicant must have experience in AutoCAD, Lumen Micro, Visual 2.0, Lightscape, WordPerfect, Excell, Adobe Photoshop, Dream Weaver, Flash 4, Aftershock, Fireworks, HP Precisions Scanner & HP Designjet Plotter. Great potential for growth. Full benefit package, salary commensurate with experience. Fax resumes to Robert Singer @ 970-963-5684 for immediate review & response.

### TRACK & RECESS

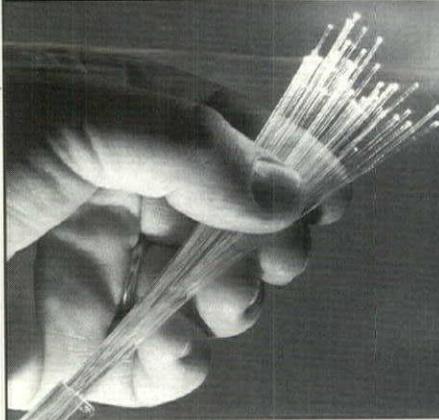
#### LIGHTOLIER

See what "Designing with Light" is all about with our full line of Lightolier track, recessed, fluorescent & controls.

**SHOWROOM LIGHTING BY GREGORY**  
Ph: 212-226-1276 or 800-796-1965  
lbg158@aol.com • www.lightingbygregory.com

### PRODUCTS FOR SALE

#### PLASTIC OPTICAL FIBER



✓ QUALITY

✓ PRICE

✓ DELIVERY

✓ MORITEX

Call today for a catalogue and a competitive price quote

800-548-7039 | sales@moritexusa.com  
858-453-7905 | www.moritexusa.com



### SERVICES TO THE TRADE

*Transforming Ideas Into Reality*

**BLOCH DESIGN GROUP, INC.**

**Call 847-446-6500**

Full service to the technical arts, including architectural and production lighting design, engineering, and construction supervision

550 Frontage Road, Suite 3735, Northfield, IL 60093 • Website: www.blochdesign.com

### SPECIALTY LIGHTING

FPO  
PU from Aug/Sept  
"bendalite.com"

Please fax your classified ad copy to us at 212-279-3955, attn: Sarit Zadok, and we will build your ad free of charge!

## ARCHITECTURAL LIGHTING 1999 CLASSIFIED RATES & INFORMATION

### PER COLUMN INCH

1X .....\$99  
4X ..... \$94  
8X ..... \$89

### PRODUCTION OPTIONS

Photo.....\$25  
Bold.....\$10  
Special Border.....\$10  
Reverse.....\$15  
Logo.....\$20

(additional charge per issue)

Rates are quoted as per issue/per inch.  
All classified advertising is prepaid.

**CONTACT ARCHITECTURAL LIGHTING • ONE PENN PLAZA NY, NY 10119 OR CALL 800-950-1314 EXT. 2727**