

OCTOBER/
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1997

lighting

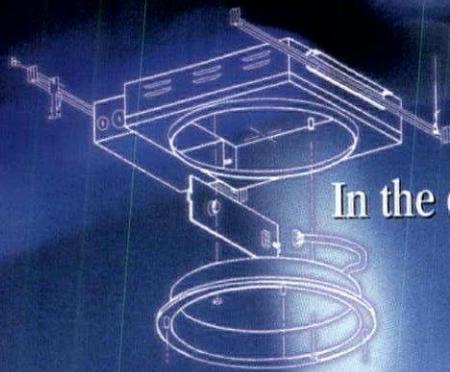
architectural

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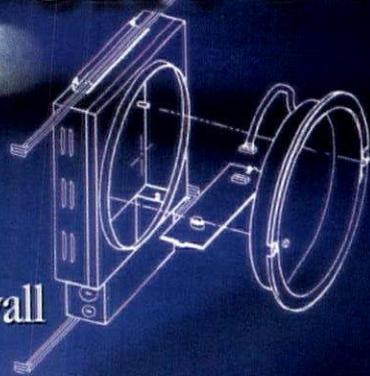
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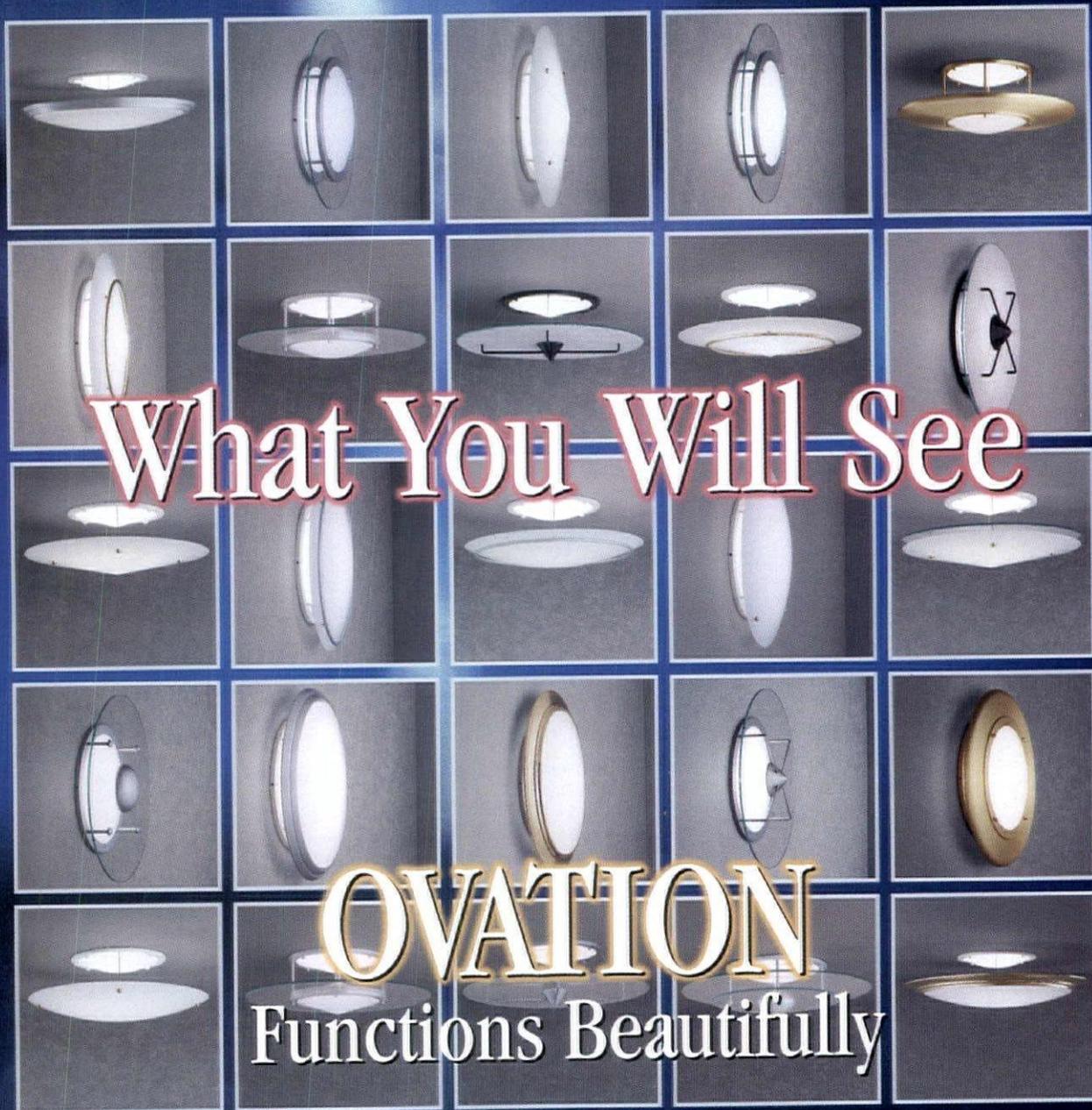
What You Won't See



In the ceiling



In the wall



What You Will See

OVATION

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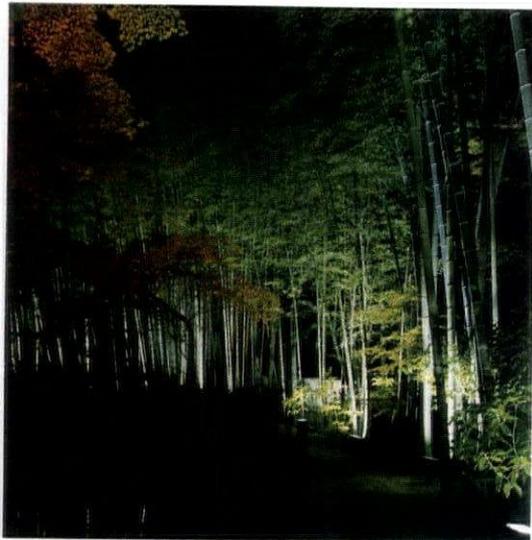


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ENKOJI TEMPLE

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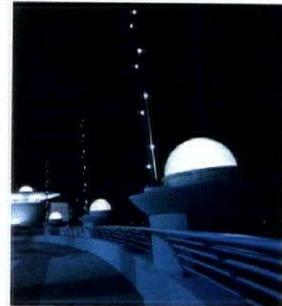
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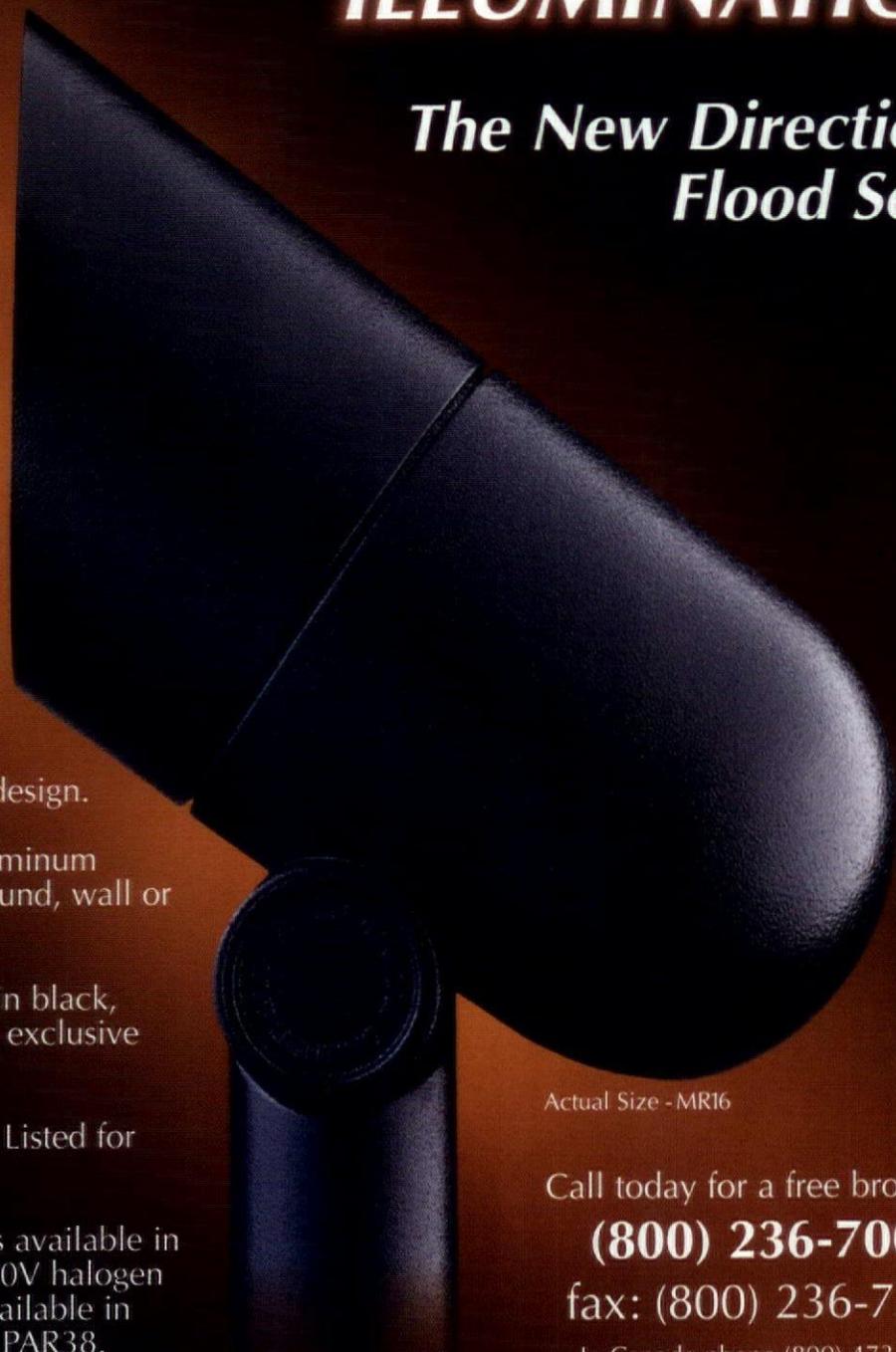
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Editor-in-Chief/
Associate Publisher

CRAIG DILOUIE
(212) 615-2304
e-mail: cdilouie@mfi.com

Executive Editor

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

Assistant Editor

EMILIE SOMMERHOFF
(212) 615-2621

Designer

ROMAN TSUCKERMAN
(212) 615-2273

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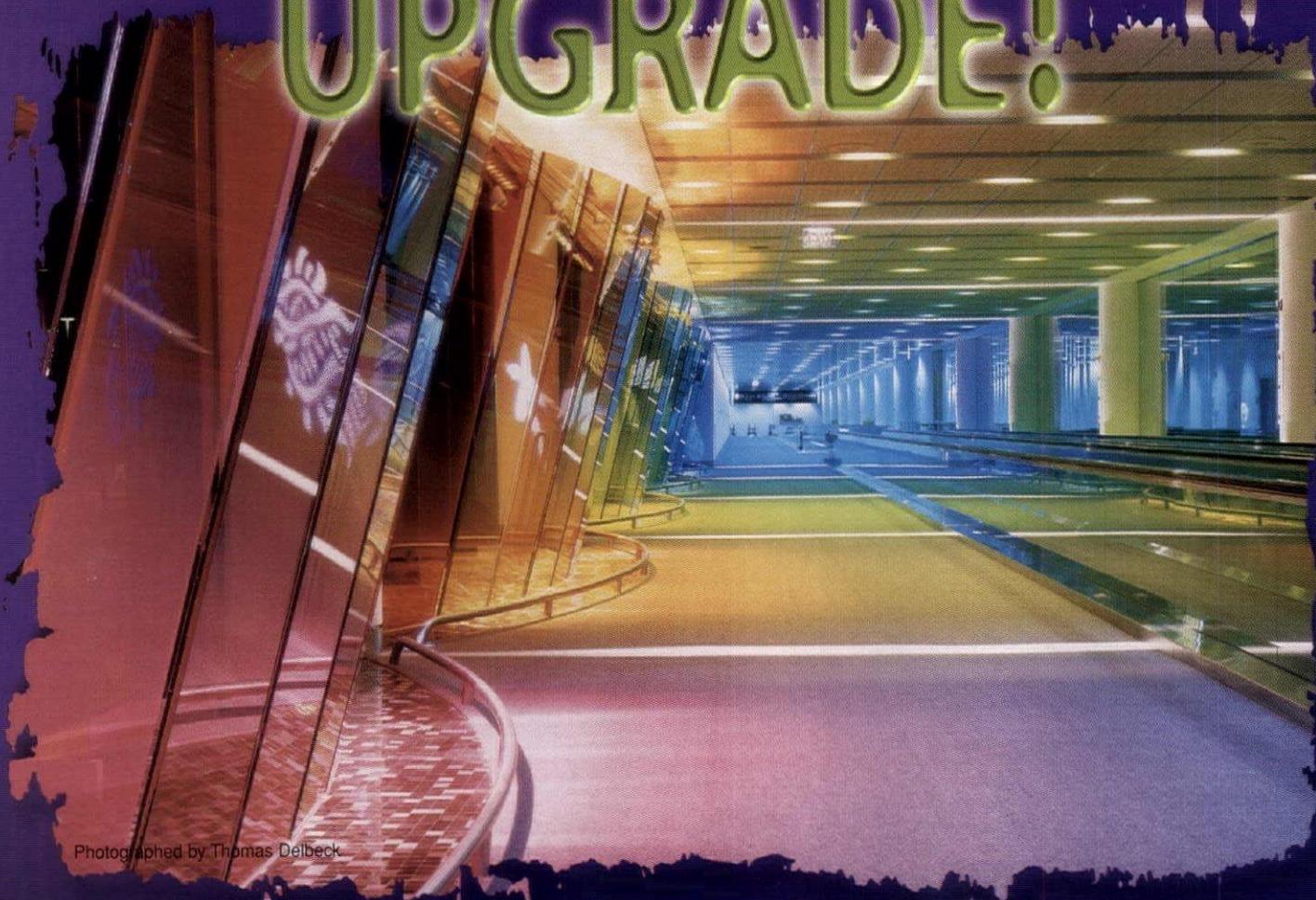
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USHIO 10,000 Hour MR-16 Lamps

Travelers arriving at Miami International Airport will happen upon an oasis for the senses called the Harmonic Runway. This achievement of "interactive architecture" by PhenomenArts, Inc. is a spectacular mix of color, changing light and sound. As visitors stroll through a rainbow of color the 180 foot-long corridor resonates with a harmonious blend of musical instruments tinged with the calls of the Florida Everglades' native wildlife.

Recognized for excellence in the use of lighting, the Harmonic Runway was presented with the prestigious G.E. Edison Award in 1995.



How do you go beyond "excellence"? Designer, Christopher Janney chose to relamp his creation with MR-16's from the Ushio Ultraline™ series of reflector halogen lamps.

At 10,000 hours average life — twice the life of any MR-16 on the market today — the Ushio Ultraline's™ special titanium reflector coating provides consistent color throughout the life of the lamp.

Designers no longer have to compromise their creative vision...

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GREG ZMURK, DESIGN ENGINEER



INTRODUCING THE NEW PRESCOLITE EMERGENCY COMPASS™ DIECAST EXIT.

What would be the perfect diecast aluminum exit? Last Fall, we asked this question of lighting specifiers and contractors throughout North America. Their responses led directly to the creation of Compass™ – the industry's first truly contemporary diecast exit. Unlike traditional emergency exits, Compass has an elegant appearance with soft edges and a contoured faceplate – and

all components are mounted inside the housing, eliminating the need for an unsightly canopy module. But don't let its good looks fool you. Compass features an exclusive Light Cavity Module™ which provides excellent uniformity and brightness from highly efficient LEDs. (Performance which surpasses the 1998 UL requirements as well as earning the EPA Energy

Star certification.) But, perhaps most importantly, Compass is the only emergency exit with a standard Self-Test Continuous Verification System (CVS) that eliminates the costly and often neglected manual testing of exits. Contemporary design, easy installation (less than five minutes) and standard Self-Test CVS – that's what we call a beautiful exit.

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BUILDING INTEGRITY, BUILDING VALUE

After much self-criticism, the lighting industry has intensified its focus on issues of integrity and credibility.

First and foremost on the agenda is education and recognition of professional competence, evidenced in the new LC certification offered via NCQLP. Despite some legitimate concerns and questions raised by various parties within our industry, I believe that certification has been long overdue and I applaud the effort; by our next issue, we should have the final results on how it did after its first time at bat. As with any certification, a good number of people will have to be certified and a lot of marketing will have to be performed before it carries the weight it deserves.

Another exciting development that will interest you is a historic meeting that took place over the summer at the Lighting Research Center. Some 25 manufacturers of fiber-optic lighting systems agreed that until specifiers are more comfortable with the information they're given and how to use it, use of fiber-optic lighting will continue to be limited. These manufacturers are cooperating on developing standardized performance data, and the Lighting Research Center is working on a data collection form to help designers make apples-to-apples comparisons of products. This is an exciting opportunity for that industry and we look forward to keeping you up-to-date on its progress (see page 52).

Architectural Lighting also decided to lend a hand to help specifiers become better educated regarding fiber-optic lighting. In a joint venture with UpWord Publishing, Inc., *Fiber Optic Lighting: A Guide for Specifiers* is now available (see ad on page 74). Written by Russ DeVeau, it provides an unbiased survey of fiber-optic lighting fundamentals.

What's more, *Architectural Lighting* is also developing another book with UpWord Publishing, a historical perspective of the lamp industry and the evolution of the light source and associated technology from World War II to the present. Written by some of the finest engineers who were there in the labs and out in the field, *Revolution in Lamps: A Chronicle of 50 Years of Progress* is also in production. You can advance order a copy of either of these books by calling UpWord Publishing at (800) 444-4881.

In our other Industry Focus story, we see the efforts of the Lighting Industry Resource Council (LIRC), which is now working on a document, produced jointly by designers and manufacturers, that will serve as a tool to strengthen the integrity of lighting specifications (see page 50).

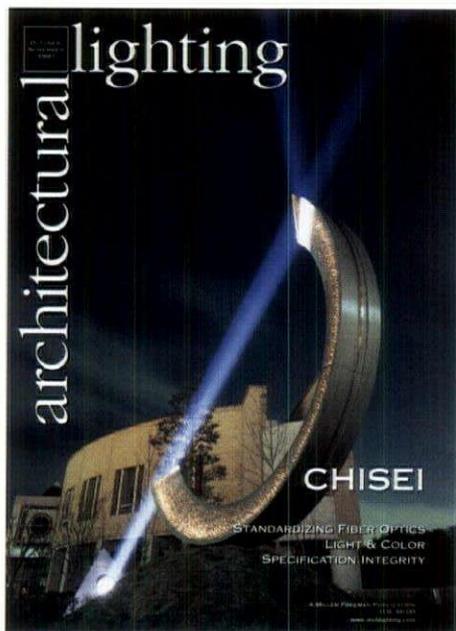
And in this issue, we offer two Perspectives, our popular soapbox-solution columns, contributed by Gary Steffy, IES, FIALD and John Nadon of Prescolite. Mr. Steffy discusses the state of ethics in construction/lighting specification (page 79) and Mr. Nadon, after GE Lighting announced that they would not manufacture the much-anticipated Heliac lamp, calls for greater cooperation between manufacturers to share information (page 83).

As you can see, in 1997 the lighting industry turned very serious about some of its most important issues, producing solutions and action as well as new ideas for the future.

Christina and I are proud of this issue of *Architectural Lighting*, which presents this information plus new innovative design projects (welcoming back Wanda Jankowski for our cover story), an article about documenting landscaping projects, the fundamentals of light and color (part of a new ongoing series), an interview with Ann Kale, products and other information that will help you end the year by looking ahead to a great 1998.

On behalf of *Architectural Lighting*, I wish all of you happy and safe holidays. ■

CRAIG DILOUIE,
EDITOR-IN-CHIEF/
ASSOCIATE PUBLISHER



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MASAMI SATO



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ADVANCED LIGHTING TECHNOLOGIES TO ACQUIRE RUUD

Advanced Lighting Technologies (ADLT) announced the signing of a letter of intent to acquire Ruud Lighting, Inc., located in Racine WI. Started in 1982, Ruud is a manufacturer and direct marketer of HID lighting systems for commercial, industrial, outdoor and retail lighting applications. Ruud's sales for fiscal year ending November 30 are expected to exceed \$65 million.

Under terms of the proposed agreement, Advanced Lighting Technologies will acquire Ruud for

\$35.5 million in cash and three million shares of ADLT common stock. The transaction is subject to certain conditions, including completion by ADLT of financing arrangements, satisfactory completion of due diligence and completion of the pre-merger notification process. The transaction is expected to close in January 1998. After closing, Alan Ruud, founder and CEO of Ruud Lighting will remain in that capacity and will join the ADLT board of directors as vice chairman.

OSRAM FORMS NEW PHOTO-OPTIC DIVISION

Osram Sylvania announced the formation of a Photo-Optic lighting division within the company's General Lighting business unit. This new division is responsible for the sale of lamps to the audiovisual, entertainment, medical/scientific and industrial lighting markets. All

photo-optic products are manufactured, packaged and sold under the Osram name.

Paul Caramagna has been named VP and general manager of this new division. Previously, Photo-Optic lighting was part of the company's Specialty Lamps/ Markets division.

NLB ANNOUNCES AWARDS PROGRAM

Deadline for submission of completed applications for the 18th annual National Lighting Awards Program, established by the National Lighting Bureau (NLB), has been extended to December 1.

The program recognizes lighting applications that demonstrate the bottom-line value of effective illumination and is open to owners, managers, lighting system designers, consulting engineers, contrac-

tors, and others who have had a role in influencing modification of an existing lighting system, or development of a new one. Submission should document how the new or modified system has contributed to energy conservation, improved productivity, increased retail sales and other desirable goals.

For more information, contact Lou Ann Moore at (301) 587-9572 or e-mail nlbusa@aol.com.

ARCHITECTURAL LIGHTING SPONSORS LUMIERE PARIS

Architectural Lighting has agreed to become a sponsor of Lumiere Paris, the Paris-based lighting conference and trade show.

The trade show will be held January 8-12, 1998 at the Paris-Expo Porte de Versailles Exhibition Centre. Manufacturers of fixed and recessed, portable, specialized lighting and components and accessories will be represented.

For more information on Lumiere, contact Aleksandar Medjedovic at 33 (0)1 44 29 02 19.

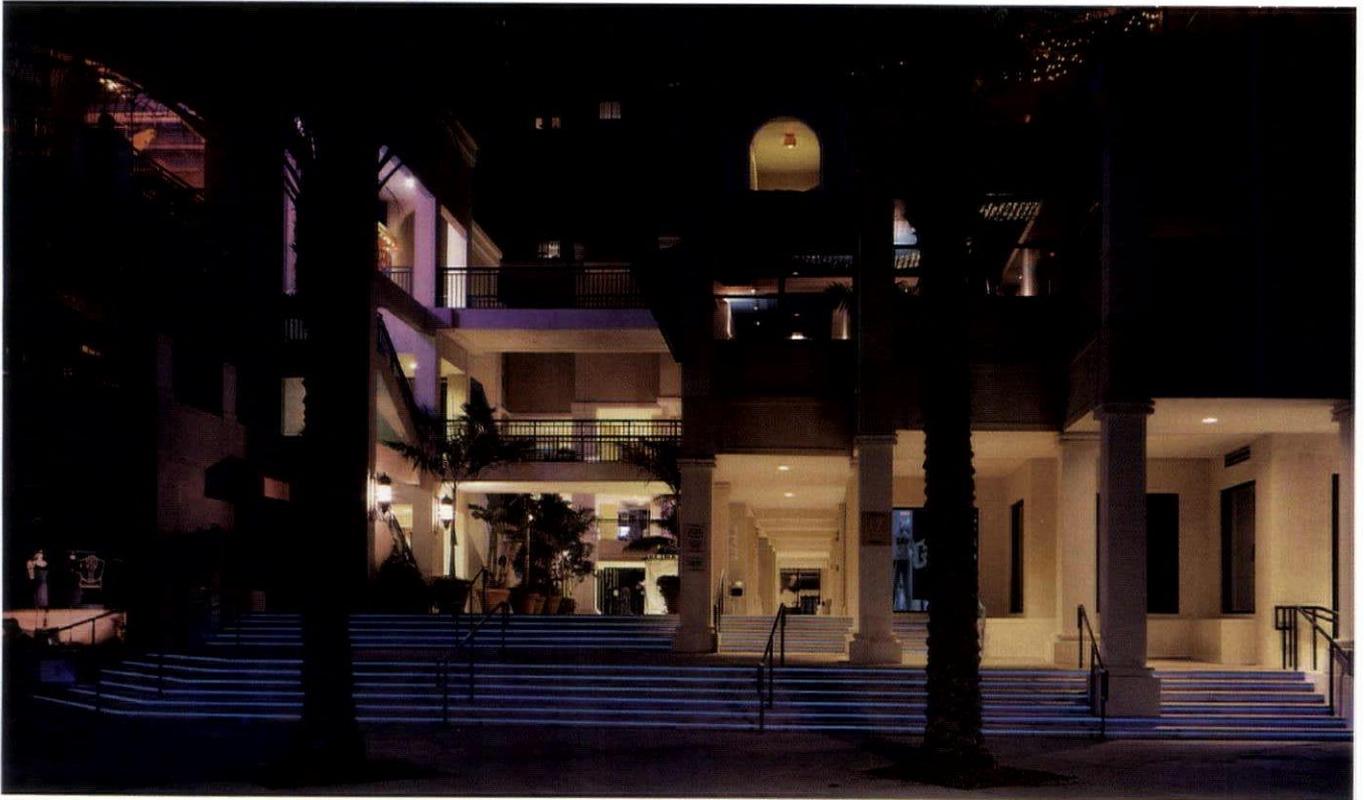
ADLT AND FIBERSTARS FORM PARTNERSHIP

Fiberstars, Inc. has announced that Advanced Lighting Technologies, Inc. has acquired an equity position in Fiberstars and entered into a strategic partnership that will develop and market fiber-optic lighting systems worldwide.

ADLT acquired Fiberstars shares formerly held by Pacific Technology Partners, a venture capital fund. The shares represent approximately 18 percent of Fiberstars' outstanding shares. Wayne R. Hellman, chairman and CEO of ADLT, has joined the Fiberstars board of directors.

Fiberstars also has a fiber technology partnership with Mitsubishi Industries of Japan, a manufacturer of plastic optical-quality fiber. Mitsubishi purchased 3.6 percent of Fiberstars' stock in 1995.

WITHOUT FIBER OPTIC LIGHTING FROM FIBERSTARS, THE STAIRS AT BEACH PLACE WOULD JUST BE STAIRS.



When Lighting Designer Paul Morgan took on the challenge of lighting thousands of feet of stairs at Florida's Beach Place complex, he turned to Fiberstars for help. "It was no easy task: we had to provide appropriate stairway illumination in a way that created a powerful visual impact. . .while meeting strict local and ADA requirements.

"With Fiberstars, we solved installation, heat, maintenance and code problems, while creating an elegant look that draws attention to the project. And, since the color can be changed at any time, the project will be visually interesting for years to come."

The result was so successful that even Morgan was surprised: "I never thought that 120' runs could be so consistent and bright. I'm truly impressed."

Fiber optic lighting from Fiberstars: elegant solutions for the real world.

Project: Beach Place Resort & Shopping Center, Ft. Lauderdale, FL.
Lighting Designer: Paul Morgan Lighting Design, Inc.
Photography: Richard Sexton



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LRC AND ADLT TO ESTABLISH FACILITIES FOR METAL HALIDE

The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute announced a \$1.5 million contract with Advanced Lighting Technologies, Inc. to design lighting for two metal halide research and demonstration facilities.

The LRC and ADLT, one of LRC's 15 partners, are collaborating on the design of a residential facility in Naples, FL that will be lighted

entirely by metal halide products to demonstrate the flexibility of metal halide products and extend the number of suitable applications for the technology. In addition, the LRC will design the lighting for a training and demonstration facility at the company's Twinsburg headquarters. The LRC will also assist in developing the training and educational program for the facility.

RSLI SELLS SHARES TO INVESTMENT FUND

Remote Source Lighting International, Inc. (RSLI), privately held manufacturer of fiber-optic lighting systems and optic display technology, announced that it has sold an equity stake for \$6 million in cash to Quantum Industrial Partners LDC (QIP), an international investments fund advised by Soros Fund Management, LLC.

QIP purchased 500,000 shares at

\$12 per share and has the right, under the agreement, to raise its stake in the company over a five-year period through further purchases at \$24 per share.

In July, RSLI announced a multi-million dollar equity investment by Strategic Resource Solutions Corp., a wholly owned subsidiary of Carolina Power & Light Co.

IALD MOVES TO NEW LOCATION

The International Association of Lighting Designers has moved from New York City to Chicago. The new address is Suite 487, Merchandise Mart, 200 World Trade Center, Chicago, IL 60654; Tel.: (312) 527-3677, Fax: (312) 527-3680.

Morag Fullilove has been named president, a newly developed administrative position.

A CROWNING ACHIEVEMENT IN FIXTURE DESIGN

Each new 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 (U.S. Des. 373,437), and patent pending 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 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.

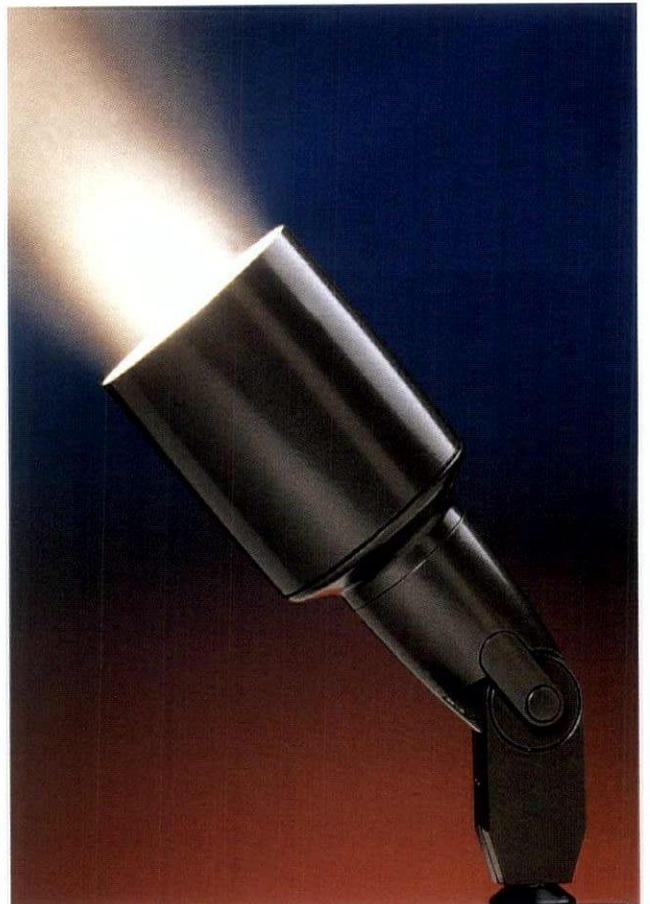
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and featuring minimal color shift over its life, it's the more efficient form of white lighting

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both open and enclosed fixtures. For more information on our latest innovation that helps

make periwinkle, well, look better, reach us at 1-800-LIGHTBULB, or www.sylvania.com.

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GREEN SEAL PUBLISHES REPORT

Green Seal announces the release of a *Choose Green Report* on energy-efficient indoor lighting. This report examines energy-efficient fixtures, focusing on providing tips and products that can help builders and owners further reduce the energy costs of operating a home. The report is aimed at residential homebuilders, architects and developers and discusses technological advances.

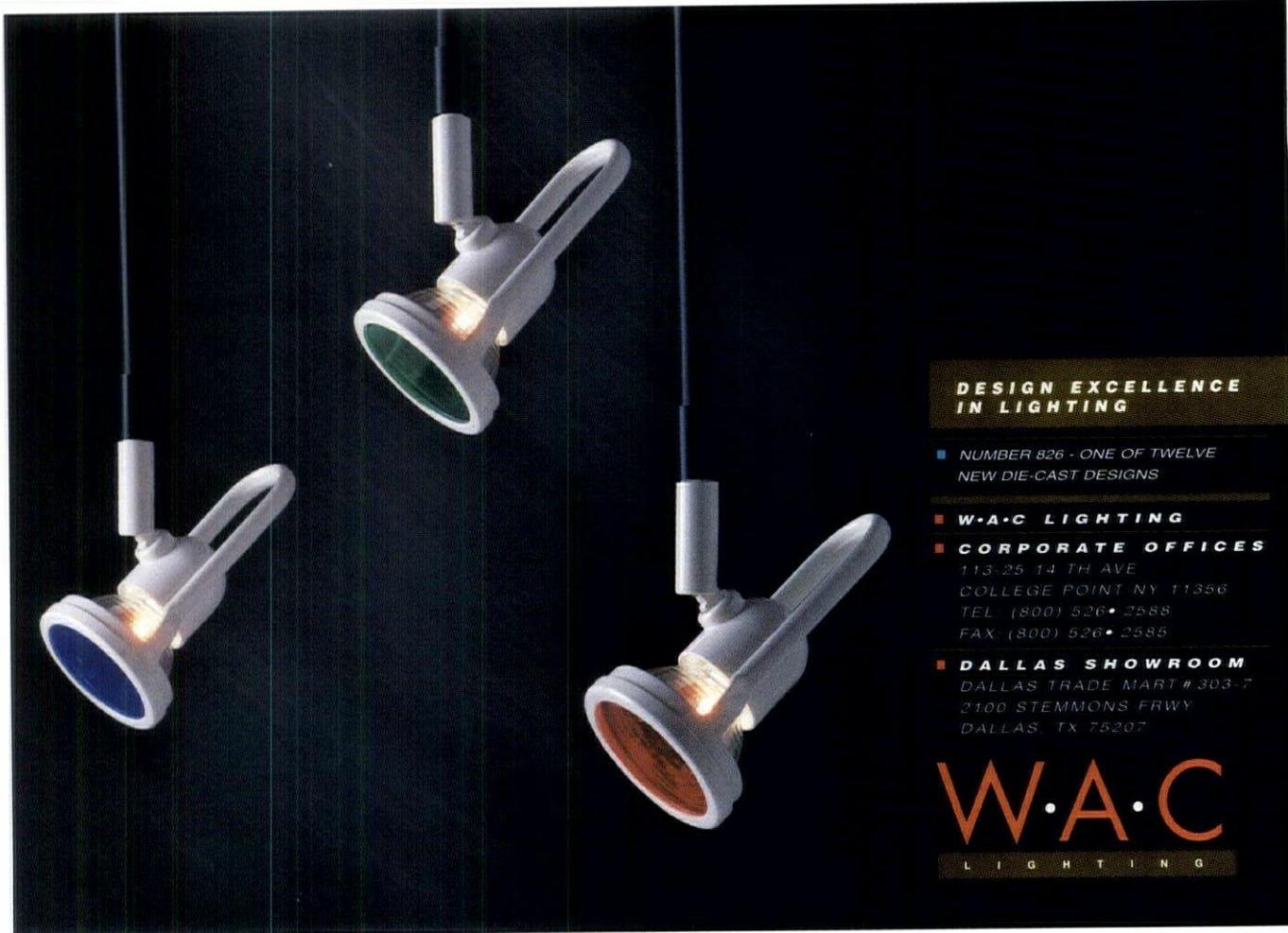
Green Seal, an independent non-profit organization that awards a seal of approval to products that cause significantly less harm to the environment than similar products, is publishing this report under a grant from the U.S. Environmental Protection Agency's Energy Star Homes Program. For more information on Green Seal, visit them at www.green seal.org.

LEVITON ACQUIRES MACRO ELECTRONICS

The Leviton manufacturing Company announced it has purchased Macro Electronics Corp. of Austin, TX. Macro Electronics will become part of Leviton's newly created Lighting Controls Division, headed by David Harrison, VP and general manager. Macro Electronics former president Ken Miller and VP Jeff Wilson, will continue with Leviton as part of the new division. Type Lighting Control Division is a business unit that will concentrate in providing lighting controls and lighting control systems to commercial, institutional and residential markets.

CORRECTION

In the IALD Awards section of the July/August issue of *Architectural Lighting*, Kim Lighting was omitted from the credits list for the Cleveland Bridges project, designed by Ross De Alessi. *Architectural Lighting* regrets the error.



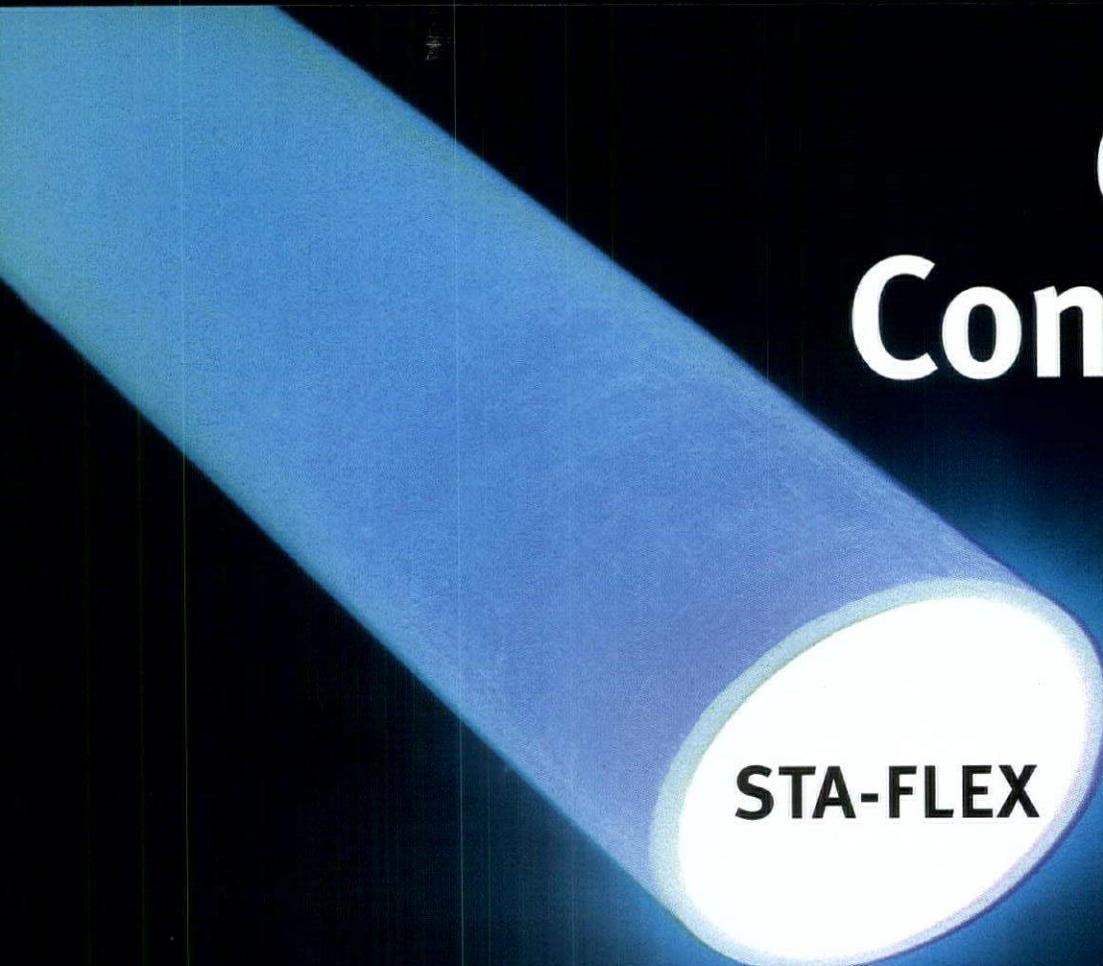
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Core Concept



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HIGH END FORMS FINANCIAL SERVICE

Automated lighting manufacturer High End Systems, Inc. announced that the company has formed wholly owned subsidiary High End Financial Services, Inc. (HEFS). HEFS will develop, market and admin-

ister financial programs for the domestic and international marketplace. The resulting financial products will assist dealers, distributors and users in acquiring High End Systems' range of lighting products.

ADVANCE BUILDS NEW WEB SITE

Advance Transformer Co. announces its new interactive Web site on the internet at www.advancetransformer.com.

The new site provides lighting designers, distributors, contractors and facilities

managers with a direct link to the Interactive Product Catalog of current information on Advance's line of electronic and magnetic ballasts for fluorescent and HID lamps.

FIBERSTARS OFFERS ITL REPORTS

Fiberstars has announced the availability of a series of independent reports from Independent Testing Laboratories (ITL). The reports verify the lumen output and candela distribution from a range of fiber-optic illuminators, fiber-optic tubing and point-source lighting fixtures.

ITL reports are based on standardized industry procedures and are regarded as an industry standard for comparing lighting performance.

LITHONIA LAUNCHES WEB SITE

Lithonia Lighting's home page at www.lithonia.com provides customers with current information about company products, services and employment opportunities. General areas such as corporate information, contacts, product information, announcements and training programs are open for public view. Registered users can visit the Lithonia library to review a summary of corporate publications. Visitors may order literature, and with an authorized password, can download specification sheets, photometric data and application software.

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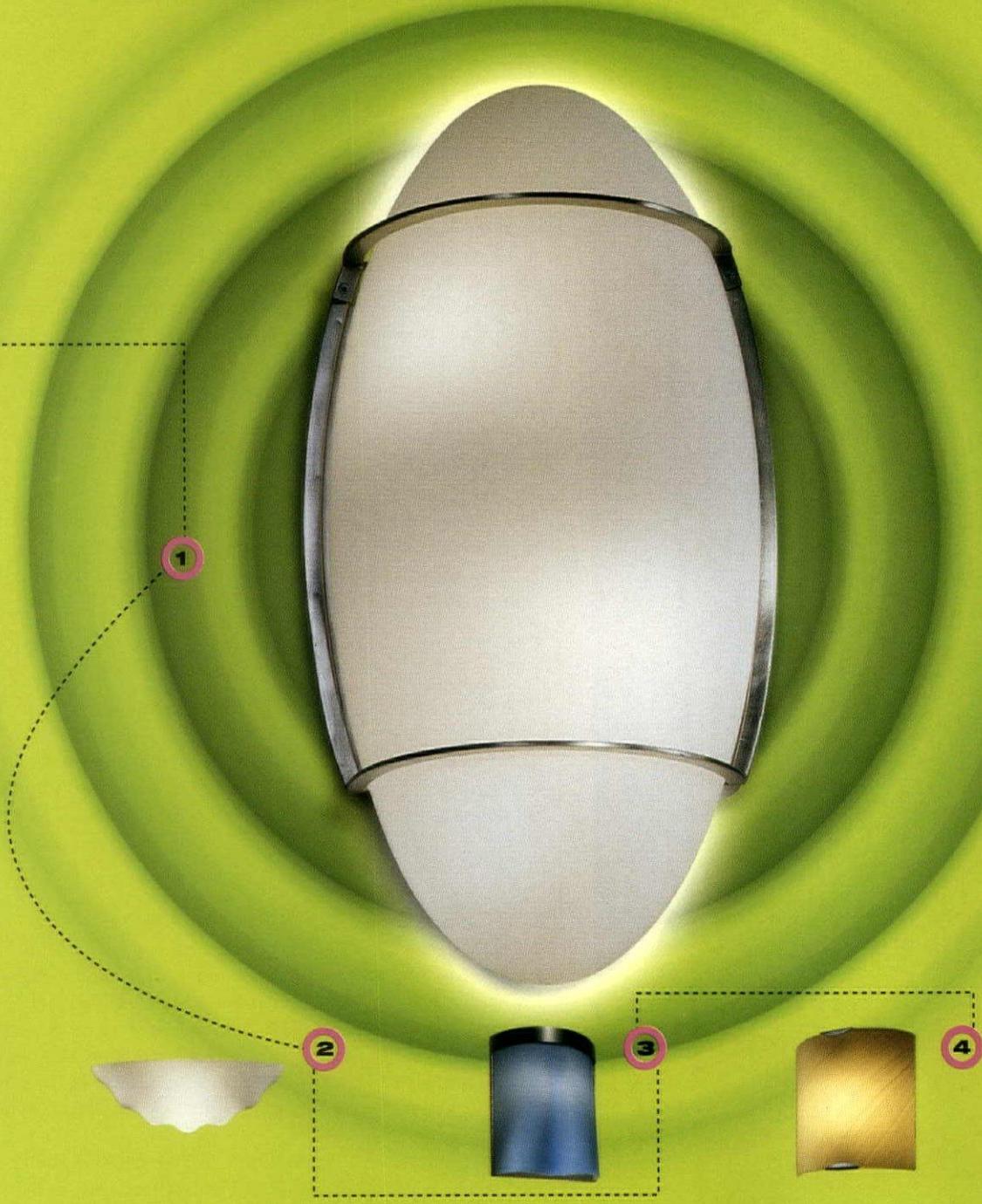
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THOMAS EXPANDS IDEA CENTER

Thomas Lighting's Accent Division has expanded the remodeled Idea Center at its Los Angeles facility. Formerly a product showroom, the Center has been developed to serve the professional lighting community and the internal design and training needs of the Accent Division and its representatives.

COOPER EXPANDS SOURCE

Cooper Lightings' Source educational center, which provides specifiers and end-users with information on residential and commercial space illumination, has added two new vignettes in the learning center, based at the company's Elk Grove Village, IL headquarters. One new feature is a kitchen, the other is a high-end bath. A variety of different lighting schemes emphasize task, ambient, mood, general and accent lighting with a range of the company's products.

MSC LAMINATES OFFERS WARRANTY

MSC Laminates & Composites, manufacturer of reflective lighting materials, has added a scratch-resistant feature to their products, as well as offering 25-year warranty coverage on all of its lighting products.

GARCY/SLP ACHIEVES ISO

Garcy/SLP, a manufacturer of furniture-integrated task and ambient lighting for office environments, has achieved ISO 9001 certification for its manufacturing facility in Portland, TN.

COOPER PRESENTS AWARDS

Cooper Lighting awarded four professional interior designers and six students at the 21st Annual Halo/Metalux National Lighting Competition held in July. The competition showcases exceptional design and application of Halo Power-Trac, Halo recessed downlighting or Metalux fluorescent lighting in either commercial or residential applications. The entries are judged by a panel of ASID members.

The winners were: Frank Conte, ASID; Cynthia Riebe, ASID; McDonald & Moore, LTD.; and Gandy/Peace, Inc. in the professional category. Michelle Puckett and Lori Batten; J. Shelby Taylor, ASID; Carmen Too-a-Foo, ASID; Natalia Gaviria, ASID; Cristi C. Moore, ASID; and Amy Laughead, ASID were the student winners.

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more consistent color rendering than standard metal halide. Plus, its long lamp life makes relamping a rarity. All of which means dramatic savings on operating and maintenance expenses.

Other ways to control lighting costs? With Hubbell's advanced control capabilities, you can tailor an energy-saving system to your exact needs. Keep the lights as dim or bright as you like — for as long or short as you like. Hubbell has energy-saving HID Switch Level Dimming, dimmable fluorescent, and sophisticated passive infrared occupancy sensors.



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these energy-efficient exits use as little as 1.5 watts per face.



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Lighting, Inc.

Circle No. 18 on product service card

Edison Avery Price, founder and long-time president of Edison Price Lighting, passed away on October 15 at the age of 79. He founded Edison Price Lighting in 1952 and pioneered the development of low-brightness down-lighting. He worked with I.M. Pei on the National Gallery in Washington, created curtains of

light on the lobby walls of Mies van der Rohe's Seagram Building, and provided lighting for Philip Johnson's Four Seasons restaurant. He created lighting for the designs of architectural greats Marcel Breuer, Louis Kahn and Buckminster Fuller. In 1981, the American Institute of Architects bestowed

its AIA Medal to Price; in 1990, Edison Price was honored with the Richard Kelly Lifetime Achievement Award from the IESNA.

Kenneth Schedin has been promoted to VP of Sylvania Lighting Services, the lighting maintenance business of Osram

Sylvania. Also at Osram Sylvania, **Cornelius (Neil) B. Collins** has been named VP of Special Markets.

Morag Fullilove has been named president of the International Association of Lighting Designers (IALD), a newly developed administrative position.

Rodrigo Manriquez, a June graduate of the University of Kansas is the 1996-97 recipient of the third annual Mickey A. Woods Award for Outstanding Besal Scholar, which recognizes one student who is pursuing studies in illumination engineering under scholarship from the Robert J. Besal Memorial Education Fund.

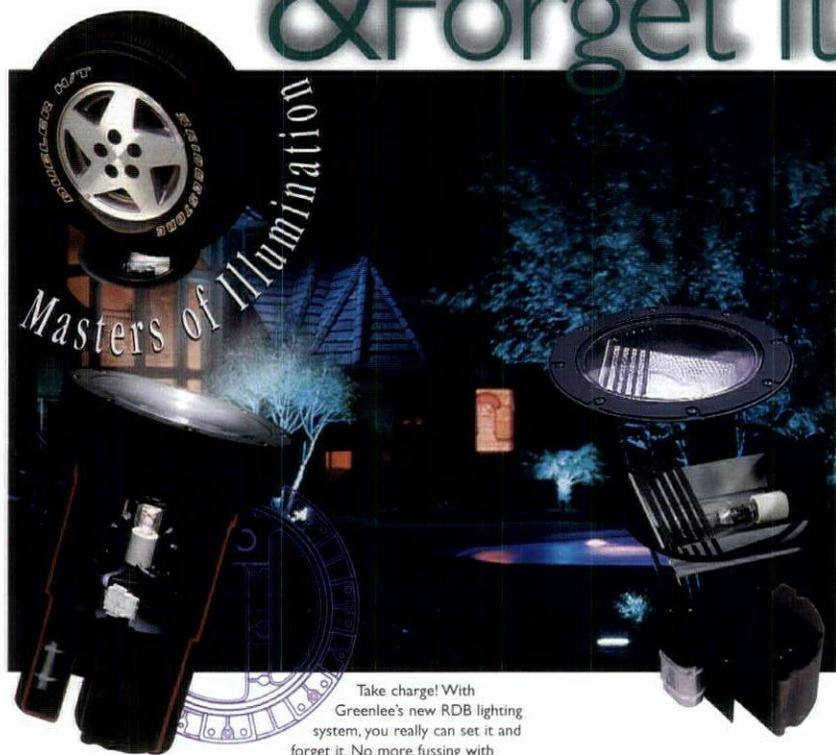
Russell P. Leslie and **Peter R. Boyce**, faculty members of the Lighting Research Center, have been selected as the first co-chairs of the Feltman Seminar in Humanities at The Cooper Union in New York City. They will hold the chair jointly for one year and teach the multidisciplinary seminar on the philosophical and social contexts of design and visual perception.

Larry French, IALD, MIES has been named a principal of Auerbach + Glasow, San Francisco; **Paul Garrity** has been named senior associate of Auerbach + Associates, New York; **Richard Osborn**, MIES has been named associate at Auerbach + Glasow, San Francisco; and **Adam M. Shalleck**, AIA has been named associate at Auerbach + Associates, San Francisco.

Chuck Edds has been named group product marketing manager for H.E. Williams, Inc. Fluorescent Lighting and sister company Infinity Lighting.

Thomas Lighting has announced the appointment of **Don Cassidy** to northeast regional sales VP.

Set It & Forget It



Take charge! With Greenlee's new RDB lighting system, you really can set it and forget it. No more fussing with

flimsy parts or struggling to replace a lens. The RDB is tough, durable and easy to install. It's the toughest fixture on the market, made of composite materials with drive-over capability. You can't damage it even if you drive a Hummer! Greenlee's RDB is so well made it has two warranties; a two year general warranty and five years against corrosion. The RDB also has a recyclable plastic debris guard to catch dirt, leaves and other debris during installation that often prevent proper sealing in other inground lights. But that's not all. It has fully adjustable high performance optics that give you absolute control over beam spread, tilt and rotation. Glare is not a problem thanks to available louvers that sit under the lens. Smart? Definitely. Easy to use? You bet. If you want a flexible, quality fixture that lets you be in control, then you need Greenlee's RDB.

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Circle No. 19 on product service card

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**“Fabulous!
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SCHEDULED EVENTS
1997 EVENTS

November 17-21 "Fundamentals of Commercial & Industrial Lighting," GE Lighting, Cleveland; (800) 255-1200.

November 18-19 CSI seminar: "Specifications: Principles and Practices," Memphis, TN; (703) 706-4776.

November 18-20 13th Annual Build Boston, World Trade Center, Boston; (617) 439- 5020, (800) 544-1898.

December 1-3 "Industrial Lighting," GE Lighting, Cleveland; (800) 255-1200.

December 10 Energy Technology Resource Center class: "Fiber-Optic Lighting," Tampa; (813) 202-1777.

1998 EVENTS

January 8-12 Lumiere Paris—International Lighting Show, Paris—Expo Porte de Versailles, Paris; 01 53 24 99 19.

January 16-19 International Builders' Show—54th Annual Convention & Exposition, Dallas Convention Center, Dallas; (202) 861-2105.

February 1-4 Enlightening America, Grand Kempinski, Dallas; (609) 799-4900.

February 2-4 "Industrial & Inspection Lighting," GE Lighting, Cleveland; (800) 255-1200.

February 5 ASID seminar: "Power Selling—High Performance Communications for Successful Design Partnerships," Houston; (202) 546-3480.

February 8-10 1998 Retail Design & Construction Conference & Expo (RDC '98), Omni Rosen Hotel, Orlando; (800) 288-8606, (303) 220-0600.

February 16-18 "Store Lighting," GE Lighting, Cleveland; (800) 255-1200.

February 19-21 Luminaire Asia, Singapore International Convention & Exhibition Centre, Suntec City, Singapore; 65 431 2293/97.

March 4-5 Globalcon '98, Infomart, Dallas; (770) 279-4388.

March 5 ASID seminar: "How to Increase Your Sales and Become a Valued Member of the Interior Design Team," Dallas; (202) 546-3480.

March 19-20 "Museum Lighting," GE Lighting, Cleveland; (800) 255-1200.

March 19-20 NeoCon West, Los Angeles Convention Center, Los Angeles; (800) 677-6278.

March 19 ASID seminar: "Power Selling—High Performance Communications for Successful Design Partnerships," New York City; (202) 546-3480.

April 2 ASID seminar: "How to Increase Your Sales and Become a Valued Member of the Interior Design Team," Troy, MI; (202) 546-3480.

April 8-9 Energy Management Congress, Disneyland Hotel, Anaheim, CA; (770) 279-4386.

**ARCHITECTURAL
LANDSCAPE
LIGHTING**

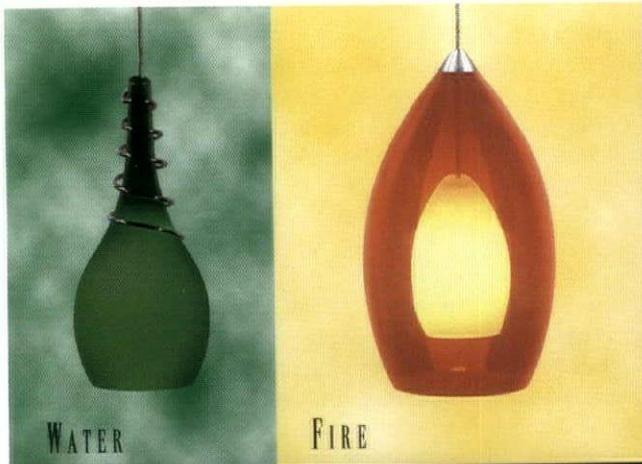
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WATER

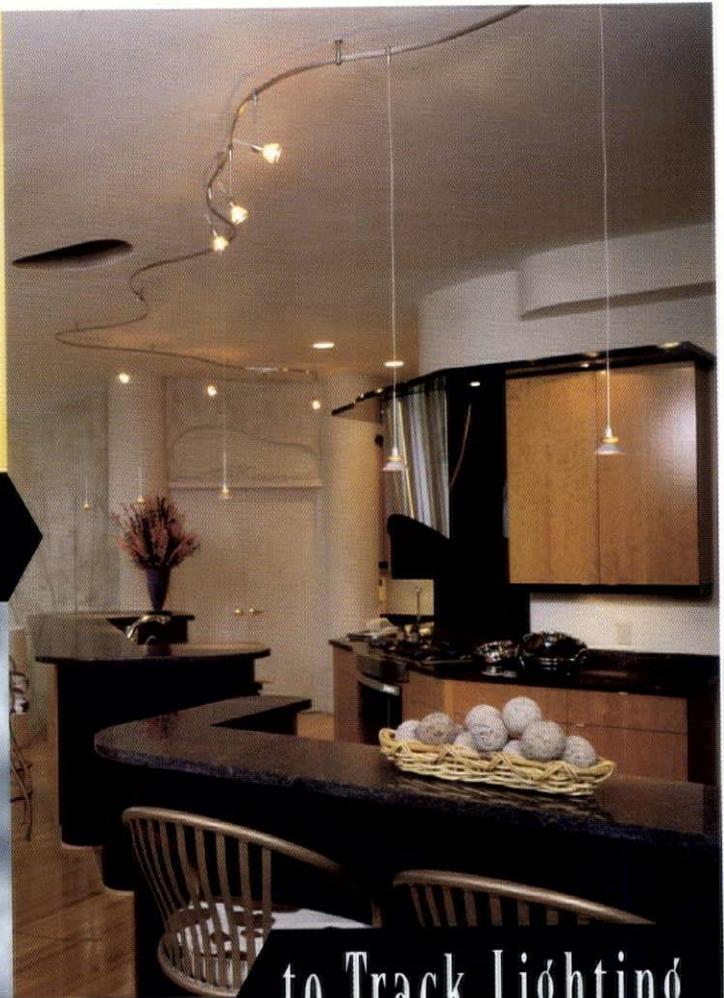
FIRE

Elegant Alternatives

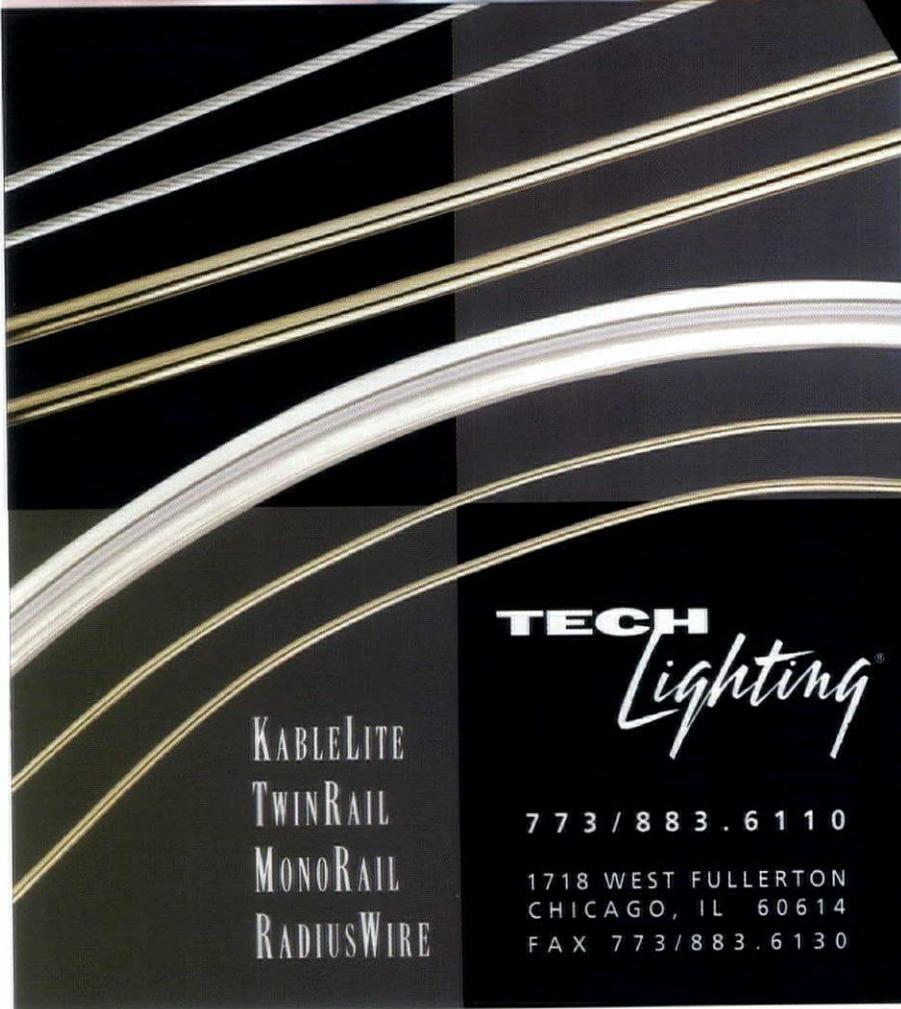


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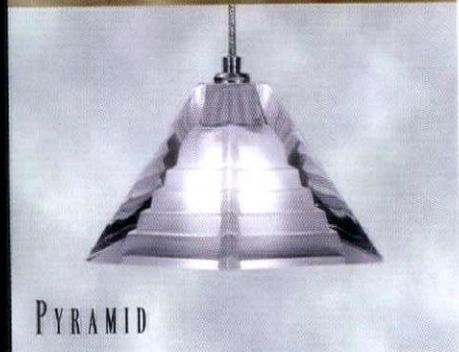
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FAX 773/883.6130



TRIPLANE



OAK PARK



PYRAMID

In this issue, Architectural Lighting interviews Ann Kale of Ann Kale Associates in New York City. The firm, which has received numerous lighting awards including IES Lumen Awards and an IALD Award, has recently worked on the Bronx Criminal Courthouse with Rafael Vinoly Architects; The Four Seasons Restaurant renovation with Philip Johnson, Retch & Fiore; The University of Connecticut in Stamford with Perkins Eastman Architects; and Blue Cross/Blue Shield Headquarters in Rochester, NY with Fox and Fowle Architects.

—Christina Trauthwein

AL: Tell me about your career choice. Why lighting design?

Kale: My interest in lighting design as a profession began when the IALD internship program was first introduced to me. I was getting my degree in

interior design and my instructor had past experience sending students to the program. I had always been curious about lighting and was frustrated I could not get an education in lighting at school. I applied to the internship program and was accepted. A friend and I moved to New York; she went with H.M. Brandston & Partners and I went with Wheel Gerszoff.

AL: What a great career start with such prestigious firms.

Kale: It really did jump-start my career. The internship was paid, and even though it's typically set up for the summer months, Lesley [Wheel] convinced me to stay longer. I literally bought myself a round-trip ticket open-ended for a year. I had every intention of going back to California to get my Masters in architecture. However, I got into lighting design, liked it and stayed with it. But it took me a long time to embrace the profession as mine.

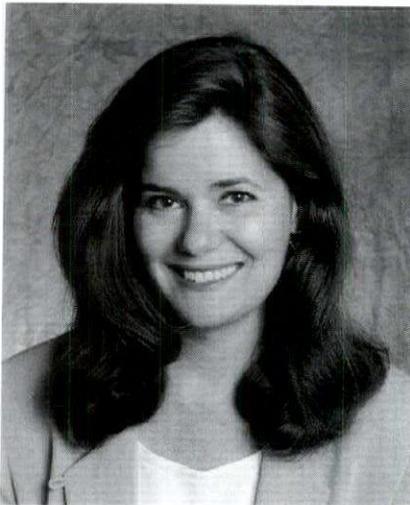
AL: How would you define your role as a lighting designer?

Kale: I think the world is divided into two camps in lighting design: the designer who loves light and therefore designs architectural lighting; and the designer whose medium happens to be light. I'm in the latter camp. I'm a designer first and a designer of light second. I'm interested in the total environment and I'm sometimes willing to back off the lighting when I see the greater good can be achieved by emphasizing another part of the project—although the lighting has to be great if you want a great project.

AL: You're from an interior design background. Do you think this has contributed to your interest in the "big picture" when designing a project?

Kale: Yes, I'm very much interested in the overall design, not just the great effects that can be achieved with lighting. And although I think a degree in architecture is a little bit stronger, a design background helps you understand space and the importance of light in a space. People are much more aware of the importance of light these days and more and more schools have a lighting design curriculum, but there is just not enough emphasis on how light affects volume and space.

The teaching of lighting design often times concentrates on the technical aspects



of lighting and I don't think that's the way to teach it. More programs should add lighting design to their curriculum. The New York City-based schools do have one or two mandatory classes, but New York is unusual in that instance.

First of all, instructors of interiors and architecture need to come way up to speed on light—most of them know little about it. The concept of the importance of light needs to be introduced by them and the student must first understand the overall effect of light on a space. Introduce the results first, then back up and teach how the results were achieved. Teach perception of space, because lighting is really the perception of space and materials.

AL: Do you teach?

Kale: Yes, I do, and I wish more lighting designers would and that more schools had

programs. I think what I'd like most is to have the opportunity to teach in tandem with an architect who has a thorough understanding of daylighting and its integration with architecture. We could include, for example, the works of Louis Kahn and other great architects who knew how to integrate light into architecture. That's what we're missing from architecture today. Only recently have I witnessed a resurgence in an interest in daylighting from architects, and particularly, how they can introduce daylight into their spaces. It had lost a lot of interest over the years.

AL: To what do you attribute this new attitude?

Kale: Energy is driving it. Europe is way ahead of the U.S. insofar as integrating daylight delivery systems into their architecture for the simple reason that their fuel is three times more expensive than ours. They're forced into it. For example, factories in Europe have fabulous daylighting systems. In the U.S., workers are still working in dreary spaces under the dim light of exposed fluorescents and HID when there is all this free light available.

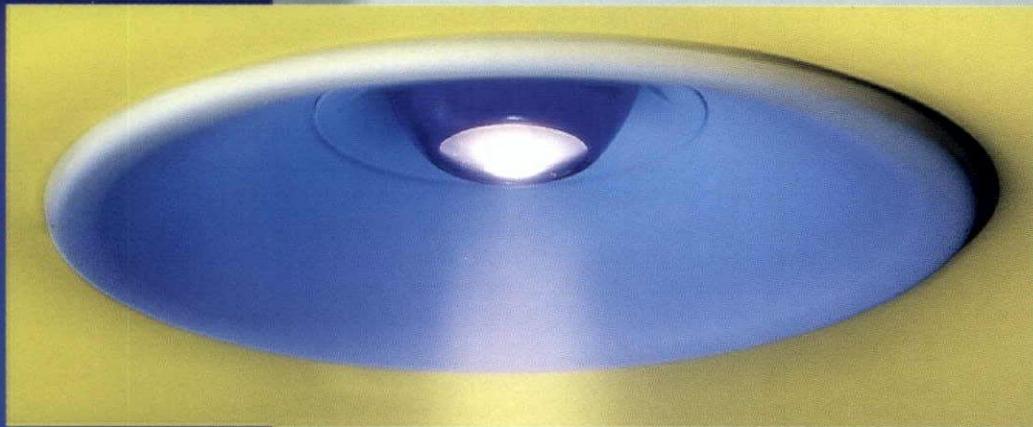
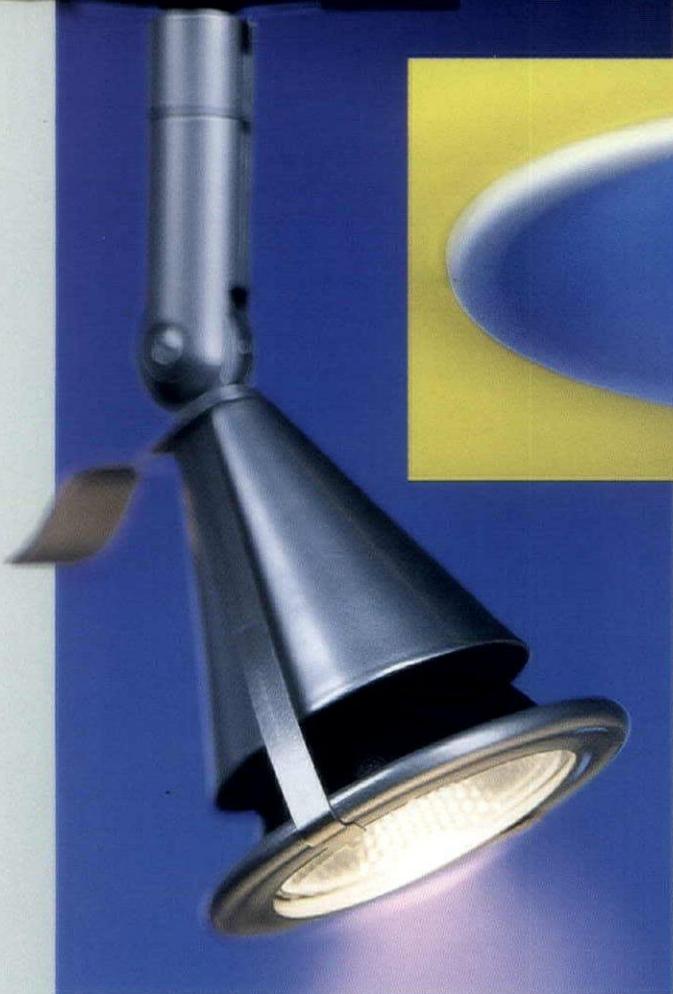
It's just different in America—it all starts with the client. Americans expect fast results and want to see profits immediately. So what we're willing to put into research and development or into a more expensive building to create a pleasant environment—and hence more productive workforce—takes years. Americans aren't interested in that. It's more like, "How can I get it up as cheaply as possible so I can start spitting out a good enough product and make my profits as soon as possible."

I'm not necessarily criticizing that, it's just reality. If an employer had to pay three times more for his electric bill, he would be much more interested in paying a higher initial cost for a building. And, let's face it, with sophisticated daylight delivery systems, a building costs more.

AL: Do you often incorporate daylighting into your work?

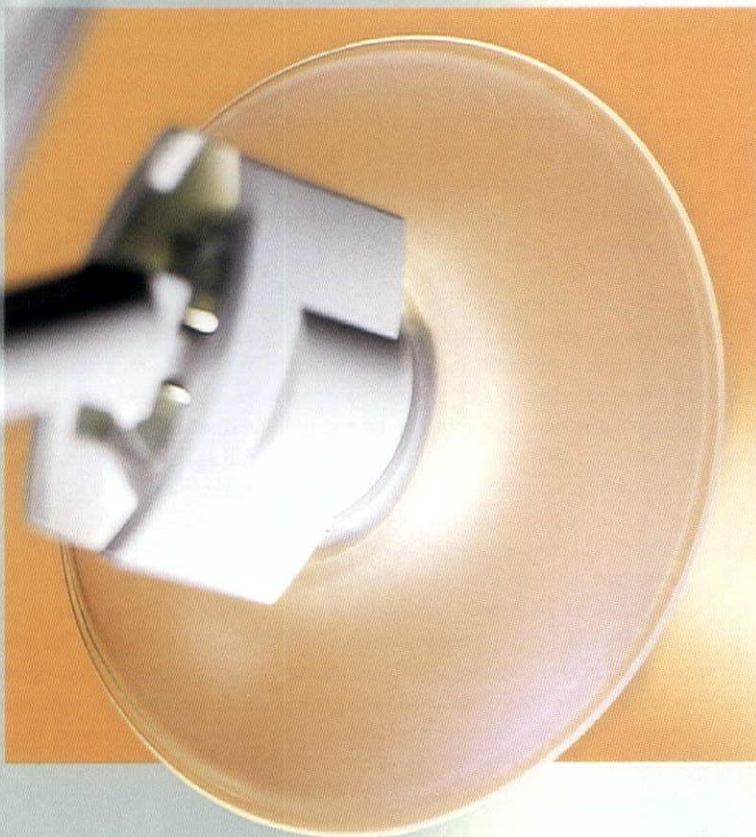
Kale: To increase interest in daylight is the lighting designer's greatest opportunity, and I try to seize that opportunity when

(Continued on page 30)



An element of surprise...a current of excitement. Lucifer Lighting Company introduces new products for '97 — and once again illustrates that practicality is the power behind elegance.

CURRENT ELEMENTS



Clockwise from upper left: The *Ringer* spotlight, a smaller interpretation of Altima's *Cornetto*, features a lens ring clasped by two spring clips. The *Gem*, a downlight of pristine matte white, is infused

with brilliant color by frosted-glass

1-800-879-9797

insets. *Camba*, a sculpted

spotlight crowned with a graceful
Fax 1-210-227-4967
frosted glass shade.

LUCIFER
LIGHTING COMPANY

Circle No. 23 on product service card

(Continued from page 28)

I can. I'm working on a project now where a daylight delivery system was intended for the project. The project had been designed before we were brought in. Had we been brought into the schematic design phase, we could've been much more useful and the system would be working better. But that's often the case—we're

brought in too late and I think it's because having a serious daylighting system is not a high priority.

AL: *What has been the biggest challenge in your career?*

Kale: Starting my own company. After Wheel Gersztoff, I worked for Jerry Kugler Associates and then I decided to start my own firm in 1988. I did this because I really wanted to work four days a week. Of course, the joke is, you don't work four days, you work seven! It very much becomes your baby—my company is an appendage of me.

The recession was a big challenge to starting my own firm, as was the logistics of building a practice. I started it young, and I don't encourage people to start too early. I think a better route is to establish yourself with a good firm and become known. It's a much easier road.

AL: *Has youth, or even gender, affected your perception in the industry?*

Kale: Youth more than being a woman. And that's just because you don't know what you don't know. I have gained a tremendous respect for experience as I have acquired some.

As for being a woman in a mostly male-dominated industry, I was lucky—I had a strong female mentor [Lesley Wheel]. Has it been a hindrance? Well, to be a woman is not a strength—that I know. But a hindrance? Often I have wondered. I will tell you this, what I absolutely have concrete examples of, in fact it happened again just today, is this: Someone working for a large firm said, "Oh, Ann Kale, she does residential work." Interestingly enough, residential is not our strongest job type; we are stronger in museum,

institutional and corporate work. Now I know I get labeled that because I'm a woman. The other thing is, I can't tell you how many times, upon hearing I own my company, someone will ask me if I share a partnership with my husband. They assume he is involved—and that's even before they find out he's an architect! It's a question I'm a little tired of, quite frankly. Other times people will assume I just do my husband's work, which is not true either. Actually, he represents a small portion of what my firm does. So yes, I think there are a few obstacles female lighting designers must overcome.

EVERY PROJECT HAS

A PERSONALITY—

LIGHTING SHOULD

HELP FLUSH IT OUT.

AL: *What is the best piece of advice you've ever received?*

Kale: A woman I know who owns her own company told me, "Don't worry about everything you think you're supposed to know because if you knew everything you were going to have to learn about starting your own company, you would never do it." Learning as you go is a pretty good system, and I would pass on the same advice. You don't always know your strengths going in, but you definitely learn them.

AL: *What are your strengths?*

Kale: Communication and design. Lighting is a difficult thing to talk about. It's very esoteric, it's invisible, you don't always know how it's going to behave and it's also an emotional medium to work with—which is what I like best about it. I have the opportunity to design an environment that will hopefully evoke an emotion when someone walks in, whether it's cheerfulness, respect, power, whatever. I describe why we're taking a project in a certain direction and what results we expect to achieve. The goal is not always to create a pretty space or to meet certain footcandle

requirements. I want the space to be more than that. It needs to convey something intangible, something about the occupant of the space.

AL: *Is there an Ann Kale trademark?*

Kale: One of our strengths, I believe, is that each project looks different. We're open to new ways of expressing volume, space and texture through light. After you're done taking care of the fundamentals—adequate light, respectable maintenance considerations—light becomes the most important tool in making the project succeed. I want my spaces to say something, not be just about light. I'm still developing a philosophy but for now it's this: Every project has a personality and lighting should help flush out that personality.

AL: *What technological breakthroughs in lighting would you most like to see?*

Kale: What I resent most about lighting is that I have to run wire to power it. I hope there'll be more research on energizing lighting without having to run hard wire to it. I think one of the best breakthroughs would be smaller wire sizes and eventually wireless light fixtures that will pick up their energy from some other source.

We also need to go to more efficient sources. Halogen is good but still a far cry from fluorescent or HID efficacies. So where I want to see technology going is a variety of easily dimmable HID point sources in lower and higher wattages with improved color rendering abilities.

AL: *How about your dream project?*

Kale: I'd love to do a hospice with a reasonable budget (the four or five we've done had low, low budgets; also a performing arts center, healthcare facility and university, all with generous budgets. It's interesting, someone else once asked me that question and my response was the same. But for that situation, it was completely wrong—he did high-end residential work. And well, we haven't been called since!

AL: *Ann, if you could do it all over again, what would you do differently?*

Kale: I would not have boldly stood up to Mr. Langston, my eleventh grade math teacher, and told him that I would never, ever use trigonometry in my future! ■

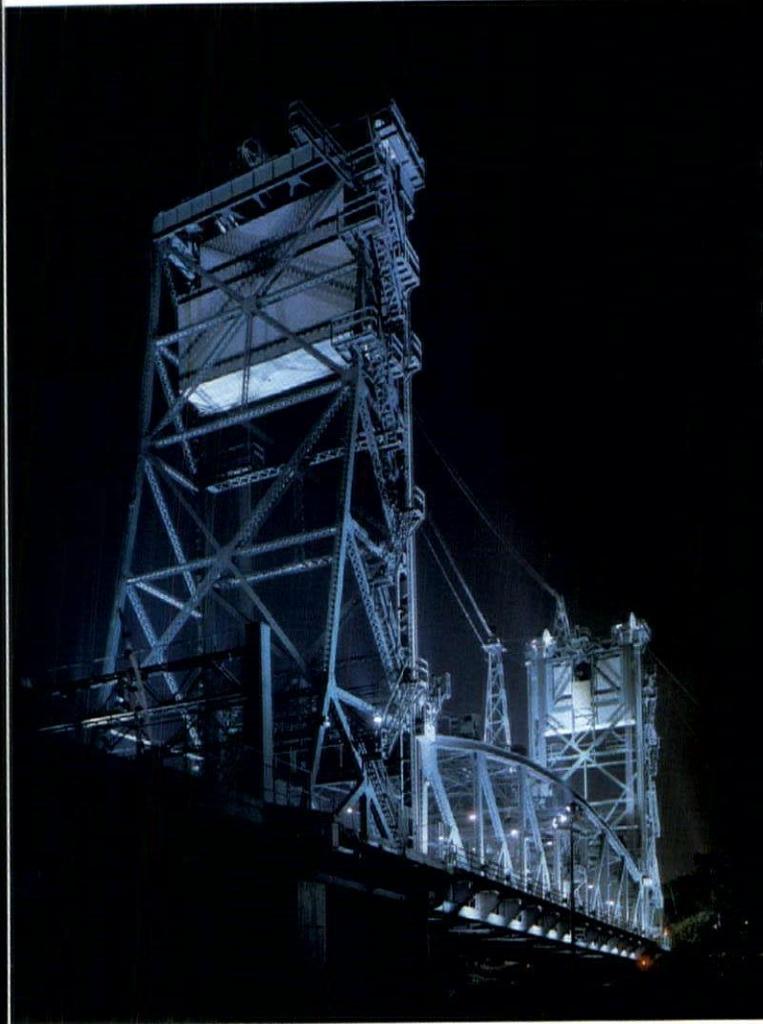
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Circle No. 24 on product service card

SHEER ELEGANCE

At this West Coast boutique, the design is perfectly clear

BY EMILIE SOMMERHOFF, ASSISTANT EDITOR

CHALLENGE The decor of Trucco Atelier is as refreshing as a pristine mountain lake—and as enchanting. Conceived by California-based Artecnic, the cosmetics shop features a lighting and architectural design that emphasizes the mystery in what is beyond or underneath. “I wanted to create an esoteric effect,” noted Enrico Bressan, principal of the architecture firm, “where you are not always sure where the surface is, what is real and unreal.”

Recently introduced as the cosmetics branch of Sebastian International, Trucco Atelier inherited the hair salon’s trend-oriented aesthetic. The design of the Glendale, CA shop, therefore, had to include the ability to change. The client also wanted an environment that emphasized the product.

DESIGN/TECHNICAL CONSIDERATIONS Limited area presented a crucial design challenge. Working with a mere 550 sq. ft., Bressan wanted to open the space as much as possible through the design. An airy, unobstructed environment seemed essential to the Trucco Atelier mission—to take customers on a trip of self discovery. The cramped space also placed high demands on the lighting design, which had to provide not only a certain level and quality of general ambient illumination, but specific task lighting as well.

METHOD Transparent materials and both ambient and backlighting work together to evoke the sensual translucency of water. Glass, plexiglass, fiberglass and resin allow the viewer to see through, while the lighting assures him there is in fact something to be seen.

Unusual in its design, the dropped ceiling manages to hide unsightly mechanics without actually shrinking perceptions of height. More than 50 fiberglass panels are suspended at different angles and levels. Hidden above the panels, 250W halogen flood reflectors are pointed selectively at the white ceiling above and the panels below, providing general ambient lighting of about 70 fc. More localized task/accent lighting is provided by 15 standard adjustable track pendants utilizing MR16 halogen spotlights, which are scattered among the floating panels. Important areas, such as the tester table, are lighted to about 120-150 fc.

The use of plastics is abundantly incorporated into this project. A plexiglass perimeter wall surface encases large, image-laden transparencies that are easily swapped for more trendy visuals when fashion or marketing dictates. It is the lighting, however, that actually brings those images to life. A standard compact fluorescent illuminates the wall and the product shots along it.

The store front is almost as striking as the ceiling. Three layers of glass positioned 2 ft. apart house a collection of images, flash words and three televisions. Recessed downlights highlight images from above, while exposed low-voltage tension wire equipped with 12W halogen MR16 lamps illuminate the transparent signage. Interestingly, the light sources, especially in the front window, tend to cause reflection throughout the project—a phenomenon traditionally avoided by lighting designers. Here, however, they were intentional, as the shimmering effect accentuates the aqueous nature of the space. Bressan pointed out that “the reflections themselves don’t really distract from the product because the product is the only real color in the clear space.” Indeed, the fluid, transparent design actually serves to emphasize the makeup above all else.

Artecnic has already installed one Trucco Atelier in Toronto, with two more in the works. Two boutiques are also planned for New Jersey; the look will be the same.

DETAILS
PROJECT
Trucco Atelier

LOCATION
Glendale, CA

OWNER
Sebastian International

ARCHITECT
Artecnic—Enrico Bressan, Lili Merck, Juan Garcia

LIGHTING DESIGNER
Artecnic—Enrico Bressan

INTERIOR DESIGNER
Artecnic—Tahmineh Javanbakht

PHOTOGRAPHER
A.V. Media—Adrian Velicescu

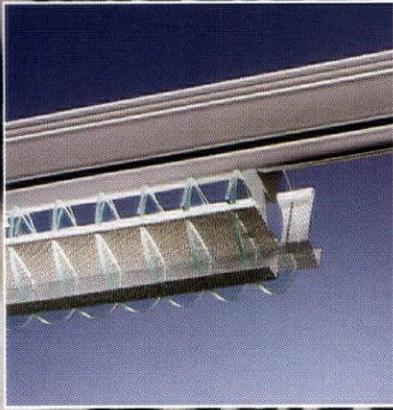
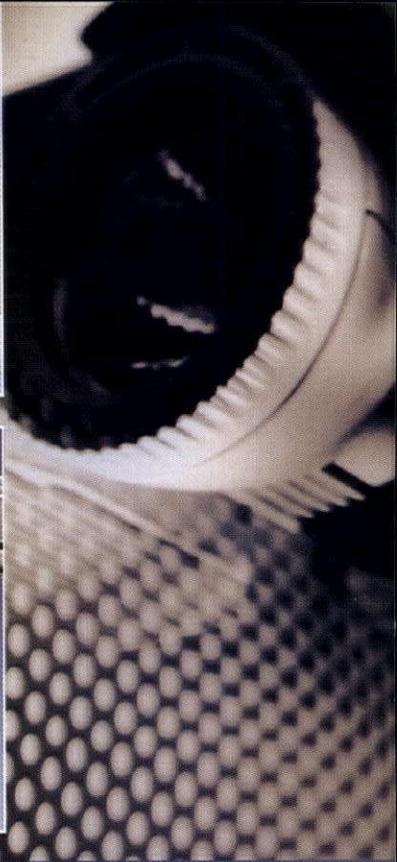
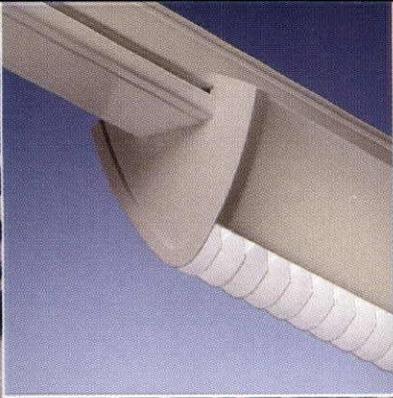
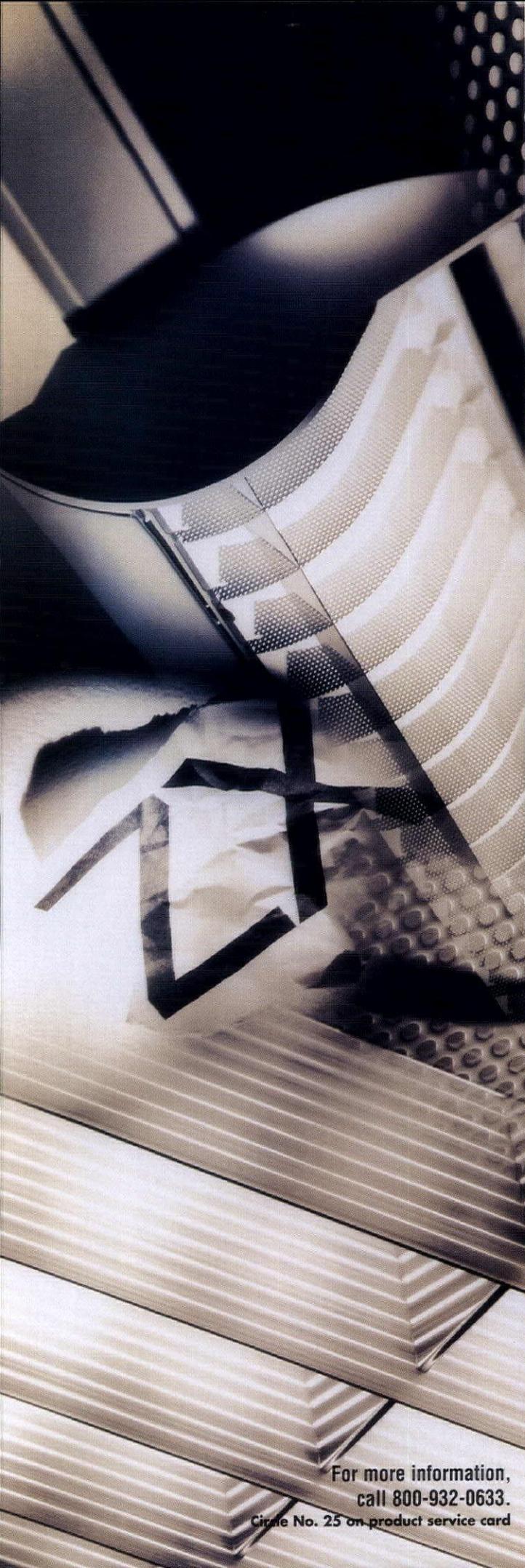
LIGHTING MANUFACTURERS
Juno Lighting; Omegalux; Lumark; SF12



PHOTOGRAPHY: A.V. MEDIA—ADRIAN VELICESCU

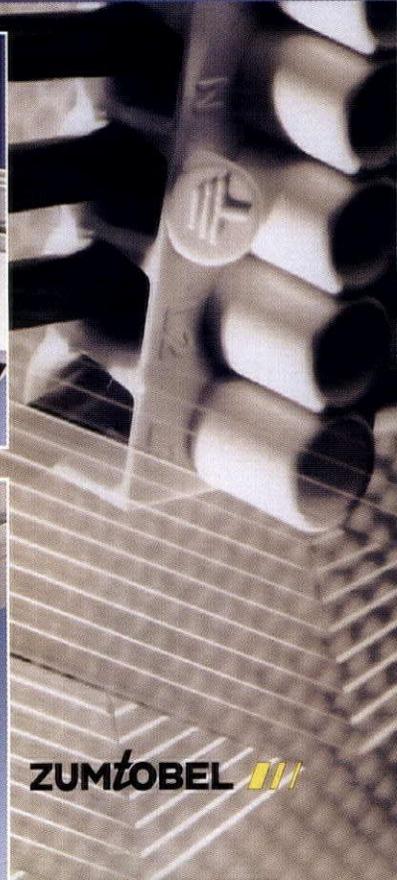
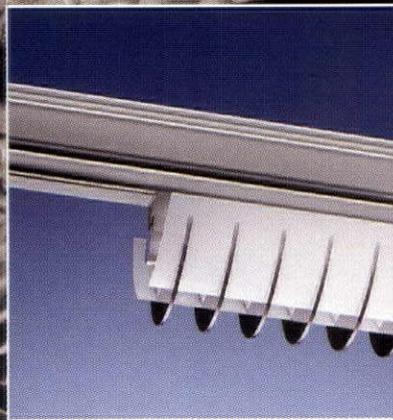
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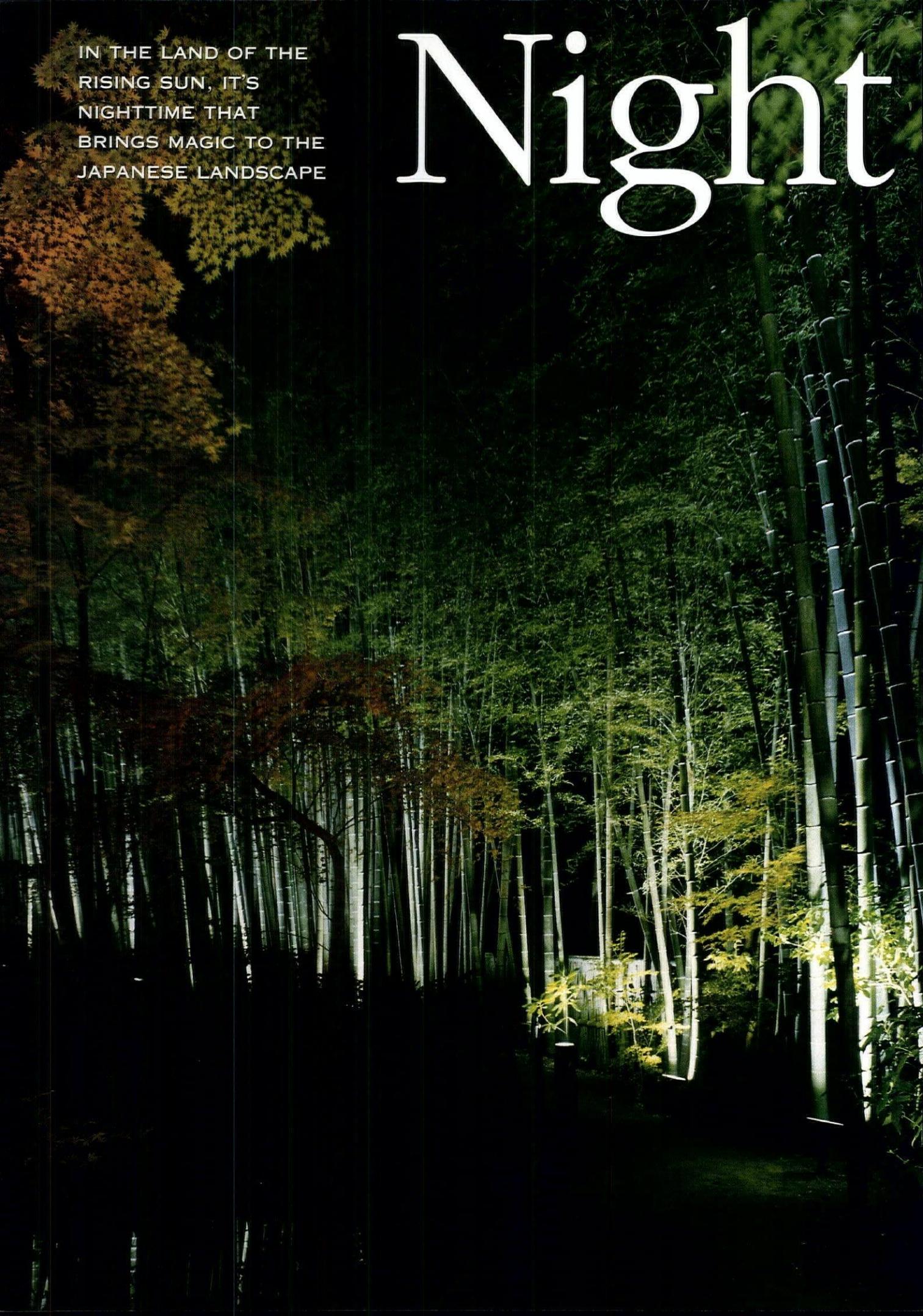


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IN THE LAND OF THE
RISING SUN, IT'S
NIGHTTIME THAT
BRINGS MAGIC TO THE
JAPANESE LANDSCAPE

Night



Lights

BY WANDA JANKOWSKI, CONTRIBUTING EDITOR

CELEBRATING NATURE

ZUIGANZAN ENKOJI TEMPLE

November through early December is a particularly special time for those visiting the Zuiganzan Enkoji Temple because the grounds and gardens are graced with evening illumination designed to reflect the theme of "Zuiun-no-hana" or "The Flower Shaped Clouds."

The serene atmosphere of the ancient Buddhist temple, founded in 1601, is enhanced

with soft lighting effects that allow the natural vibrant colors of the foliage to form a visual feast set against a back-

ground of contrasting light and darkness.

Illumination begins at the "Sanmon" or entrance gate, runs along the walkway and culminates in the garden. There are two primary tree types in the landscape. The acer palmatum trees, with their orange/red leaves, are illuminated by blending twenty-eight 100W and 150W PAR38 fixtures. The tall, green bamboo trees are lighted with 13W mercury fixtures. In addition to the ground-mounted fixtures, five 300W halogen spotlights are positioned in the branches of the tall trees. Manmade mist is highlighted with twelve 12V 50W halogens equipped with dichroic mirror reflectors.

Changes in light intensities are programmed to synchronize with an eight-minute musical accompaniment featuring a shakuhachi (bamboo flute) and synthesizer, resulting in a light, music and mist show that is repeated at regular intervals throughout the entire evening.

The lighting of the Enkoji Temple is part of "Night Visits to Old Spots in Kyoto," an event planned by the city to commemorate the transfer of the ancient capital from Nara to Kyoto in 794 A.D.

Though on the cutting-edge of modern technology, the Japanese remain true to ancient cultural traditions in their awareness and celebration of man's relationship with nature. Carving the nighttime darkness with light serves many purposes. Among them: enjoying natural phenomena in evening hours, reflecting corporate identities, creating exciting entertainment features and providing safe and attractive spaces for the public good.

In Japan, the art of lighting is not only functional and attractive, but embodies deeper meanings in mankind's quest to interact with nature as well as to explore the built environment. The following projects, all located in Japan, are artfully revealed with light by Tokyo-based ALS Landscape Design Institute Inc.



DETAILS

LOCATION Kyoto, Japan ■ **SPONSORS** Zuiganzan Enkoji Temple and Capital Transfer 1,200th Anniversary Project Foundation ■ **PHOTOGRAPHER** Yoshihisa Araki ■ **LIGHTING MANUFACTURERS** Yamagiwa Corporation; Lutron



**IZU
CACTUS PARK**

Izu Cactus Park, in Ito, Japan, is a 50-acre leisure facility at the foot of Omuro Heights on the Izu Peninsula. The park serves as a habitat for 3,500 species of cacti and other thick-leaf plants, as well as 130 species of animals and birds gathered from all over the world.

The newly installed interior lighting of five pyramid-shaped greenhouses in the park enables visitors to view the cactus plants in evening hours with minimal disturbance to wildlife and enhances the image of the park as a district landmark.

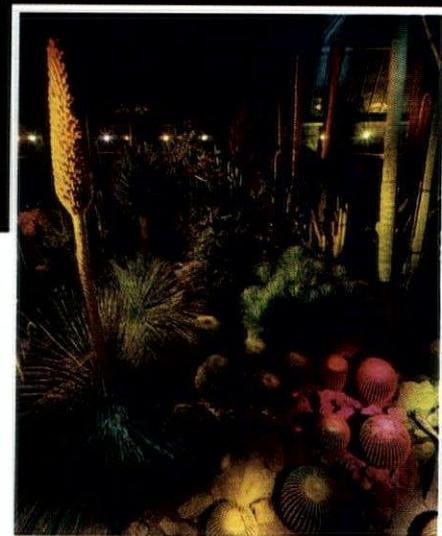
The pyramids, made with Filon (translucent fiberglass) plates set in steel frames, are accessed via underground passageways that connect one to the next. As visitors exit the darkened passageways they are refreshed by the open, uplifting atmosphere of each illuminated greenhouse.

The first four greenhouses are lighted to

render the natural colorings of the plants. The first pyramid, filled with South American cacti, is illuminated with twelve 4500K, 150W metal halide lamps. The second pyramid, for African cacti, uses five 4500K, 150W metal halide lamps and fourteen 150W PAR38 lamps. The third greenhouse, showcasing forest cacti, is lighted with eight 150W PAR38 lamps; and the fourth, for Madagascar cacti, with eight 150W PAR38 lamps.

The fifth and largest greenhouse contains Mexican cacti in an enchanted setting, created by the use of colored light and a four-minute-long music and light show repeated throughout the evening. A total of thirty-nine 20W PAR56 spotlights are installed, with 36 of them grouped into nine circuits that are dimmer-controlled and synchronized with the synthesized sounds of Latin American music. Filters in seven colors are mounted on the fixtures; yellow, amber, blue, violet, pink, green and light green. The eighth color is that produced by unfiltered incandescent lamps.

In all the greenhouses, the spotlights are mounted in several ways: spike-type fixtures are mounted within shrubbery, custom-made



fixtures are fastened onto the steel frames and clamping fixtures are mounted onto steel pipes hung from the frames.

The lighting system, in operation since July 1997, runs in summer months from 5:30 to 10 pm. During winter months, beginning in mid-October, visitors enjoy the illumination from 3:30 until 10 pm.

DETAILS

LOCATION Ito, Japan ■ **CLIENT** Izu Cactus Park Co., Ltd. ■ **PHOTOGRAPHER** Toshio Kaneko ■ **LIGHTING MANUFACTURERS** Yamagiwa Corporation; Toshiba

CREATING IMAGE AND IDENTITY

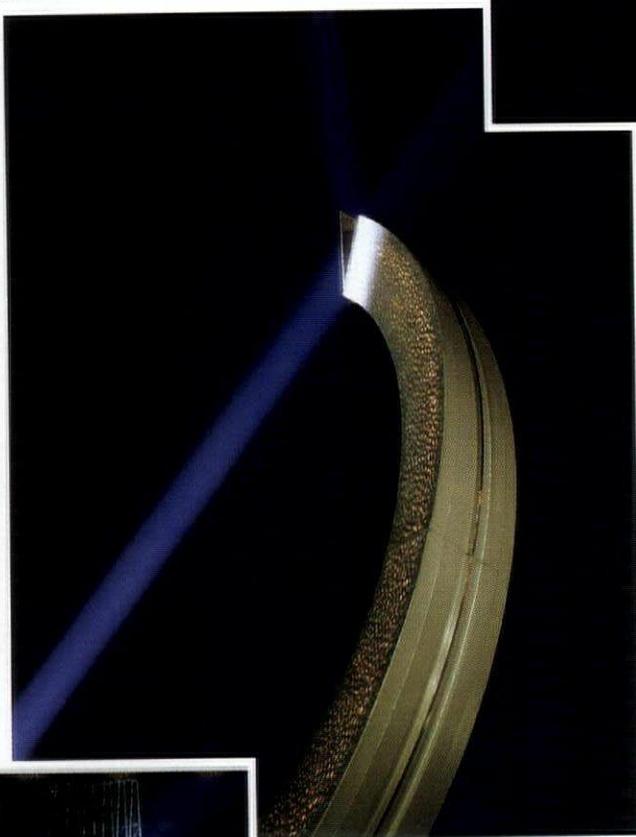
CHISEI

"Chisei" is a sculpture displayed at the northern end of Media Park Ichikawa, a life training center established by the city of Ichikawa. A Tokyo suburb, Ichikawa happens to be located at the north latitude of 35 degrees 43'. The sculpture is intended to symbolize the purpose of the center and the identity of the city, and to express the meaning of life, the earth and the universe on a three-dimensional level.

Chisei, designed to harmonize with the building behind it, consists of a crescent-shaped metal piece tilted at the angle of 35 degrees 43' with a tetrahedron-shaped reflector affixed to its top. It is set on a grassy mound that symbolizes the hemisphere.

At the base of the mound stands a separate metal tetrahedron box. A round window, through which light is projected, is included in the face nearest the lower end of the crescent.

The crescent, made of cast aluminum with a rust-resistant coating, changes in appearance throughout the day as varying sunlight conditions reflect and react with its multi-textured surface—nooks and crannies interspersed with rough and polished finishes. Daylight is absorbed at some points and reflected at others, so sometimes the sculpture appears



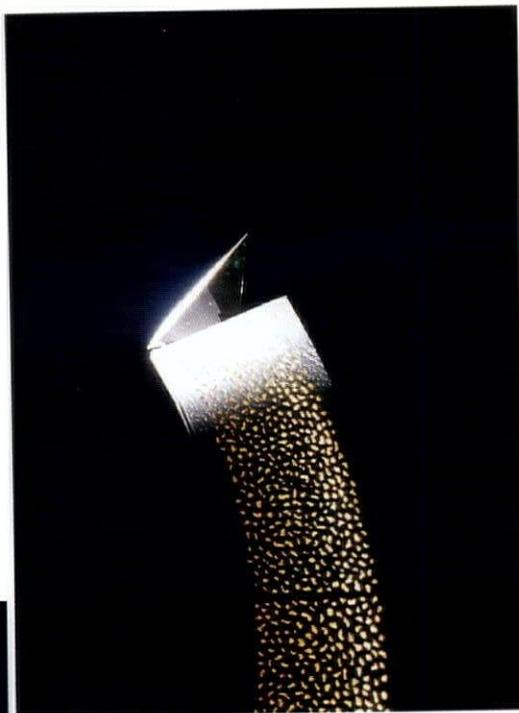
DETAILS

LOCATION Ichikawa,
Japan

■ CLIENT City of
Ichikawa

■ PHOTOGRAPHERS
Takeshi Yamada; Masami
Sato

■ LIGHTING
MANUFACTURER
Yamagiwa Corporation



warm; at other times, cold.

At sunset, the randomly shaped crevices cut into the sculpture come alive with light from long-life, low-voltage lamps installed within the crescent that blink from top to bottom. It's almost as if the metal has become vibrant and throbbing with energy stored within from the sun.

The design team of ALS and Yamashita Sekkei Inc. used a 4kW xenon projector housed inside the freestanding tetrahedron box to cast a dense beam of light into the pitch blackness of night. The beam is projected at an angle of 35 degrees 43' through the round window toward the tetrahedron-shaped reflector at the top of the crescent. A honeycomb louver as thick as 100mm is set on the round window of the tetrahedron box to avoid glare when the projector casts its light. A sensor attached to the louver

signals the projector to automatically turn off when someone approaches the sculpture.

When the light beam reaches the adjustable reflector, it divides into two beams. One angles towards the Northern Star; the other shoots up vertically tracking the movement of the earth. The designers describe the stunning effect: It's as if a message embodied in light is being exchanged between this planet, mankind and the universe.

TWELVE CRYSTALS

To enhance the reversed setback style facade of the Yamagiwa Gobancho Building, a series of 12 complementary lighting fixtures is installed in a row outside the structure. Each illuminated object represents a month of the year. The "crystals" are made of reinforced layers of cracked glass sheets. Each fixture is illuminated from within by a 75W halogen lamp.

The designers' intention was to "crystallize" the building's architecture into these optical objects, and to contain different moments of time in different shapes. As one climbs the steps of the

building's front staircase, the light fixtures come into view one-by-one at eye level. When illuminated, the objects indicate the depth of the building and the width of the space at the same time. These green focal points are set against the tapestry-like glass walls at the front of the building.

DETAILS

LOCATION Tokyo, Japan ■ **CLIENT** Yamagiwa Corporation
 ■ **PHOTOGRAPHER** Takeshi Yamada
 ■ **LIGHTING MANUFACTURER** Yamagiwa Corporation



ENTERTAINING WITH LIGHT

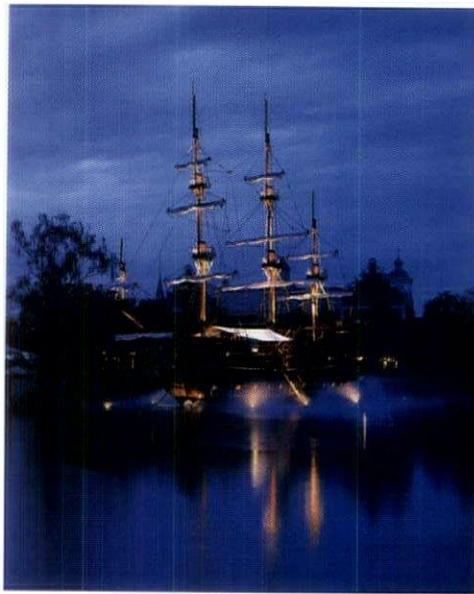
KURASHIKI TIVOLI PARK

Kurashiki Tivoli Park, which debuted in July 1997 in Kurashiki City, is a theme park open year-round modeled after Tivoli Park in Denmark. The lighting challenge for ALS and Tivoli Japan Co. involved devising a nighttime light and sound show around the Sanct Georg, a replica of the famous Danish ship that floats in the park's pond and functions as a restaurant.

During the day, even though the ship is moored, it appears to be driven forward, the illusion created by man-made waves produced at the bow and artificial fog that surrounds the vessel. From 10 am to 7 pm, a 10-minute fog-and-waves routine is performed every 30 minutes.

At night, the ship comes to life with illumination. The mast and sail are highlighted with twenty-six 200W PAR56 and ten 150W PAR38 lamps. Sixteen 200W PAR56 fixtures downlight the ship. Four 500W and eight 250W halogen E-11 base lamps installed underwater illuminate the sides of the ship.

From 7 pm to closing, two different light and sound shows are alternated for nine minutes each at 15-minute intervals. Color changes occur with the help of four 700W short-arc metal halide fixtures that illuminate the manmade mist, the mast and the sail. Also synchronized to music are color changes in the sprays of carefully placed



underwater fiber-optic pinpoint.

Two beds that total 1,500 fiber-optic strands on either side of the ship are raised from under the water toward the surface in order to illuminate the ship and reflect light onto the water's surface. Stainless steel rectangular wire nets below the water's surface contain the strands and keep them from straying in the current. The illuminator includes a 150W metal halide lamp and is remotely located on the shore. Like the flow of water, the change of color occurs sequentially from bow to stern and symmetrically on both sides of the ship.

DETAILS

LOCATION Okayama, Japan
 ■ **CLIENT** Tivoli Japan Co., Ltd.
 ■ **PHOTOGRAPHER** Yoshihisa Araki; Masaaki Fukumoto ■ **LIGHTING MANUFACTURERS** Yamagiwa Corporation; Irideon; Philips; Toshiba



LIGHTING FOR THE PUBLIC

LIGHTING STOOLS

The inhabitants of Zama, a city on the outskirts of Tokyo, had been abandoning the city center and moving out to the suburbs. To reverse this trend, the municipal administration moved its headquarters to the central district, with plans for a new city hall, a culture hall and a health center to share its building complex.

A public garden fills a corner of the 17-acre complex, but since it is located some distance behind the entrance, an attractive design was needed to draw visitors toward the back area. So the design team of ALS and Azusa Sekkei Co., Ltd. decided to install

"lighting stools" among a variety of perennial flowers. The "street furniture" can be used by weary visitors, in addition to functioning as attractive visual sculptures and illuminated guideposts at night.

The stools are made of stainless steel pipes. Within the central pipe of each stool is a slit in which a 20W fluorescent lamp has been placed. During the day, the colors and movement of the breeze-blown flowers and strolling visitors surrounding the stools are reflected in the mirror-like surfaces of the pipes. The added multiple interreflections of sunlight on the surfaces of the pipes create an eye-catching shimmering effect in the garden during daylight hours.

At night, the lighting stools take on a completely different appearance and the "light performance" changes, with rays streaming out through the slitted center pipes and reflecting from one stainless steel surface to another. The fixtures become stationary sentinels guiding guests through the landscape.■

DETAILS

LOCATION Zama, Japan ■ CLIENT City of Zama ■ PHOTOGRAPHER Toshio Kaneko ■ LIGHTING MANUFACTURER Yamagiwa Corporation



Light of Day

AT JAILS AND PRISONS DESIGNED BY ARCHITECTURE FIRM HDR, INC., SUNLIGHT IS A VISITOR WELCOMED BY BOTH INMATES AND STAFF

BY EMILIE SOMMERHOFF, ASSISTANT EDITOR

PHOTOGRAPHY BY MARK TREW

Intuition tells us—as do numerous studies—that sunshine is a healthy ingredient in daily life. It's a positive mood enhancer, and cheaper, easier to access and more natural than most other remedies for the blahs. In fact, a dose of sunlight is so remedial, even fundamental, that its presence is sought in even the harshest of environments—jails and prisons.

While enforceable guidelines vary from state to state, the American Correctional Association (ACA) maintains a set of professional standards requiring "access to natural light by means of an opening...with a view to the outside," which means that an allegiance to daylight is maintained by any facility wishing to receive accreditation—a helpful, almost necessary, status for correctional institutions should they become involved in litigation.

For responsible architecture firms, however, such a mandate is unnecessary. HDR, Inc., a leading designer of domestic correctional facilities, makes an effort to incorporate daylight into its designs regardless of standards or the client's preconceived notions. "I think the better environment you can give people, the better chance you have of them reacting favorably," says Bob Price, senior designer and vice president, HDR, who specializes in criminal justice facilities.

However, the clients (state and county governments) are not usually aware that what they want is a well-lighted facility until they see one. It's up to the design firm to lead them there. They also think structures that integrate daylight are expensive. "They're really not," says Forrest, project manager, HDR. "What it costs is attention. You have to want to do it."

IN DEFENSE OF DAYLIGHT

Of course, hard-liners will argue that convicted criminals don't really deserve the privileges that free citizens enjoy—daylight, perhaps, being one of those privileges. However, according to several correctional facility officials interviewed by *Architectural Lighting*, in addition to being humanitarian, the use of daylight can actually promote a more manageable environment.

"If you can reduce the stress level of the inmate, you can reduce the workload of the detention staff," notes Lieutenant Mark Williamson, transition team coordinator for the HDR-designed David L. Moss Criminal Justice Center, Tulsa, OK (to be completed in 1998).

"It's all driven towards keeping the inmate calm, not necessarily making him feel better," Forrest agrees. "And there are three things that make inmates feel more comfortable and therefore less stressed: good food; the ability to recreate; and the overall quality of the environment. Lighting is a big part of that."

Natural lighting is similarly soothing to staff, who in most cases are subjected to the same conditions as inmates for at least the work day. "We like to say they do life eight hours at a time," says Forrest. And, as in any workplace, a content staff means a better-run facility.

Last, but not least in a prison, sunshine helps bring the general level of illumination up, at least during the day. While Forrest notes that aggressive glare should be avoided (hence the predominant use of indirect fixtures), brightness is a necessity for safety reasons. "It's of primary importance to have adequate light in these facilities," says Forrest, "so that

AT YORK CORRECTIONAL FACILITY, COUNSELORS MEET WITH PRISONERS IN THE UNIT MANAGEMENT AREAS, WHICH EMPLOY GLASS BLOCK WALLS TO ALLOW THE MAXIMUM AMOUNT OF NATURAL LIGHT WHILE PRESERVING PRIVACY.

staff can see and everybody knows that they can see." Brightness also alleviates the aesthetic heaviness of the concrete-walled space—again, a perk employees benefit from as much as inmates.

Surprisingly, the cost-effectiveness of using daylight is not a deciding factor for clients, hence mechanisms that could ultimately increase the impact of daylighting on the budget—occupancy sensors, for example—are not often employed. Price notes that the utility cost of running these institutions is miniscule compared to the cost, for example, of inmate medical attention and good staff. The comparatively minimal savings are not enough to persuade clients, who generally have a different agenda. Relates Price, "They say, 'You mean if I don't do this, I can put in a couple more cells? Well, I'll take a couple more cells.'" Even if such equipment is agreed upon initially, it is usually taken out in value engineering.

Though there is little to no empirical evidence about the effects that natural light has on inmates, Price does not seem to have a problem convincing clients that it should be used as much as possible. "They've never thought about it enough to know how important it is," he says. "They just know they like it." ■

YORK CORRECTIONAL FACILITY

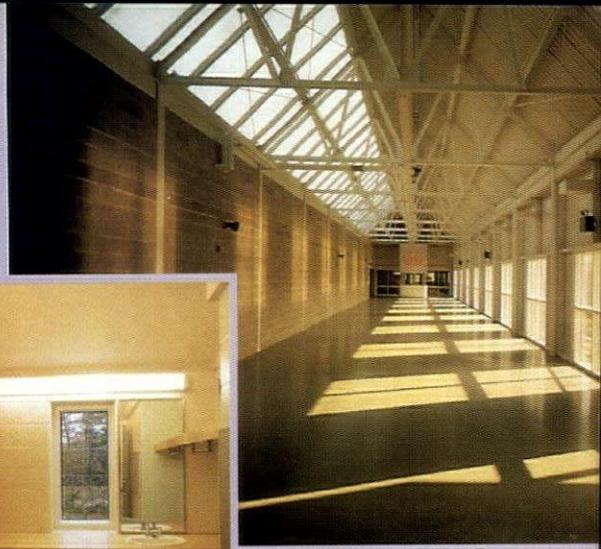
The ultimate quandary with daylighting in a jail or prison is how to let it in without letting the inmates out. Several facilities by HDR present possible options.

The York Correctional Facility for Women, Niantic, CT, is one of the most progressively designed prisons in the country. Completed in 1994, the medium and maximum-security facility allows each inmate—even those in solitary confinement—a window more reminiscent of a dorm room than a barred-cell. The dining, operations and recreation areas, while minimalist in design, feature daylight-friendly structures—the south-facing walls of the cafeteria and gymnasium are predominantly glass, while hallways in the educational building include south and east-facing skylights.

The facility was inspired, according to Price, by a correctional institution for women that was founded in 1924 and originally located on the same site. Following an honor system, sentenced women lived in cottages, cooked their own meals and did light labor. "When we built the new facility," says Price, "we wanted to create—within a secure perimeter—the same kind of feeling that you had in the cottages."

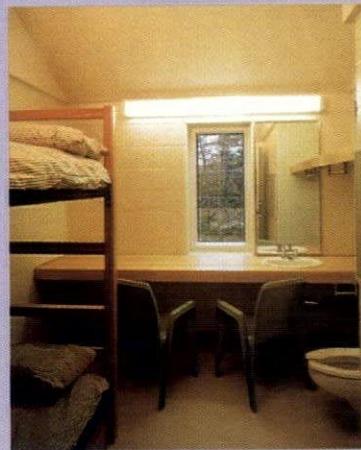
Though the compound looks mild, all necessary precautions have been incorporated into the design. The cell windows are non-operable and equipped with security-rated glass, which will not break without considerable force. A one-way film was applied to windows in the restrictive housing units because some inmates were gesturing and harassing others in the compound. Likewise, a secure perimeter, says Price, is paramount to the viability of windowed facilities; there's no doubt that a window is easier to break than a brick wall, but with a tight fencing system, if prisoners do get out they aren't going far.

The Niantic facility has suffered criticism for its unique design, but, according to Warden Eileen Higgins, there have been no significant problems. In fact, she praises the design as more healthy. "It's a distraction. The alternative is to look at a wall.



PHOTOGRAPHY BY MARK TREW

DAYLIGHTING REACHES INTO EVERY STARK CORNER OF THE NIAN TIC, CT PRISON—FROM THE CELLS, LEFT, TO THE HALLWAYS OF THE CLASSROOM AREA, ABOVE.



People don't understand that when inmates don't have anything to do, they find something to do. That's when we run into trouble."

SPARTANBURG DETENTION FACILITY; TULSA CRIMINAL JUSTICE CENTER

In certain situations, incorporating windows into the design is out of the question. Facilities located in urban areas have found that windows allow for problematic contact between prisoners and the community. In addition, not having an exterior wall facilitates the maintenance of cells, thereby making their management cheaper: A service corridor or "chase" around the outside of cells means maintenance staff can access plumbing equipment, for example, without entering secure areas.

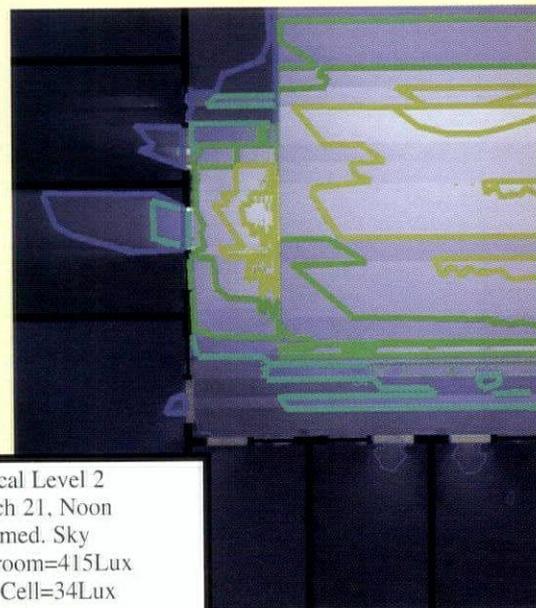
Despite these benefits, windowless designs met with resistance initially because of their similarity to the tomb-like cells of old. HDR, however, has proven in jails such as the Spartanburg County Detention Facility, Spartanburg, SC, and Williamson's facility in Tulsa, OK, that such structures don't have to be lightless. Both institutions use skylights (positioned an inaccessible 18-20 ft. high) and

glass walls leading to a secure outdoor recreation area to maintain daylighting levels.

"This works in a direct supervision situation, where the only time that inmates are in their cells is to sleep," says Price, referring to the growing trend to put an officer in with the inmates, rather than have him manage via a security camera from a separate space. "We flood the dayroom with light, and often they can go directly outside, so windows within the cell aren't that important because they aren't confined there."

To prove the legitimacy of the design created for the Tulsa, OK facility in terms of its light levels, HDR hired Charles Ehrlich, principal, Light and Space. His renderings, taking into consideration different times of the year and various weather conditions, demonstrated that in December on a cloudy day a natural light level of at least 25.6 fc was maintained in the dayroom area. (In June on a clear day, the dayroom measured at 91.1 fc.)

RENDERINGS OF THE TULSA, OK JAIL, SUCH AS THE BIRD'S-EYE SHOT BELOW, DEPICT NATURAL LIGHT LEVELS IN THE DAYROOM AND SURROUNDING CELLS. THE BRIGHTNESS OF THE SPARTANBURG, NC DAYROOM, BELOW LEFT, PROVES THE EFFECTIVENESS OF THE SKYLIT DESIGN.



Typical Level 2
March 21, Noon
Intermed. Sky
Dayroom=415Lux
Avg Cell=34Lux

LUX	
812.5	187.5
437.5	62.5

CHARLES EHRLICH



PHOTOGRAPHY BY ALLEN KÄRCHNER

AFTER COST OVERRUNS RESULTED IN A SLASHED LIGHTING BUDGET, CREATING AN EXCITING ATMOSPHERE WAS NO

Mall Miracle

BY CHRISTINA TRAUTHWEIN, EXECUTIVE EDITOR

PHOTOGRAPHY BY ROBT. AMES COOK

“A project with constant revisions and changes can make a designer feel like the project has become a ‘sink hole,’” said lighting designer Craig Roeder. “But for this project—a substantial extension to Tampa’s University Mall—the real thing took more than \$1 million with it during construction.”

While necessary action was taken to correct the mess left by the sinkhole, it wasn’t without consequence. Design budgets were cut to compensate loss. As a result, Roeder designed a particularly efficient lighting scheme on a tighter budget, which, in turn, played a crucial role in retrieving the project from disaster and creating an uplifting experience in what appeared to literally be a great depression.

The extension wing of the mall takes shoppers on a fun yet relaxing trip through colorful sights, flowing forms and familiar shapes. In fact, both the architecture and design elements make abundant use of spirals, circles and waves, with star-shaped forms interspersed throughout to

add a bit of sparkle. The lighting truly complements the space, guiding the eye around every bend, enticing people to follow the flow.

“The architect, a firm that sincerely understands the importance of lighting in a project, was exceptionally accommodating of the lighting design,” said Roeder. “It was very much a team effort from the onset.”

The lighting—and consequently, the architecture—takes on a special ambiance after the sun sets. The shopping center comes to life. “We wanted to add some night magic because this is when malls do a tremendous amount of business, particularly in Florida after the beaches and outdoor venues shut down,” said Roeder.

With 50 percent of the lighting being high-efficiency cathode with custom electronic ballasts, operation and maintenance are facilitated via long lamp service life. Despite a lower budget, \$2.90 per sq. ft. of lighting equipment resulted in 1.11W per sq. ft. and maintenance savings.

ROEDER STRIVES TO PUT AS MUCH VIBRANT COLOR INTO HIS PROJECTS AS POSSIBLE. "I DO THAT IN PUBLIC SPACES BECAUSE PEOPLE ADORE IT, THEY SMILE," SAID ROEDER. "MY PHILOSOPHY IS ONE OF ENLIGHTENMENT, WHICH IS DEFINED AS LIGHTEN UP!" ADDED ROEDER, "IF I HAVE THE OPPORTUNITY TO ENERGIZE PEOPLE, LIGHTEN THEIR LOADS, I'LL DO IT."

ACCENTING FOR THE TWO-STORY SPACES (RIGHT, TOP) IS PROVIDED BY 277V 150W PAR64/3° METAL HALIDE LAMPS POSITIONED TO CREATE POOLS OF LIGHT. COLD CATHODE AT 3.4W/LINEAR FOOT PROVIDES AN EXCITING AMBIANCE, DRAWING ATTENTION TO THE UNDULATING LINES OF THE CEILING AND OTHERWISE DARKENED SKYLIGHTS, RIDDING THE SPACE OF A "BLACKHOLE" EFFECT. COVE LIGHTING, USED THROUGHOUT THE MALL, MINIMIZES THE NEED FOR DOWNLIGHTS AND LETS SOME OF THE "SPECIAL" EFFECTS SHINE THROUGH (OPPOSITE).

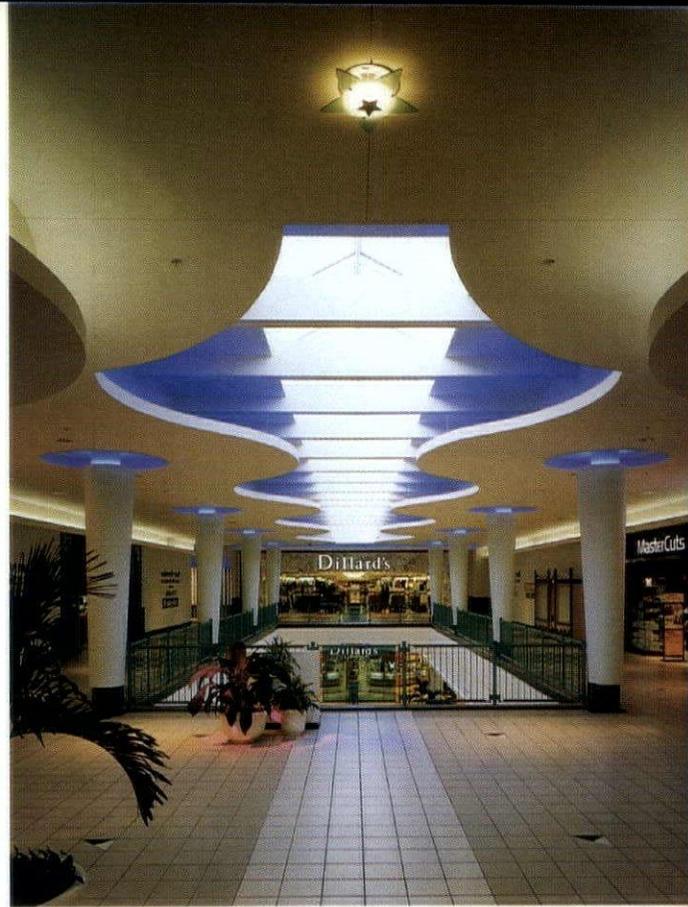
EXPLAINED ROEDER, "HAVING SACRIFICED 100W METAL HALIDE PAR38S TO THE 'SINK HOLE GOD,' 100W HALOGEN INFRARED PAR38S ADD SHIMMER TO CUT-GLASS STAR DETAILS." AN ARTIFICIAL NEBULA IS

CREATED USING BLUE CATHODE, WHICH IS ALSO USED WITH 3100K 60MA CATHODE TO MEANDER THROUGH THE MALL CONCOURSES, ILLUMINATING AND REJUVENATING WANDERING SHOPPERS (LEFT).

(RIGHT, BOTTOM) A CUSTOM PENDANT OVER THE ESCALATOR BANKS ALSO UTILIZES COLD CATHODE, WHICH PROVIDES SOME GENERAL AMBIENT LIGHTING AND ENHANCES THE DISTINCTIVE STAR SHAPE OF THE FIXTURE. STRATEGICALLY PLACED 100W METAL HALIDE UPLIGHTS WITH BLUE, PINK AND YELLOW DICHROIC FILTERS ARE CONCEALED IN JOISTS AND PROVIDE GENERAL SPLASHES OF COLOR ON THE CEILING PLANE.

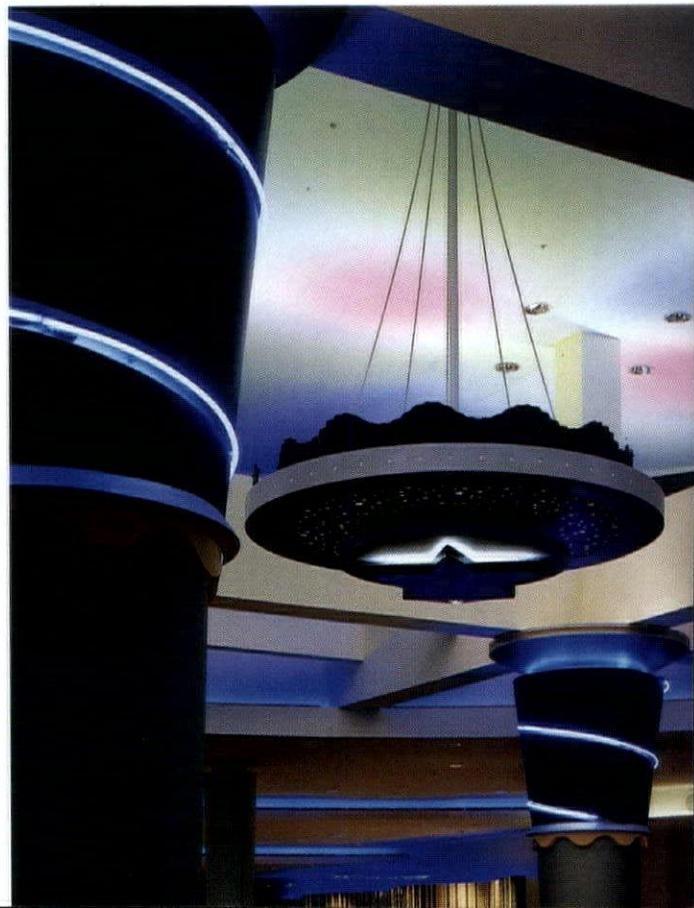
SPIRAL-WRAPPED COLUMNS—WHICH PROVED TO BE A DIFFICULT TASK REMEDIED BY BEND-

ING COPPER PIPING TO THE APPROPRIATE FORM—PROVIDE EYE-CATCHING COLOR; THE BUTT-SEALED CONNECTIONS FOR THE EXACTING SPIRAL BLEND WITH THE ARCHITECTURE. ■



DETAILS

PROJECT University Mall Extension ■ **LOCATION** Tampa, FL ■ **OWNER** Heitman Retail Properties
■ **ARCHITECT** Anthony Belluschi Architects, Ltd.
■ **LIGHTING DESIGNER** Craig A. Roeder, Craig A. Roeder Associates ■ **PHOTOGRAPHER** Robt. Ames Cook ■ **LIGHTING MANUFACTURERS** Lite Lab; Edison Price; Neotek; Lumiere; Hydrel



Recently, Taliesin Architects completed Monona Terrace Community and Convention Center, the last great civic work of Frank Lloyd Wright. The facility, though, is anything but conventional. Unlike the "closed box" construction so typical of modern architecture, Monona Terrace boasts a spectacular semi-circular design with a strong attachment to nature that is enhanced by intriguing outdoor lighting. Madison's new lakeside facility is now open after decades in the making, its design borrowed from the future, its concept set in the past. In fact, one could say, Monona Terrace has a rich and dramatic history with an intensely contemporary feel.

MOVING WRIGHT ALONG

Monona Terrace was first designed by Wright in 1938 and, after encountering considerable controversy and undergoing three revisions, was still on his drafting board when he died in 1959, six weeks after a final set of conceptual design documents was sent to the city. For nearly 40 years, Taliesin Architects—the successor firm to the original practice founded by Wright in 1893—went through redesigns to meet changed needs, budgets and legislation.

Yes, 1938. H.G. Wells' *The War of the Worlds* was broadcasted by Orson Welles. Teflon was discovered. Nylon first manufactured. And, funded by a local businessman, Frank Lloyd Wright generated his first proposal for the "dream civic center," as a local newspaper then referred to the megastructure that would link Wisconsin's Capitol building with Lake Monona. Plans for the building were revised intermittently throughout the 1940s and '50s, but project execution was held back by political objection.

IN MADISON, WI,

TALIESIN ARCHITECTS

TAKES THE

WRIGHT APPROACH

TO ILLUMINATING

THE CITY'S "NEWEST"

CONVENTION CENTER

Past & Present

BY CHRISTINA TRAUTHWEIN, EXECUTIVE EDITOR

"After the setback, Mr. Wright told us, 'some-day they will build it,'" said design architect and principal-in-charge, Anthony Puttnam.

The fulfillment of Wright's prediction began at the start of this decade when the City of Madison requested that Taliesin Architects analyze a proposal for a convention center. The resulting evaluation determined that Wright's 1959 design for Monona Terrace could be adapted to the purpose. It truly was a project whose time had come.

REINVENTING THE PAST

The building, with Wright's famous circular forms, landscaped roof and helical design elements, is a striking example of the city's renewed vitality and the evolving nature of modern meeting facilities. Set on a 4.4-acre site fronting Lake Monona and completing an axis with the Wisconsin State Capitol building, the \$67.1 million, five-level, 600,000-sq.-ft. structure was finally completed by a combination of private sector interests and government officials.

Puttnam, who first worked on the project as a student of Wright in the 1950s, was committed to turning the late architect's vision into reality. As a result, he closely followed Wright's design intentions and interpreted what Wright would have done with today's requirements and technologies.

Wright's original drawings for the project focused on the exterior and the building's relationship to the city and to nature, a concept first introduced in 1910 by John Nolen, one of the foremost city planners and landscape architects of his time. This is evidenced by the 68,000-sq.-ft. rooftop garden designed to accommodate outdoor events. The park-like setting, which is "literally within feet of Wright's original design," said Puttnam, "harmoniously integrates the built and natural environments." It is here that the lighting is particularly interesting, especially when one considers the lighting design was conceptualized more than 50 years ago.

GLOBAL THINKING

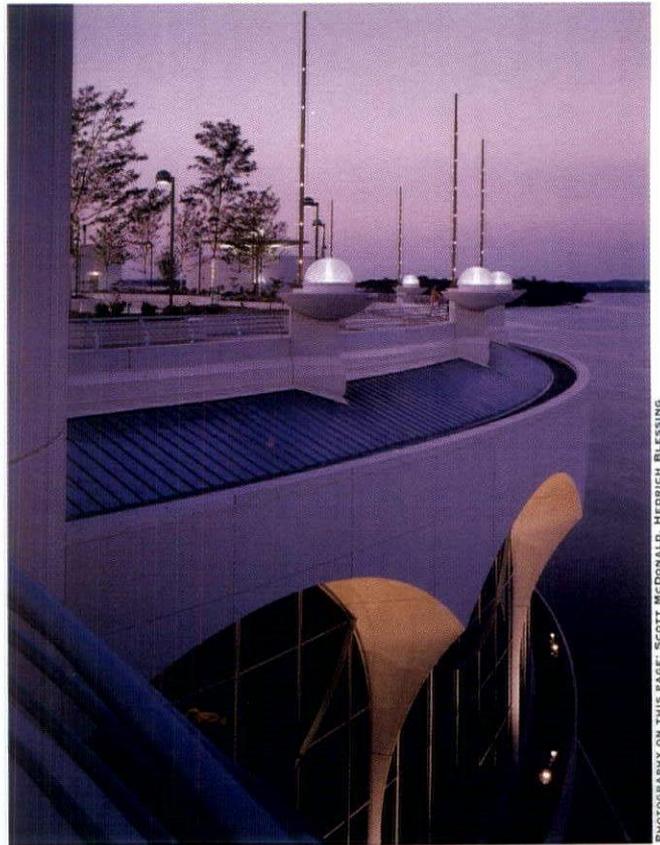
All exterior lighting is metal halide, selected for better color rendition. "The buff-colored

building would seem dingy and dreary if we were to use the HPS sources typically chosen for urban landscapes," Puttnam said. "But we had to run a real campaign to use metal halide. And now, after seeing the results of Monona Terrace, Madison has decided to use it throughout the city."

Futuristic-looking light spheres circle the perimeter of the rooftop. The fixtures, illuminated by fiber-optic systems, are based on Wright's interpretation of glowing glass tubes at what was then the Johnson Wax Co. facility in the late 1930s. Puttnam translated this vision into fiber-optically diffused orbs, formed by bending and shaping plexiglass tubes into a globe-like shape.

A light spire projects from each sphere, illuminated by fiber-optic points. In the center of the roof, reinforced concrete "bowls" or fountains, intended to reflect the dome of the Capitol, are uplighted by metal halide fixtures.

"I'm confident that we haven't done anything Mr. Wright wouldn't have done," said Puttnam. "The exterior is extraordinarily close to the 1959 design. One thing is clear, it couldn't have been done without him." He added, "Many people associate Mr. Wright's concept of 'Organic Architecture' with pastoral settings. But he was keenly aware of urban design issues and opportunities. Monona Terrace exemplifies his view of what the city should be—a festival of wit, a show of pomp and a celebration of circumstance." You need only to look at the rooftop garden to see the way this idea of celebration comes into play. It celebrates the look and relationship of the building to the lake, and of man to nature." ■



PHOTOGRAPHY ON THIS PAGE: SCOTT McDONALD, HEDRICH BLESSING

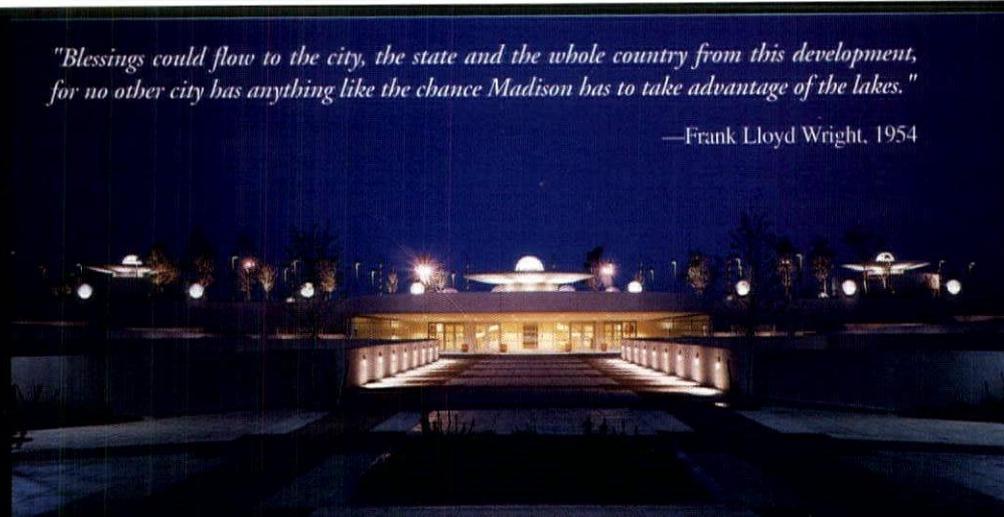
FIBER-OPTICALLY LIGHTED SPHERES AND SPIRES (OPPOSITE) GRACE THE ROOFTOP GARDEN OF MADISON'S MONONA TERRACE CONVENTION CENTER TO CREATE VISUAL INTEREST AND IDENTITY (BELOW). THE ROUNDED SHAPES RESEMBLE THOSE AT THE STATE CAPITOL, FORMING A UNIFIED ARCHITECTURAL PRESENCE IN THE CITY. ANOTHER PROMINENT "WRIGHTIAN" FLOURISH, AND A GOOD EXAMPLE OF HIS DEPARTURE FROM THE TYPICAL "BIG-CITY" DESIGN, IS THE BOWED AND SCALLOPED 34-FT.-HIGH WINDOW WALL OF AQUA GLASS AND ALUMINUM, CROWNED BY A SERIES OF ARCHES (ABOVE). METAL HALIDE FLOODLIGHTS, LOCATED IN THE CANTILEVERED TERRACE, UPLIGHT THE ARCHES AND CREATE NIGHTTIME MAGIC.

DETAILS

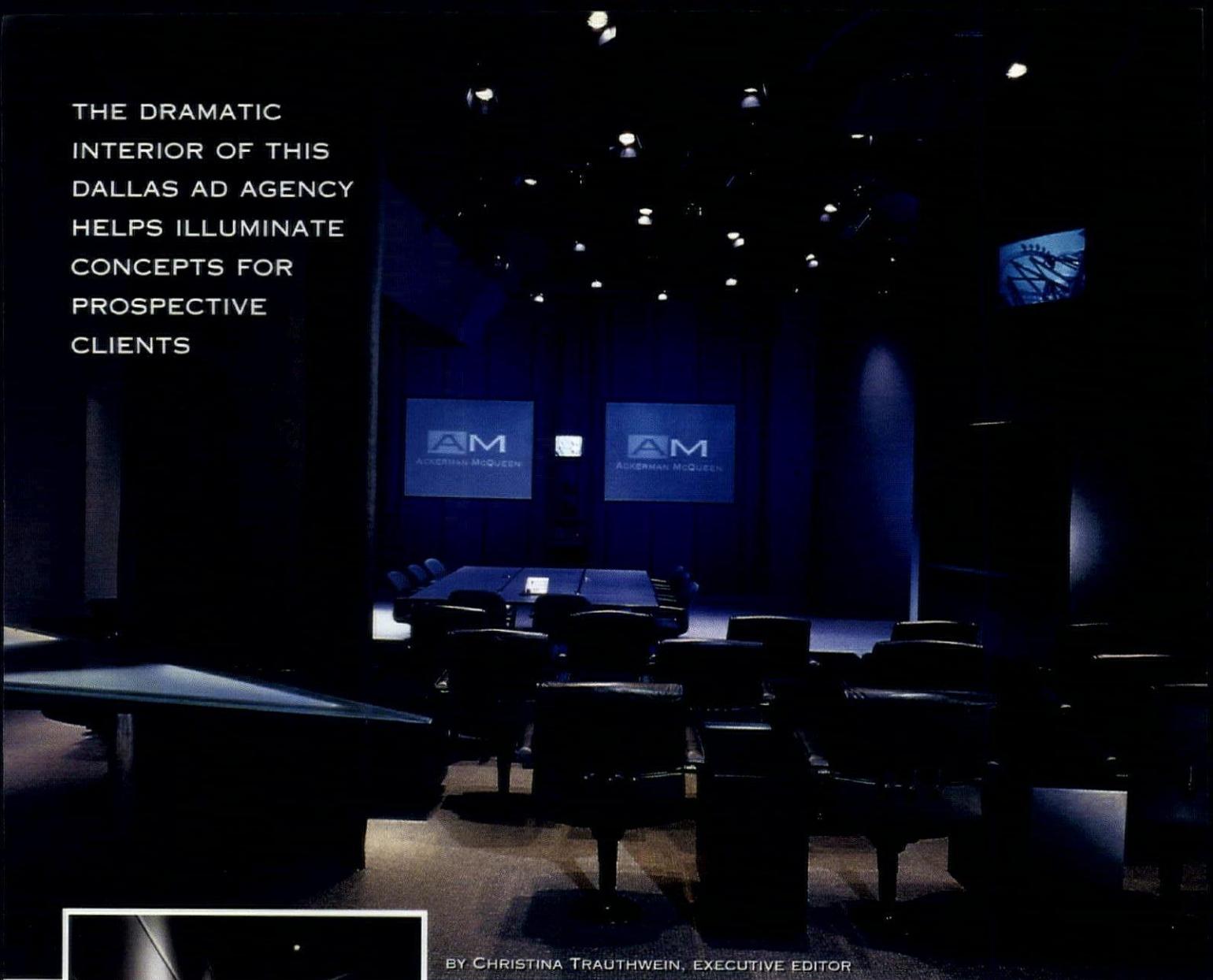
PROJECT Monona Terrace ■ **LOCATION** Madison, WI ■ **OWNER** City of Madison; State of Wisconsin ■ **DESIGN CONCEPT** Frank Lloyd Wright ■ **ARCHITECT OF RECORD** Taliesin Architects; Anthony Puttnam, design architect & principal-in-charge; R. Nicholas Loope, AIA, managing principal ■ **DESIGN TEAM** Monona Terrace Design Venture; Taliesin Architects; Potter Lawson Architects; Arnold and O'Sheridan Engineers ■ **LIGHTING CONSULTANT** PHA ■ **PHOTOGRAPHERS** Scott McDonald, Hedrich Blessing; Joe and Chris Paskus ■ **EXTERIOR LIGHTING MANUFACTURERS** Kramer Lighting Inc.; Louis Poulsen; Sterner Lighting; Hydrel; Bega; ETC; Norbert Belfer; Devine

"Blessings could flow to the city, the state and the whole country from this development, for no other city has anything like the chance Madison has to take advantage of the lakes."

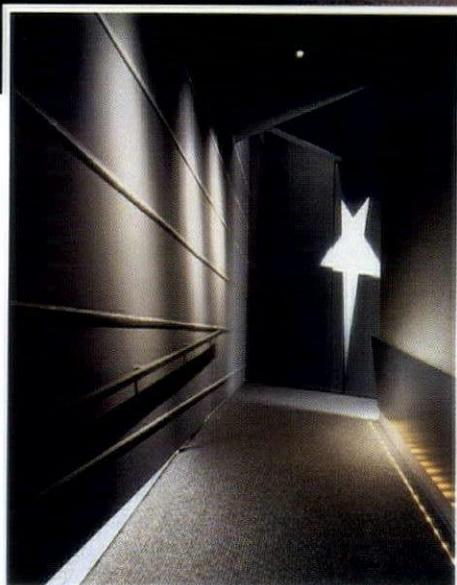
—Frank Lloyd Wright, 1954



THE DRAMATIC
INTERIOR OF THIS
DALLAS AD AGENCY
HELPS ILLUMINATE
CONCEPTS FOR
PROSPECTIVE
CLIENTS



BY CHRISTINA TRAUTHWEIN, EXECUTIVE EDITOR



THE VIDEOCONFERENCING AREA OF THIS DALLAS AD AGENCY IS EQUIPPED WITH ACRYLIC SHEETS AND SOLAR SHADES TO DARKEN THE ROOM WHEN NEEDED (TOP). THE CORRIDOR LEADING TO THE VIDEOCONFERENCE SPACE (OPPOSITE) IS PUNCTUATED BY POOLS OF LIGHT TO CREATE GLAMOUR; THEATRICAL GOBOS ALLOW THE FIRM TO CUSTOMIZE PRESENTATIONS, LIKE THE ONE MADE TO THE DALLAS COWBOYS (ABOVE).

When Ackerman McQueen Advertising Agency decided to inhabit the 7,600-sq.-ft. space on the 18th floor of the Texas Commerce Bank Tower at Los Colinas, they once again called upon the design services of Elliott + Associates. It was this same collaboration of client and architect that was responsible for producing award-winning offices in Tulsa, OK a few years back. Now, together again, they've delivered another punch. And this time the design is even more cutting-edge, emphasizing the distinctive signature style of Ackerman McQueen. In fact, in Dallas, the entire space, with wonderful volumes and great views, is a working metaphor for creative vision.

"Each project has gotten progressively more exotic or more focused on the image of the company," said Rand Elliott, FAIA, president of Elliott + Associates Architects. "The project in Tulsa was pivotal in that it awakened the client to realize that a really great space is an ideal marketing and sales tool for the company."

Elliott added, "Ackerman McQueen is pushing the envelope in terms of wanting this image to be consistent, to be exciting—an opportunity to

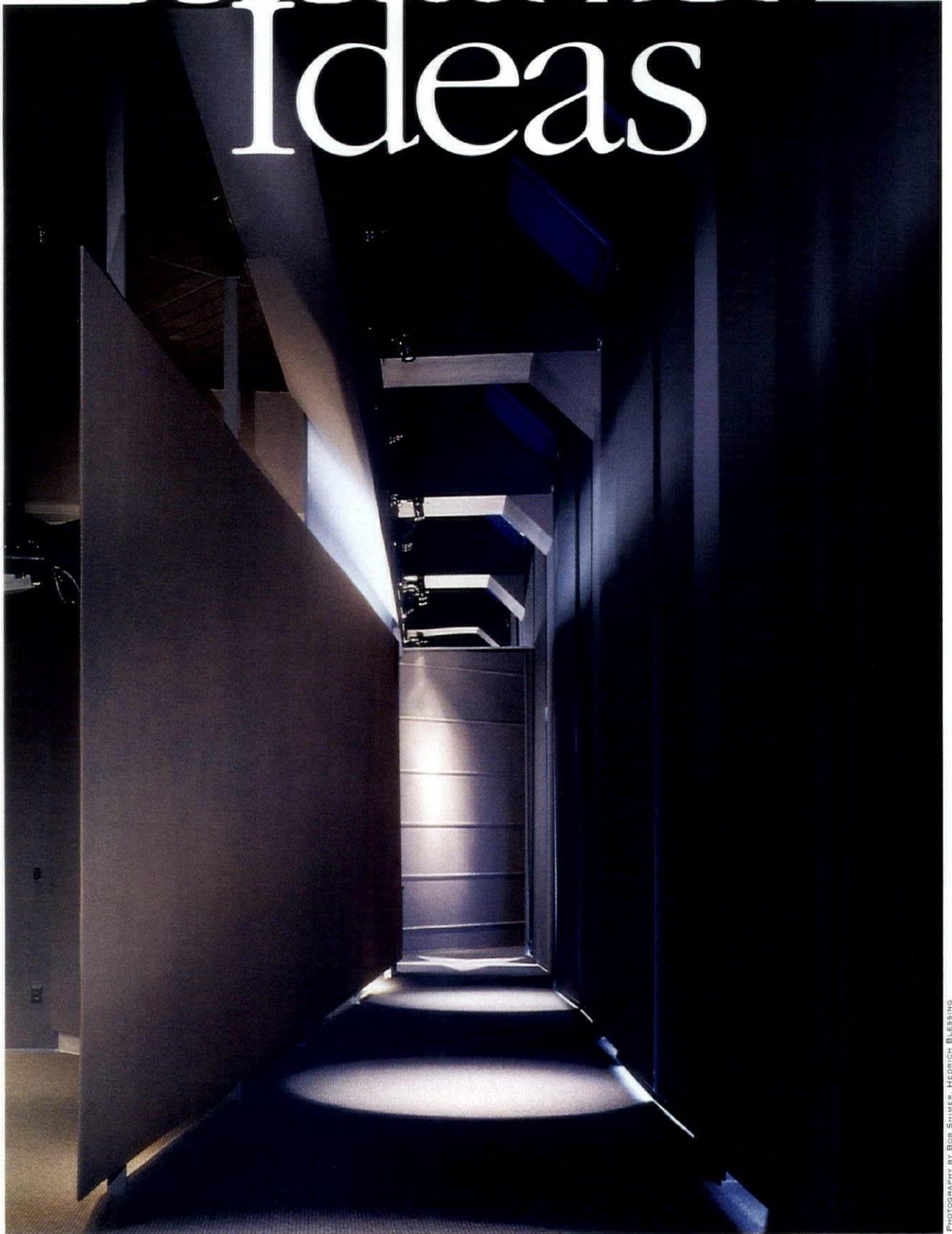
bring clients into an environment where they've never been before and where staff can bring creative ideas to their product or need."

CREATING THE IMAGE

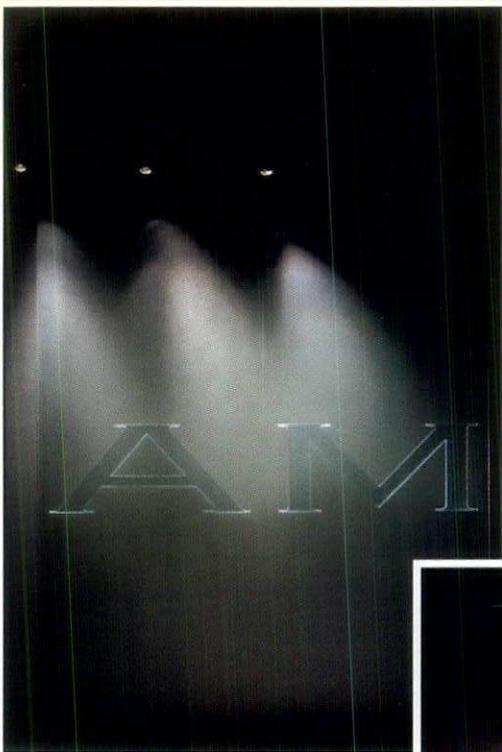
The goal in the first phase—public spaces and a videoconferencing center—is to "surprise" existing and potential clients with the drama and excitement associated with the concept of new ideas. Upon arriving at Ackerman McQueen, visitors are greeted by a laser-cut 1/2-in.-thick glass panel with the agency logo. The distinctively etched *AM* is lighted by MR16 lamps recessed in the ceiling, and backlit by incandescent sources. "From the start, you get an ethereal sense of what this space is and what the experience is going to be like," said Elliott.

Further in the corridor, a lighted glass and black granite display niche surrounds "ideas"—i.e., artistic elements such as pieces of art, floral arrangements—with high drama as a tease of more to come. Fluorescent fixtures above the etched glass "ceiling" and below the

Brilliant Ideas



PHOTOGRAPHY BY BOB SHINER, HEORICH BLESSING



LIGHTING HELPS TO ENHANCE SPECIFIC ARCHITECTURAL ELEMENTS IN THE SPACE SUCH AS THE COMPANY LOGO (LEFT), WHICH IS BACKLITTED AND WASHED BY MR16S, AND A DISPLAY NICHE (BELOW). PLENTY OF WINDOWS AND SKYLIGHTS PROVIDE DAYLIGHT DURING WORK HOURS AND AMAZING VIEWS ROUND THE CLOCK.

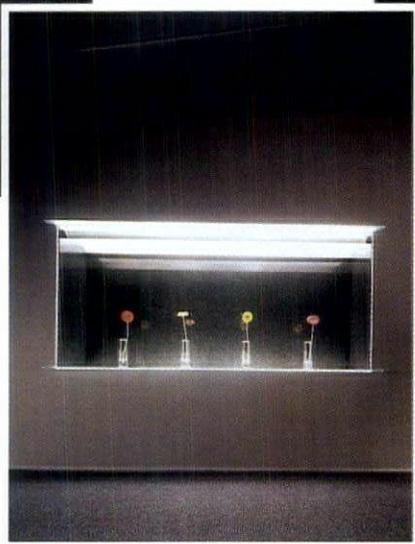
etched glass counter envelop the objects in a softly diffused light.

The entry area leads into a thin diagonal, spatial "slice" through the building, flanked by glass windows at both ends, evoking a feeling of complete openness. Adjustable HID lighting is added above each window to increase the brightness and closely match daylight, causing the glass walls to seemingly disappear. Spectacular views of the cityscape and beyond allude to imagination without boundary, where the sky's the limit—a philosophy the ad agency strongly supports and offers its clients. "You get the sensation that you can leap out the window and fly toward the horizon," said Elliott, "so I really wanted to emphasize that idea."

TRUE BLUE

The videoconferencing center is entered via a winding 15-ft.-long ramp along the northeast 70-ft. wall. The ramp is outlined by simple recessed steplights and defined by scratched acrylic wall bands highlighted by MR16 fixtures. Wall-mounted fixtures deliver round pools of light to the floor to add extra excitement to the experience. "They provide a Hollywood-like effect, making the client feel special," said Elliott. At an acute angle in the hall, which is the final turn before entering the videoconference area, special theatrical gobos light the loggia space with dramatic patterns. "Projecting patterned images lets the agency customize a presentation and shows the client that they pay attention to details," said Elliott.

The ramp leads to an elevated walkway, which fully unveils in front of a window, offering a view of downtown Dallas. Lighting is provided by PAR38 monopoint track lights. Windows are covered with



blackout shades and 18-ft.-high, 12-ft.-wide motorized solar scrims to allow lighting to be controlled. In addition, existing skylights around the 22-ft.-high perimeter are covered with translucent blue acrylic to create a deep blue mystical glow that does not affect lighting control. Strategically placed mirrors extend the visual length of the space.

In the videoconference area, where the customer truly interfaces with the agency on buying or selling product, fixed seating and modular tables accommodate changing "scenes" for client presentations. "The video space is all about the sell, the sizzle," said Elliott. "The idea of creating a very exciting environment makes the client more interested in buying the agency's services."

The focal points of the space are two 8-ft., 10-in. x 6-ft., 7 1/2-in. backlit video screens and multiple video monitors supported from electric ceiling-mounted scissors lifts. Here again, skylights are covered with blue acrylic; solar shades manipulate daylight presentations. Fluorescent lamps with blue gel are installed behind the presentation screens to create a sense of deep space, an "aura." General lighting is provided by PAR38 fixtures on a unistrut grid, allowing for flexibility;

a "personal" swinging presentation wall is also lit by PAR38 track lights. Several ellipsoidal fixtures allow for color and special effects.

Electronic glass, left over from the previous tenant, obscures the adjacent AV control room from view when activated, or, with the flip of a switch, enables visitors to view it as part of the tour. ■

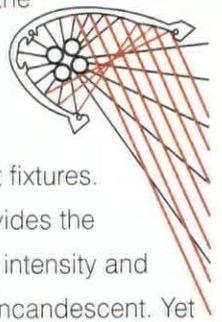
DETAILS

PROJECT Ackerman McQueen ■ **LOCATION** Dallas ■ **ARCHITECT/INTERIOR DESIGNER/LIGHTING DESIGNER** Elliot + Associates Architects—Rand Elliot, FAIA and Bill Yen, AIA ■ **GENERAL CONTRACTOR** Purdy-McGuire Engineering ■ **PHOTOGRAPHER** Bob Shimer, Hedrich Blessing ■ **LIGHTING MANUFACTURERS** Halo; Tech Lighting; Reggiani

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Specification

From designers to manufacturers, lighting professionals have called for the need to hold specifications so that quality designs and products are better respected, and endure budget scrutiny through final installation and start-up.

The IALD's Lighting Industry Resource Council (LIRC) has proposed a comprehensive new document that can be used by lighting designers to ensure the integrity of their equipment specifications. Developed jointly by designers, manufacturers and other industry participants, the Design Checklist for Specification Integrity will be made available to all lighting designers as a tool to help them strengthen their understanding of holding a specification and their ability to do so.

Specifically, it provides guidelines for gathering information about various products, developing standards for quality, improving understanding of the products that are specified, working with manufacturers to establish expectations, researching alternatives to standard products to build enhanced value into the project, and other recommended procedures.

Now six pages, it is being revised and streamlined; according to LIRC, the final version will be four pages and ready to use in December.

Lee Waldron, principal of Grenald Waldron Associates and co-chair of the LIRC, called on the lighting specifier community to adopt the document's practices on a regular basis.

"Designers and manufacturers alike have a vested interest in improving quality in specifications," he said, "so as to gain greater respect for the design intent and the equipment selected. Through cooperation and the development of quality standards that are communicated

and adhered to, we believe that lighting specifications will achieve this higher level of integrity. It will help create situations where everyone wins."

The LIRC, co-chaired by Waldron and Megan Carroll of Philips Lighting Company, was formed in 1995 as an affiliate of the International Association of Lighting Designers (IALD), now headquartered in Chicago at the Merchandise Mart. According to the LIRC, its goal is to provide a forum for industry executives, product designers, research and application engineers and sales personnel to exchange ideas and information with designers and to foster growth for the lighting industry.

Said Carroll, "The LIRC is a permanent, comprehensive structure to effect the evolution of the industry by fostering improved communication between manufacturers and practitioners, and by increasing awareness *outside* the industry of the importance of quality lighting."

The LIRC met late last year and established three goals, one of which involved specification integrity. The goal was to develop a checklist that designers could use as a guide to specification, relying on a number of already-published sources and fresh input. A committee was formed that worked on the document; members included Allyn Bennett, Juno Lighting; Howard Brandston, H.M. Brandston & Partners; Randy Burkett, Randy Burkett Lighting Design; Carol Chaffee, Carol Chaffee Lighting Design; Phil Cialdella, Poulsen Lighting; Patricia DiMaggio, Osram Sylvania; Franz Euler, Litecontrol; Daniel Gelman, Lighting Services Inc; Lloyd Jones, Lehigh Controls; Addison Kelly, U.S. Lighting Consultants; David Mintz, David Mintz Lighting Design; Robert Newall, Robert Newall Lighting

THE LIRC/IALD TAKES THE LEAD IN PROMOTING "SPECIFICATION INTEGRITY"

Design; Earl Print, ADLT Venture Lighting; Sy Shemitz, Elliptipar; Steven Silverstein, Kurt Versen; Jim Yorgey, Lutron; and Waldron and Carroll.

According to Waldron, the LIRC is looking for an ongoing educational process, starting with this document, and moving on to the development of related resources, including a Lighting Product Data Sheet. This will be made available to help specifiers collect data in a common format to allow apples-to-apples comparisons of the performance of various products. In addition, other topics, including how to ask for unit pricing, will be tackled in future documents.

For more information and to get on the list to receive a copy of the Design Checklist for Specification Integrity, **circle No. 44** on the reader service card included in this issue. ■

IALD MOVES

The IALD has moved its headquarters from New York City to Chicago: Suite 487, The Merchandise Mart, 200 World Trade Center, Chicago, IL 60654; Tel: (312) 527-3677, Fax: (312) 527-3680. Morag Fullilove has been named president, a newly developed administrative position.

Integrity

ACTIONS THE SPECIFIER CAN TAKE PRIOR TO ACTUAL WORK ON A PROJECT

- I. *Continue to work on developing your company's lighting database.*
 - A. Establish a lighting vocabulary of key fixtures you use
 - I. Classify them according to location, source and function or application (e.g., recessed incandescent downlights, pendant fluorescent uplights, exterior metal halide floodlights)
 - B. Develop a fixture typing system to organize your lighting equipment
 - C. Use this typing system to prepare a Lighting Product Data Sheet for every key fixture type you use. Initially, the information will be generic; then begin adding acceptable manufacturer names and their specification number
 - D. Add project pricing information to your Lighting Product Data Sheets which let you develop a history of unit price information
 - E. Develop a personal master fixture schedule that identifies acceptable products of manufacturers
- II. *Promote your standards of quality for lighting equipment.*
 - A. Make a clear determination of your interpretation of differing specification grades
 - B. Share your views with manufacturers to develop a common understanding
 - C. Develop a personal checklist of product performance specifications
 - I. Adopt product performance evaluation criteria:
 - Photometric performance
 - Aesthetics
 - Construction materials
 - Finishes
 - Manufacturer's support
 - Delivery
 - Long-term availability and service
- III. *Update your master specifications to address specification integrity.*
- IV. *Get to know the lighting products you specify.*
 - A. Encourage manufacturers and their agents to visit your office with working sample products, not just catalogs. Use these visits to evaluate the product performance
 - B. Visit manufacturers' facilities to see how the products are researched, developed, designed, manufactured, tested, shipped
- C. Discuss and debate the issues of quality with specifiers and manufacturers. Identify the manufacturers who have demonstrated the same quality and capability
- D. Attend seminars and trades that allow you to evaluate quality and compare products
- E. Obtain product samples of the same fixture type from multiple manufacturers for comparative evaluation. Use the Lighting Product Data Sheet to record your responses. Add this information to your personal lighting product database
- F. Develop a checklist of standard notes relating to lighting products that are to be used for quality assurance during the project design process (e.g., allowable lamp operating temperatures or distances for remote ballasts)
- V. *Research alternatives to standard products used by your ongoing clients to improve product quality, performance and cost.*
- VI. *Promote and protect the creation of unique designs.*
 - A. Educate your staff and your clients as to the value of unique products and the necessity for protecting intellectual property
 - B. Work with other design professionals to curb substitutions and knock-offs

Standardizing Fiber Optics

On July 15 of this year, 45 representatives from the lighting industry, including designers and some 25 manufacturers, met at the Lighting Research Center (LRC) to discuss how to make fiber-optic lighting more accessible to specifiers, who currently have no standardized methods for evaluating and comparing performance.

Nadarajah Narendran, a senior scientist for the LRC, moderated the roundtable. After several brainstorming sessions, the attendees reached a consensus that standards should be developed for light-guide technologies, no small feat in a very competitive industry.

"There are many types of fiber-optic lighting systems, most of them very good," said Narendran, "but there is still no standardized method of specifying or assessing performance, which restricts application."

Designers attending the meeting confirmed this belief, requesting better photometric and performance data. Others agreed that information on brightness, lumen output, system efficacy and photometrics would ease designers' uncertainties regarding fiber optics.

SOLVING THE PROBLEM

The first step to solving the problem, said Narendran, was to bring together manufacturers and have them agree there is a problem. This has been tried before in recent years, and each attempt has failed. But now, the timing is right.

The next step, helping designers to evaluate various products, is now in progress. A paper, "Performance Evaluation of End Emission Fiber-Optic Lighting Systems," presented at the IES conference in Seattle, is now being revised based on fresh input. The final result, Narendran said, will be a unified data representation format for fiber-optic lighting to be ready for distribution by January 1998.

Manufacturers may choose to use this

format for representing data that is useful to the design and specifier community. (See future issues of *Architectural Lighting* to receive a copy and for further developments.)

"The whole idea of the paper," said Narendran, "is to generate awareness of the standards and issues and begin a dialogue between interested parties."

BENEFITS OF STANDARDIZATION

The idea is not only to help designers make more sense of fiber-optic lighting specification, but to create a stronger demand for standardized performance information. The result, said Narendran, will be that more manufacturers will develop data that is useful to designers; uncertainties regarding fiber-optic lighting specification will be eased; specification will become simpler; and fiber-optic lighting will enjoy more widespread use.

He added that there were two other key benefits. The first addressed: Is fiber optics a system or a collection of components?

System specification is certainly easier, but specifying as separate components, which are then designed to operate together as a system, can provide greater flexibility. In any case, standardization is much needed, which can help expand application and help the designer reach a broader range of lighting goals. Narendran also predicted that standardization will bring the cost of these systems down, which in turn will further fuel widespread use.

NEMA GETS INVOLVED WITH LRC

Narendran was quick to note that the group could only recommend approaches, not set standards. This is why the LRC approached the National Electrical Manufacturers Association (NEMA). At the July 15 meeting, Kyle Pitsor, industry director of NEMA's Lighting System Division, expressed an interest in NEMA involvement

THE NEXT BREAKTHROUGH IN FIBER-OPTIC LIGHTING MAY NOT BE WHAT IS SPECIFIED, BUT HOW IT'S SPECIFIED

in coordinating industry-developed standards for light-guide technology. On September 17, manufacturers attended a roundtable in Washington, D.C., and discussed establishing a Remote Illumination Systems section within NEMA. The second meeting, to be held in January 1998, should result in the development of this section and new standards.

"The time is right for this," said Narendran. "It's been tried before, but the effort never got off the ground. Now, the manufacturers are more willing to work together—citing the common need to make specification easier for the designer—and there is enough momentum so that we should see quick results."

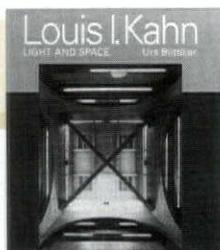
Manufacturers attending the July 15 meeting included Advanced Lighting Technologies Inc., Ashahi Glass, FarLight, Fusion Lighting, Fiberoptics Technology Inc., Fiberstars, General Electric, International Lights, Lighting Services Inc, Lucifer Lighting, Lumenyte International, MagneTek, 3M, Osram Sylvania, Remote Source Lighting International, Rohm & Haas, Schott CML and Supervision International.

While manufacturers are working to make specification easier, designers now have even more incentive to become better educated. To help in this effort, *Architectural Lighting* has published a book on fiber-optic lighting in a joint venture with UpWord Publishing, Inc., titled *Fiber Optic Lighting: A Guide for Specifiers*. Call (800) 444-4881 to advance order a copy of this book, now in production. ■

**Louis I. Kahn:
Light and Space**

Urs Büttiker Whitney Library of
Design/Watson-Guptill

Louis Kahn (1901-1974) is one of the preeminent figures in the history of American architecture, and today his body of work is receiving renewed attention. In this book, Buttiker analyzes Kahn's lighting solutions. ISBN: 0-8230-2772-4; 9.25 x 8.625 (paper with flaps); 184 pp.; illus.

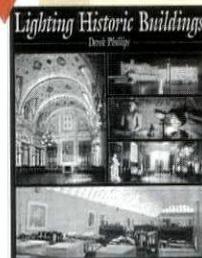


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Derek Phillips McGraw-Hill

Using examples going back to ancient times, the author traces the evolution of architecture and light to create an intriguing and essential look at how historic buildings can be preserved, illuminated and used in modern times. ISBN: 0-07-049864-4; 8.5 x 11 (hardcover); 206 pp.; illus.



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RECORD DOCUMENTS FOR LANDSCAPE LIGHTING

BY MICHAEL STEWART HOOKER AND JANET LENNOX MOYER, CONTRIBUTING EDITORS

Record Documents represent the only hope the owner of a landscape lighting system has to maintain the integrity of the initial design. The information communicated in these documents offers the owner all the knowledge he will need to maintain the quality of the design throughout the life of the system. Clear, concise and thorough documentation provides the owner with the ability to maintain the system.

The content and organization of these documents should provide the maintenance and repair personnel with an understanding of the system and of their importance in the continuing functioning of the system. This will help gain their acceptance and support of the design. This documentation prepares them to keep the design functioning as intended by supplying information about the equipment installed and maintenance schedules.

The information required to provide a complete record of the as-built conditions on the site comes partially from the design team and partially from the construction team. Successful communication of this information will result in ultimate satisfaction of the project by the owner.

INFORMATION NEEDED ON LAYOUT DRAWINGS

As-built information added to the existing contract document layout drawings must reflect the actual, finished conditions. The design team typically updates all the fixture locations as determined on site during the aiming/adjusting session. The aiming of each fixture should be represented by an arrow, and sometimes, a brief description of its lighting purpose. At each fixture location, the exact lamp installed should be noted, along with all accessories that were added during the aiming and adjusting sessions. The accessories could consist of lenses, louvers, color filters or screens.

The design team should show all control equipment interconnections, representing the fixtures that are controlled together. All control device locations should show on these plans with accurate cross-referencing to all descriptions and schedules.

The construction team should update all low-voltage transformer and luminaire wiring interconnections on the plans. The location of each transformer should show graphically on the plans, and any description needed to make the location clear should also be noted. The construction team must also make sure that all pull-box, junction-box, service trench, conduit sleeves and panel locations show accurately on the drawings.

SCHEDULES NEED TO BE UPDATED

Any changes to the lighting fixtures listed on the fixture schedule should be updated on the appropriate schedules. This information, along with all lamp types and quantities, control channel assignments and settings, and all information for the transformers and loads should typically be provided by the design team.

The construction team then must update the electrical distribution panel schedules with revised loads. They're also responsible for updating all schedules with cable, conduit, pull-box and junction-box information.

PHOTOGRAPHIC DOCUMENTATION

On many projects, photographs showing the locations of equipment become an excellent means of communication when information will not accurately show on plans or in schedules. All fixtures located in trees are best shown using photographs. It may require more than one photograph to visually establish the specific tree concerned and then the specific location where the photographer stood when taking the photo in order to find a fixture in the tree. It helps to have a numbering or other identification system for each tree on the site. This allows the trees to be identified on the photographs and quickly referenced from landscape plans to lighting plans, schedules and all record documents.

Notations on the photograph should include the tree identification, the photographer's standing location, the relamping, aiming and any accessories used for the fixture. The viewing direction(s) of the photographer is also helpful information. For example, "facing north towards the guest house and looking up into the tree."

Other equipment that could be documented using photographs include transformer, ballast, pull-box, junction-box, service trench, sleeve and panel locations. Whenever photographs are used, they must be clearly labeled, organized and put into books that become part of the record documents package.

PREPARATION AND DISTRIBUTION

On small commercial and most sizes of residential projects, the designer prepares the record document package and presents it to the owner. Other potential recipients of this

(Continued on page 58)

RECORD DOCUMENTS SHOULD INCLUDE

- DESCRIPTION OF THE FINISHED SYSTEM
- DESCRIPTION OF THE SYSTEM OPERATION
- ALL INSTALLED EQUIPMENT, INCLUDING TYPE AND LOCATION
- ALL EQUIPMENT AND MATERIAL SCHEDULES
- ADJUSTMENT SCHEDULES
- MAINTENANCE AND REPAIR SCHEDULES
- ALL MATERIALS REQUIRED FOR MAINTENANCE
- COMPLETE ADDRESSES (INCLUDING E-MAIL) FOR ALL TEAM MEMBERS
- SUGGESTED SUPPLIERS AND THEIR PHONE NUMBERS FOR ALL SPARE PARTS



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(Continued from page 56)
package include the landscape architect/designer, general contractor, landscape contractor, electrical contractor and owner's representative.

On large-scale commercial projects, all the record document updating and recording become the responsibility of the general contractor through the electrical subcontractor. All documents must be reviewed and approved by the design team prior to submittal to the general contractor by the electrical contractor. In this case, the lighting designer is added to the distribution list to receive one or more reproducible copies of the record documents. Whenever layouts

and schedules have been produced on a computer, the design team should provide the contractors with disks for updating. Those revised disks are then returned by the contractors to the design team when the updating has been completed.

ADJUSTMENT SCHEDULES

The owner, design team and construction team need to understand from the beginning that landscapes grow and change. Plants and trees mature, expanding their height and width. Sculptures may be moved or added over time. Pathways may be enlarged, changed or added. These changes affect the lighting effects. New landscapes with immature plantings change much faster than mature landscapes. This requires a review of the condition of the lighting effects more frequently in a new landscape. During the first year, the design team should review the project at least once, and maybe twice. After that, an annual review is probably adequate until the plantings become mature. Lighting installed in mature gardens can be reviewed annually or perhaps as infrequently as every two to three years. The timing should be discussed between the designer and the owner so that the owner understands how landscape changes will affect the lighting system, and the designer understands the owner's preference for maintaining the lighting effects. For example, one of our clients wants us to re-aim the lighting in their system twice a year, concurrent with annual-flower changes, to keep the lighting looking optimum.

Adjustment sessions can vary in their content. Some years, slight re-aiming may be all that is necessary. At other times, low-voltage fixture(s) may need to be moved, lamp wattages and beam spreads may need to be changed, and/or fixtures may need to be added or

removed. Sometimes fixtures may need to be replaced with others due to wear or to new requirements stemming from landscape changes. Any time a fixture is opened, it should be serviced to keep it functioning at its best.

MAINTENANCE & REPAIR SCHEDULES

The lighting system does not require as frequent or as much attention as maintaining the landscape itself, but it is no less important. Soil, leaves and other debris will accumulate on uplights, no matter the fixture type or its construction. This should be checked on a regular basis but the frequency depends on the specific

SCHEDULES THAT SHOULD BE REVISED

- LIGHTING FIXTURES AND ACCESSORIES
- LAMPS AND QUANTITIES
- CONTROL CHANNEL ASSIGNMENTS
- CONTROL CHANNEL SETTINGS
- LOW-VOLTAGE TRANSFORMER TYPES, SIZES AND LOCATIONS
- LOADS
- ELECTRICAL DISTRIBUTION PANELS WITH LOADS
- CABLES, CONDUITS, PULL-BOXES AND JUNCTION BOXES

site. If the site has trees that drop leaves regularly and abundantly, then the time frame could be every two weeks. In gardens with less leaf drop, perhaps once every one or two months. Landscapes with irrigation systems, in areas with frequent rainfall, or where regular planting or replanting occurs, require more frequent checks.

The party responsible for keeping fixtures clean of debris must be identified in the contract documents, agreed upon by the owner and then briefed thoroughly by the designer so that they understand the purpose and the importance of cleaning.

Whenever uplight fixtures are located among plantings, the maintenance check will need to include reviewing the growth of plants to see if it has begun to affect or interrupt light distribution. When it does, the maintenance staff needs to know whether they are to prune the plantings or adjust the height of the fixture. If pruning is required, the maintenance personnel needs to have been briefed by the landscape or lighting designer to understand what is required.

Relamping fixtures comprises another maintenance task. For ground-mount fixtures, relamping should occur as lamps burn out. For tree-mount fixtures, group relamping is a better approach. When any fixture is opened for

relamping, all threaded parts should have a layer of anti-seize compound applied. Any fixtures with screw-base-type sockets should have a high-heat lubricant applied to the new lamp prior to installation. Any time a fixture is maintained, the lens should be cleaned. Some environments will deposit chemicals on the glass forming a dense film that cannot be removed without a solvent. Selection of the solvent should consider environmental issues.

Maintenance sometimes requires replacing parts on fixtures. Gaskets may be broken or lost. Screws and other accessories can easily be dropped and lost. We recommend providing the owner with a kit of spare parts including gaskets, opening/locking mechanism tools, lamps, lenses—anything that might be broken, lost or wear out over the life of the system.

SPARE PARTS OR MATERIALS

The record documents should list all the lamps and accessories installed. This can be provided in the form of a spread sheet that itemizes the total number of specific lamps used. One column of the sheet should list the recommended quantity of spare lamps the owner should keep on hand. This allows them to easily change lamp as needed, and then replace the spares at their leisure.

As part of the record documents kit, the owner should be provided with a set of tools needed to maintain the equipment, accessories such as lenses and louvers and the solvent, lubricant and anti-seize compound best suited for their situation. Each of these is listed in the documentation with suggestions of where to find replacements.

In addition, all the owners/users manuals and installation instruction sheets provided by manufacturers should be included in this package.

PROJECT SERVICES DIRECTORY

Three different groups of names and addresses and other contact information should be included in this part of the document package. First, all members of the design team; next, all members of the construction team; and last, a list of local suppliers the owner can contact when they need to purchase additional spare parts.

Armed with all of this information, the owner can expect to enjoy the lighting system for many years. It may sound daunting to provide all this information, but once you put a system in place, it does not require that much additional time. To ensure that this work gets done, include the time this documentation will require as part of the design fee proposal. ■

Michael Hooker is principal of MSH Visual Planners and Janet Lennox Moyer is senior lighting designer at the Lighting Research Center.



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UNDERSTANDING LIGHT & COLOR

BY CRAIG DILOUIE, EDITOR-IN-CHIEF

While 80 percent of our impressions of the world are visual, 100 percent of those impressions are dependent on light and, therefore, lighting. This is especially true when considering color. The most detailed and powerful color scheme can be produced, but if the wrong light source is chosen, a dramatically different scene could result. It therefore pays to understand how light affects color in order to securely achieve the overall design goals.

The first of a series, this article describes the fundamentals of light and color, then describes the tools used to determine the color characteristics of various lamps; in future articles, we will discuss selection criteria, performance based on lamp type, color marketing trends and more sophisticated concepts.

LIGHT AND COLOR

Light is radiant energy that travels in waves composed of vibrating electric and magnetic fields. Light waves have both a frequency and length (measured in nanometers); the ranges of frequency and wavelength differentiate light from other forms of radiant energy expressed on the electromagnetic spectrum, such as heat and radio waves. Certain light waves comprise a portion of the spectrum called the visible light spectrum. This energy is capable of exciting the eye's retina, producing a visual sensation.

Visible light, however, is not really visible. It must strike an object first, then be reflected into our eyes. Even a beam of light reaching into the night sky from a powerful flashlight is not visible to us—we are actually seeing light reflected from a multitude of tiny dust particles floating in the air.

The visible light spectrum is composed of different colors/wavelengths, from violet (380 nanometers) to red (about 620 to 760 nanometers). An even balance of these wavelengths composes pure white visible light. This can be physically demonstrated by shining a beam of white light through a glass prism; the light will be refracted into a rainbow of colors appearing from the other side.

We see objects because light strikes them, and the light is reflected back to our eyes. This is also how we see color. The surfaces of objects are chemically oriented to absorb all wavelengths of light except their "own color," which they reflect, and so we see the object as a shade of that color.

When electric lighting is employed, the color spectrum of the light may not be evenly balanced. For example, it may be saturated in blue and green wavelengths, and low in red, yellow and orange. As a result, if the object is blue or green, it will appear a rich blue or green; if it is red, it will appear darker and duller if the light source is low in red, black if red is non-existent.

For those who believe that perception is reality, therefore, the lighting designer has a lot of power over how the space is viewed by choosing the right light source. To choose the right light source, three standard tools are available: color temperature, color rendering and the spectral power distribution curve.

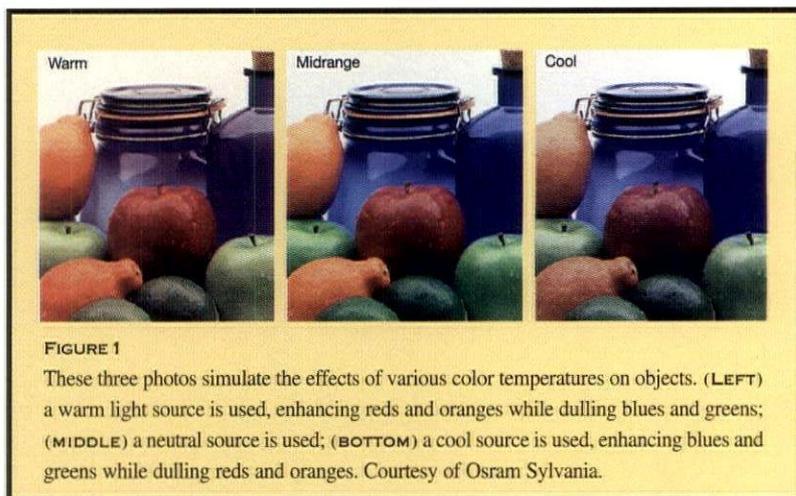


FIGURE 1

These three photos simulate the effects of various color temperatures on objects. (LEFT) a warm light source is used, enhancing reds and oranges while dulling blues and greens; (MIDDLE) a neutral source is used; (BOTTOM) a cool source is used, enhancing blues and greens while dulling reds and oranges. Courtesy of Osram Sylvania.

COLOR TEMPERATURE (CT)

Color temperature is a numerical measurement that describes the color appearance of the light produced by the lamp and the color appearance of the lamp itself, expressed on the Kelvin scale (K). It appears in the lamp catalog.

For incandescent lamps, the color temperature is a true value; for gaseous discharge lamps, the value is approximate and results in a value called correlated color temperature (CCT). The difference is subtle enough that the two terms are often used interchangeably.

The science behind determining color temperature values starts with a theoretical blackbody radiator, a block of black metal through which electric current is passed (performed as a computer model). As we heat the metal, it turns red-yellow, then white, then blue; as we measure the temperature of the metal at any given color produced, we then match the color to that temperature and produce a color temperature value.

In application, we use the color temperature of lamps to categorize them as warm, neutral or cool sources. The terms are not directly related to temperature; instead, they describe how the light source appears visually. Warm sources actually have a lower color temperature (3500K or less), producing a red-yellow appearance. Neutral sources (between 3500K and 4000K) have a white appearance, and cool sources (4000K and higher) have a bluish-white appearance. Daylight (summer sunlight), with a color temperature of about 5500K, is a very cool light.

In design, the color temperature of the lamp will affect the visual appearance not only of the lamp itself, but more importantly, objects in the room. Lamps with a warm color temperature, for example, produce light that is saturated with red and orange wavelengths, producing a richer appearance of red and orange objects and lending a reddish tint to whites, while darkening blues and greens (see Figure 1).

Warm light sources are traditionally used for applications where warm colors or earth tones dominate the scene, and where we want to impart a feeling of comfort, coziness and relaxation. Applications include the home, restaurants, lobbies and private offices. Neutral light sources are traditionally used for applications where we want to enhance all colors equally, such as supermarkets and stores. Cool light sources are traditionally used for applications where we want to enhance blues or stimulate the occupant to alertness and activity, such as offices and hospitals.

Note that HID lamps may experience a phenomenon known as color shift, a change in the color appearance of the light source that can negatively impact color uniformity in a space. It is most noticeable in uplighting and wall-wash application. Depending on the lamp type, it may be caused by operational age, operating phenomenon such as voltage variations, or dimming using a dimming ballast (usually 50-60 percent of light output). To account for color shift due to operational aging, group relamping may be desirable. Ask the lamp manufacturer for more information about color shift and how its products perform.

COLOR RENDERING

Color rendition describes how a light source makes the color of an object appear to our eyes, and how well subtle variations in color shades are revealed. A lamp's color rendering ability is measured on the Color Rendering Index (CRI), a scale from 0 to 100 (although negative values are possible). Incandescent lamps have a CRI rating of 100. The higher the CRI rating, the better the lamp's color rendering ability is. The rating is provided in the lamp catalog.

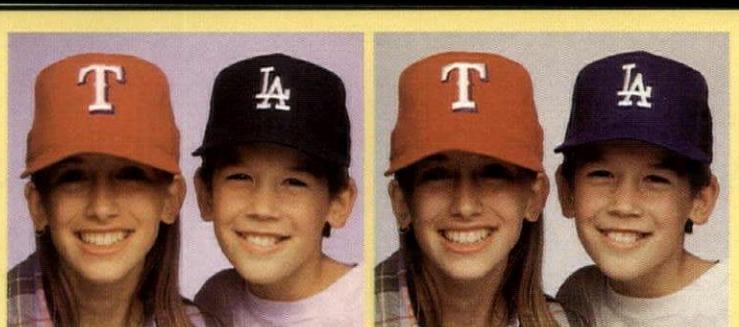


FIGURE 2

To properly compare CRI ratings, choose lamps that have the same color temperature; otherwise, a higher CRI does not necessarily mean it is best for the application. In the photo on the left, for example, a 100 CRI 2800K incandescent lamp (warm source) is used. On the right, an 82 CRI 3500K fluorescent lamp (warm/neutral source) is used. While the lamp on the right is lower in CRI, it renders blues better, while the incandescent warm source darkens blues while enhancing reds and oranges. Courtesy of Osram Sylvania.

between the two, the CRI rating is 100; if there are changes, a lower rating is given based on the degree of color shift. Note that a high CRI rating means that the range of eight colors will be rendered well, but it does not guarantee that any specific color will appear natural.

In application, lamps with a CRI rating of 80 or higher are considered to have "good" color rendering properties, causing objects to look "natural." Thanks to improvements in lamp phosphor technology, CRI ratings for fluorescent lamps have steadily increased, now offering a range from 48 up to 95 depending on the lamp.

In design, high-CRI lamps are ideal for color critical applications where color rendering and matching is important, such as clothing stores, groceries, graphic design studios and similar applications.

Color rendering is sometimes confused with color temperature. First, we must understand that color rendering is a comparative tool between lamps with the same color temperature as a base. If we choose a lamp with a cool color temperature, for example, we can effect richer blues and greens in the space; however, if we then choose a high CRI rating for that lamp, we can effect color enhancing for the weaker colors, rescuing in a sense the reds, yellows and oranges from distortion and darkening.

SPECTRAL POWER DISTRIBUTION

Although color temperature and color rendering are useful tools in determining the color behavior of lamps, a more precise picture is provided by the lamp manufacturer in the form of a spectral power distribution curve (SPD) (see Figure 3). In a typical curve, we are essentially seeing the visible light portion of the electromagnetic spectrum. Incandescent lamps produce a smooth curve, low in blue and green and heavily saturated in red and orange. Gaseous discharge lamps are characterized by spikes, which are generated by the arc, and low points provided by the fluorescence of the phosphor coating. Lamps with improved

phosphor coatings show a more continuous spectrum of energy, resulting in better color rendering. On the curve, therefore, we can see, to an extent, both color temperature and color rendering in action; we see what colors the lamp is saturated in, which are very low in energy or non-existent, and we see the effect of the phosphors at improving color performance. Because the SPD is somewhat complex, it is most useful when combined in analysis with color temperature and color rendering. ■

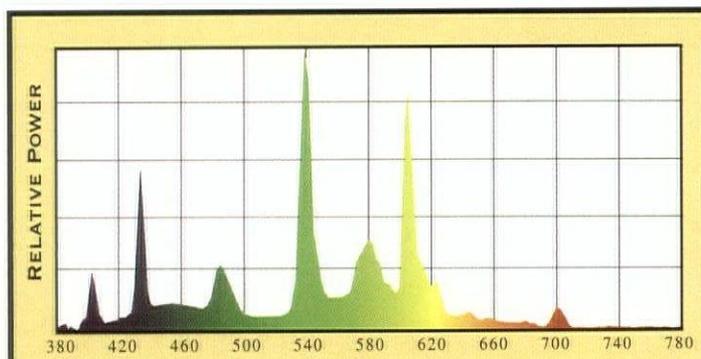


FIGURE 3

A spectral power distribution curve for a 400K lamp with a triphosphor (red, blue, green) coating to improve color rendering. Courtesy of Osram Sylvania.

NEW RESEARCH OFFERS POSSIBILITIES OF LIGHT AS A NIGHTTIME STIMULANT

BY CRAIG DILOUIE, EDITOR-IN-CHIEF

Research toward linking lighting and productivity hit another milestone this summer as researchers from the Lighting Research Center (LRC), University of Notre Dame and Memorial Hospital of South Bend, IN conducted a field experiment. The objective was to determine whether a brief exposure to bright light would improve nurses' performance during both day and night shifts at the hospital's Newborn Intensive Care Unit (NICU).

Initial results show that nurses exposed to the periods of bright light produced higher subjective responses of states of well-being, and those working the night shift scored faster and higher in performance tests when exposed to a period of bright light.

Fourteen day-shift (7 am- 7 pm) and fourteen night-shift nurses (7 pm - 7 am), almost all female and with ages that varied from 28 to 45, participated in the four-week study, conducted in the nurses' lounge next to the NICU. Nurses meet there at the start, middle and end of their shifts to receive reports, have their meals, rest or watch television. Windowless, the 14 ft. x 13 ft. room was lighted with two recessed 2x4 fluorescent prismatic panel fixtures housing two F40 lamps each. Light levels ranged from 25 to 40 fc on a table in the room.

During weeks 1 and 4, lighting in the lounge was provided by these fluorescent fixtures; during weeks 2 and 3, four table lamps (Advanced Lighting Technologies), each with one 68W metal halide lamp (Venture Lighting) and two 15W compact fluorescent lamps (GE Lighting), were placed in the lounge; in combination with the overhead fixtures, at least 200 fc were delivered to the workplace.

Four conditions were used, shown below. Every nurse went through all four conditions, so each served as his or her own control.

- A. Existing lighting conditions before the experiment
 - B. Dark glasses during exposure to bright light
 - C. No dark glasses during exposure to bright light
 - D. Existing lighting conditions after the experiment
- Performance was measured via the hospital standard

**NURSES EXPOSED
TO PERIODS
OF BRIGHT LIGHT
PRODUCED HIGHER
SUBJECTIVE RESPONSES
OF STATES OF WELL-
BEING, AND THOSE
WORKING THE NIGHT
SHIFT SCORED FASTER
AND HIGHER IN
PERFORMANCE TESTS**

Dosage Calculation Test. Speed was considered as part of the score as well as accuracy.

In addition to the performance test, a questionnaire was used to probe the subjects' emotional state during the shift (how awake, how motivated and how they were feeling). Finally, body temperature was measured after each session (start, middle and end of shift).

The results showed that the nurses' sense of well being correlated with body temperature; the higher the temperature, the better was the nurses' subjective responses. Administering the bright light apparently shifted the circadian rhythms.

In regards to the performance tests, the Dosage Calculation Test showed an improvement in performance at night, but not during the day. When exposed to the bright light, night shift nurses not only improved the number of correct answers, but also reduced the time to take the test. This led the researchers to conclude that the bright light had a positive, acute effect on the nurses' performance. Further, it may have major implications for light as a stimulant at night.

Based on these results, the preliminary recommendations were to have the nurses exposed to the bright light during the entire night shift. It was recognized that special attention should be given to nurses' visual comfort and protection of the premature babies from the bright light. The LRC proposed a more detailed study first, however, to gain a more precise set of data that would help researchers better understand the acute effects of light on alertness and performance. The experiment would be conducted in the winter to monitor the effect of seasonal affective disorder (SAD), and data would be collected on melatonin levels to produce data on related studies targeting the relationship between melatonin and breast cancer.

In addition to the LRC, University of Notre Dame and Memorial Hospital, the study was supported by the Swedish National Board for Technical Development (NUTEK). The study formed the basis for thesis research by Mariana Figuero, an LRC graduate student who was advised by Dr. Mark S. Rea. ■

DELTA

Snapshots

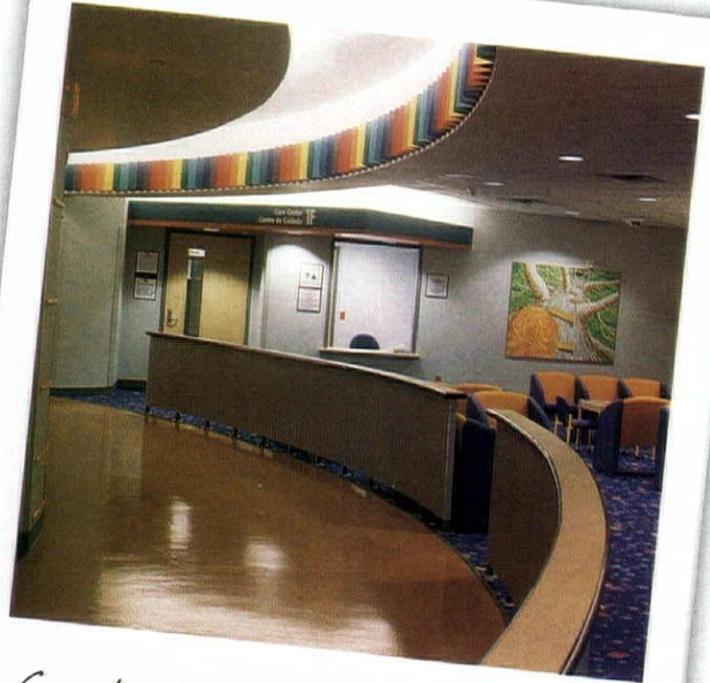
Issue 1

Corridor Lighting

There are many ways to light a corridor. This application illustrates a clever way to accentuate the curve of the corridor, while providing comfortable, indirect lighting.

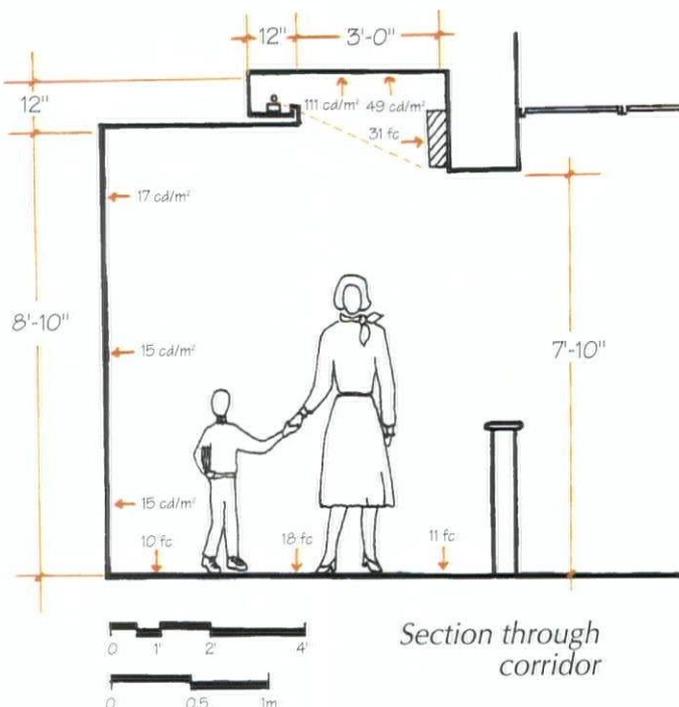
Application Profile

One intent of the design of the Connecticut Children's Medical Center was to provide visual variety for children and parents visiting the hospital. An asymmetrical architectural cove echoes the shape of the curved corridor, and the soffit drop on one side suggests an edge to the corridor without a full wall. Fluorescent striplights directly light the ceiling and the multicolored, folded steel sculpture mounted to the base of the soffit, and indirectly light the path below. Good color rendering lamps are used to flatter skin tones and the colors of the sculpture.



Connecticut Children's Medical Center Corridor

© Robert Benson



Lighting Objectives

- Reinforce the architectural design
- Focus attention on the metal sculpture instead of the luminaires
- Minimize glare for visitors and hospital staff
- Provide good color rendering

Lamps, Ballasts, and Energy

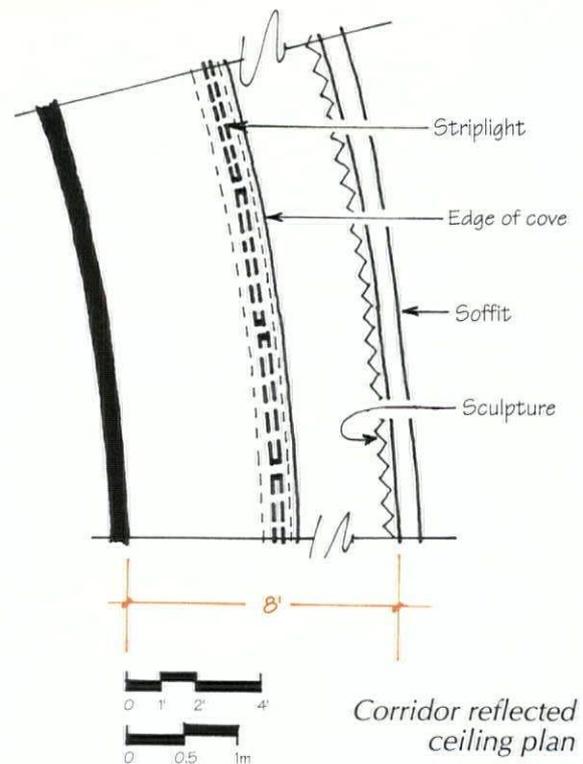
F32T8/RE735 lamps and electronic ballasts are installed for energy efficiency and reduced lamp flicker. The corridor's energy use is approximately 1.0 W/sq. ft.

Design Highlights

Architectural/Lighting Integration: The dimensions of the cove were carefully calculated so that the fluorescent lamp rises above the lip of the cove. This directly illuminates the steel sculpture as well as the ceiling, and the extended soffit drop cuts off any view of the lamp. (Normally, the lip of the cove should be as tall as the full height of the lamped striplight to block the lamp from view.)

Comfort: The lighting helps visitors and staff orient themselves in the building, and find their way along the corridor. It does this without any visible luminaires or direct glare.

Color: The fluorescent lamps have a CRI of 75 and a correlated color temperature of 3500 K (neutral).



DELTA Snapshots • Issue 1 • May 1996 Connecticut Children's Medical Center

Sponsor: Connecticut Light and Power Company, an operating company of Northeast Utilities

Northeast Utilities System:

DELTA Project Contact: Peter Morante

Connecticut Children's Medical Center:

Lighting Design: The Lighting Practice, Inc.,
Philadelphia, PA

Architect: HKS, Inc., Dallas, TX

Interior Design: The Hillier Group, Princeton, NJ;
Karlesberger and Associates, Columbus, OH

Electrical Engineer: Smith, Seckman, Reid, Inc.,
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Luminaires: Hubbell Lighting, Inc.

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Manager: Naomi Miller

Research Specialist: Rita Koltai

Publication: Judith Block

DELTA Members:

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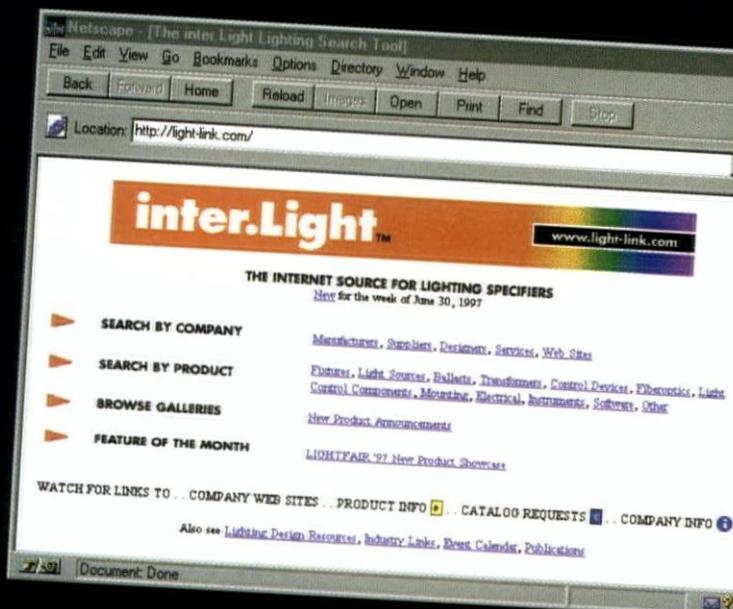
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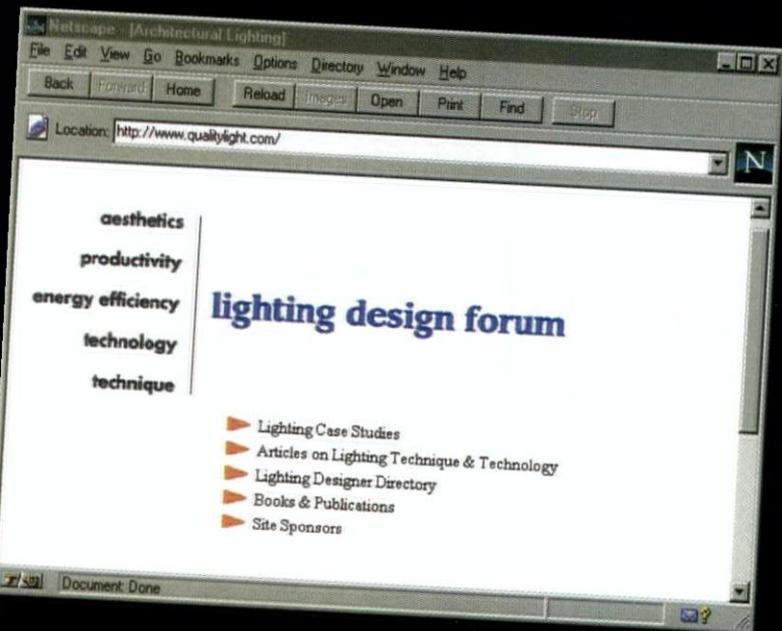
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ARCHITECTURAL LANDSCAPE LIGHTING

Four new fixtures have been added to the BL Series of specification-grade building-mounted landscape lighting fixtures: BL-36, 38, 44 and 45. These join the BL-35, 52 (shown) and 55. Each fixture housing is cast aluminum with a clear glass or opal polycarbonate lens; the Series accommodates compact fluorescent or HID light sources, ULC- and ETL-listed. **Circle No. 46**

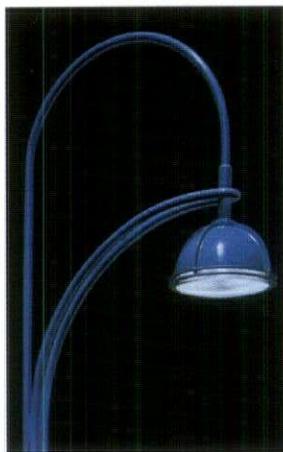


BEGA

This surface wall and ceiling fixture is small in scale and features a die-cast aluminum "eyelid" trim. The fixture is ADA-compliant and is ideal for walkway, pathway and corridor illumination. UL-listed for wet locations. **Circle No. 47**

HOLOPHANE

This four-color, four-page brochure details the Primsphere Series of fixtures, which are designed in a traditional spherical style. The fixtures include castings that allow adaptation to existing poles and are available in four types of optical assemblies and two types of spheres. The brochure includes information on photometrics, typical configurations and dimensional data. **Circle No. 48**

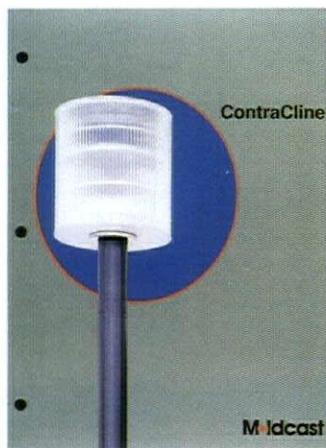


HESSAMERICA

The Olympus pole-mounted landscape area fixture is characterized by a finned, domed shade and features integral dual-trim rings around the lens connected to an arched dual mast. Four mounting heights are available, including a roadway lighting model. The fixture uses a metal halide or HPS lamp, and is offered in a wide range of fade-resistant baked enamel finishes. UL-listed. **Circle No. 49**

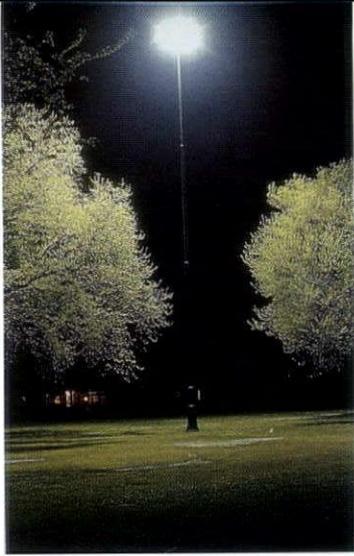
MOLDCAST LIGHTING

A new brochure details the ContraCline series of low-brightness outdoor pole-mounted fixtures. The full-color, 180-page brochure features a new graphic format which contains a variety of photos and expository drawings of the models. Photometrics, specifications and product dimensions are provided. **Circle No. 50**



FIBERSTARS

Creative Spa Products has teamed-up with Fiberstars to create FiberScape Model 610 Bollard System for commercial and residential outdoor applications that require weather-resistant, low-maintenance, pedestrian-level barrier or landscape marker lighting. Model 610 is a point-source, above-ground lighting system consisting of a 41½-in. high bollard, FiberSpots fiber-optic tubing and a remote compact illuminator that has the ability to change light colors by a predetermined program sequence. UL-listed for wet locations. **Circle No. 51**

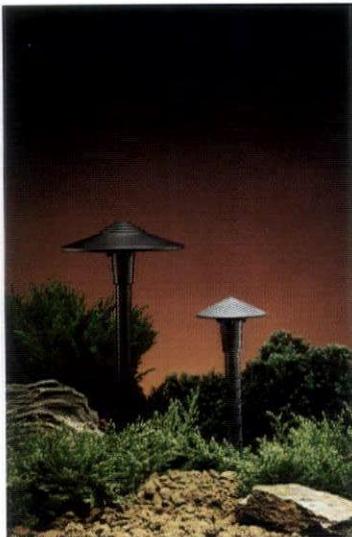
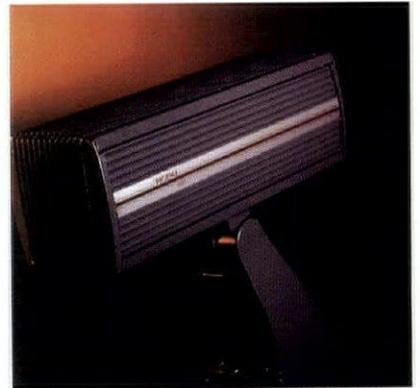


QUALITY LIGHTING

The Highmast Lighting System is a device for raising and lowering highmasted lighting. This product is suited for commercial applications where a large area must be illuminated using fewer poles such as highways and interchanges, rail yards, truck terminals, public parks, campuses and sports arena and shopping center parking lots. A galvanized-steel mounting ring allows two to 12 area lighting fixtures to be attached as needed by bolting fitters and mounting arms to the ring. **Circle No. 52**

PHOENIX PRODUCTS

The Phoenix 100 is a sealed, weather-tight framing projector that provides illumination at great distances and maintains control over beam shape and light coverage area. This means no spill light on rooftops or window details and glare-free illumination for entryways, statues and sculptures. All adjustments, including the four shutters, are located within the copper-free aluminum housing; ridged double locks on fixture aiming and pattern holders prevent movement and the need to refocus. Two light sources are available—incandescent quartz and metal halide. UL-listed. **Circle No. 53**

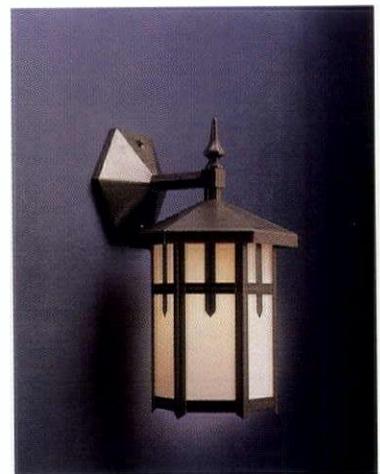


RUUD LIGHTING

Luma landscape path lights utilize an 18W lamp and include a friction-fit stake assembly and pigtail connector. The fixtures are powered by a low-voltage transformer (either 300W or 600W). Path lights are available in black or verde green; some models are available in solid brass. UL-listed for wet locations. **Circle No. 54**

REJUVENATION LAMP & FIXTURE

The O'Neil fixture, as featured in the company's new *30th Anniversary Edition* catalog, is an art-glass lantern bracket (model W742 shown). O'Neil measures 14 in. high, 8 in. wide and has a 9-in. projection. Maximum wattage is 100W. The fixture is shown here in cream art glass and a mottled brass finish. UL-listed for wet locations. **Circle No. 55**



LUMIERE DESIGN & MANUFACTURING

Cat. #1701 is a compact outdoor imaging projector that takes advantage of the long life and natural color rendering of new metal halide 35W PAR20 lamps such as Philips' MasterColor Series. This fixture projects standard Micro-E size templates, offers a variety of beam spreads and accepts a wide range of colored and dichroic filters. UL-listed. **Circle No. 56**

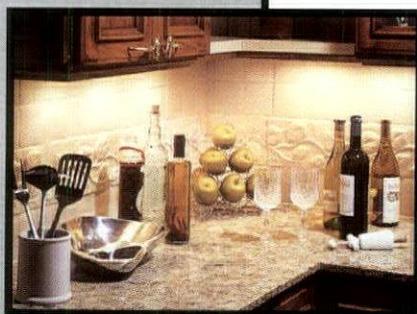
DECORATIVE PENDANT

The Fire Pendant from **Tech Lighting** is made of radiant Murano glass and measures 7½ in. high with a 3¼-in. diameter at the base. An opaque white inner glass diffuses a 50W halogen bi-pin; the outer glass is available in amber, red, cobalt, green and crystal. The fixture is available for the Kable Lite, RadiusWire, TwinRail and MonoRail low-voltage systems, or as a monopoint pendant. UL-listed. **Circle No. 60**



UNDERCABINET

The Lincs Halogen from **Alkco** is a miniaturized modular halogen undercabinet lighting system. Each fixture is 1.19 in. high by 4.19 in. deep and utilizes one, two or three long-life 12V, 20W T3 bi-pin halogen lamps. The system is offered in lengths of 9, 18 or 27 in. UL-listed. **Circle No. 62**



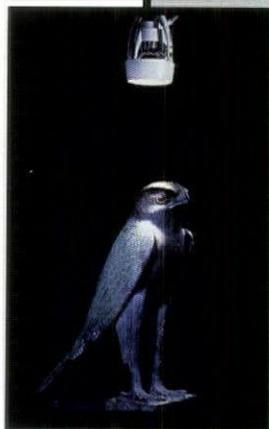
PENDANT FIXTURES

D'ac Lighting's six new Soft Industrial pendant fixtures are Alanzia, Boralo, Clareta, Davidio, Encino and Fonari, as well as Stadio, which has been carried over from the original collection. Each pendant has an inverted drum-shaped canopy made of smooth-finish spun aluminum with a 5-in.-diameter diffuser opening. A sandblasted white opal acrylic diffuser ring provides a soft white glow from a range of light sources: 150W incandescent A-lamp; 100W halogen T-lamp; 23W or 32W triple-tube compact fluorescent or 13W quad tube compact fluorescent; and 70W, 100W or 150W metal halide lamps. UL-listed. **Circle No. 61**



HALOGEN DOWNLIGHTS

SpeX30 from **Ardee Lighting** is a collection of 3-in.-aperture halogen recessed downlights and surface-mounted spotlights. The Pull Down 6 (ridged, cylindrical housing) and Pull Down 7 (smooth, rounded housing) spotlights feature lampheads that rotate 358 degrees and tilt to 90 degrees. The SpeX30 Dot provides traditional recessed downlight distribution, and Comma is a universal downlight whose lamphead rotates 358 degrees and tilts to 40 degrees. Other models in the collection are: Cylinder, Cowl, Arrow, Cap, Broadway, Pin Point, Slider and X-Ray. UL-listed. **Circle No. 63**



RECESSED LIGHTING

Luceplan's Orchestra Series, designed by Alberto Meda and Paolo Rizzatto, is a recessed lighting system consisting of square and rectangular housings that utilize fluorescent and incandescent sources. The fixtures contain asymmetrical reflectors, which permit mounting upward or downward for indirect illumination. UL-listed. **Circle No. 64**

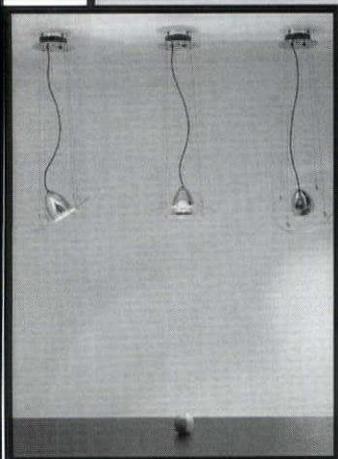


products

UPDATED DESIGN

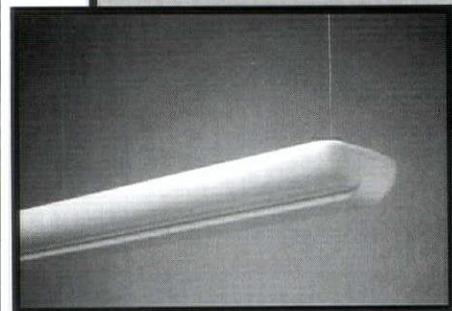
Boyd Lighting Co. relaunches its Tilt 36 Pendant with an updated twist. The Tilt 16 Pendant features four ultra-thin steel cables to enable a 360-degree tilting action on a double-disc glass assembly; the result is that the fixture is securely suspended seemingly in mid-air. A multi-directional MR16 provides targeted illumination in narrow- to wide-beam distribution. The domed metal housing is offered in polished brass or nickel; and the glass discs measure 10³/₄ in. in diameter. Overall heights may be specified in increments of 18,

24, 30, 36 or 42 in. Colored accent lenses are available. UL-listed. Circle No. 65

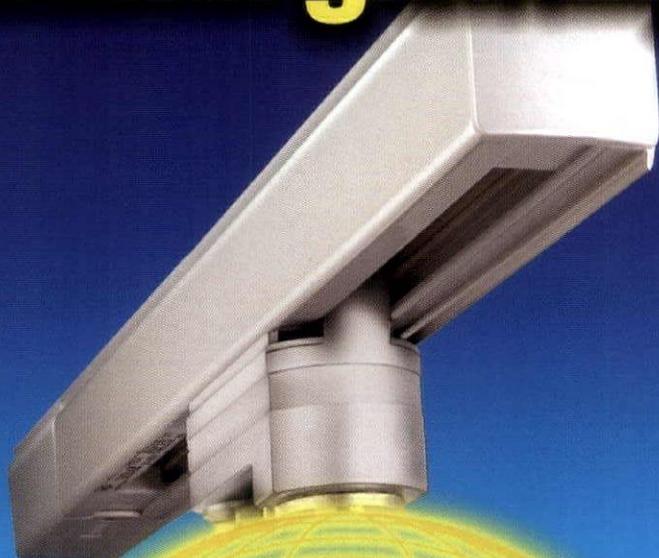


INDIRECT SYSTEM

The LT5 Series from Lam Lighting is a linear indirect fluorescent lighting system for commercial or institutional applications that would typically use deep-cell parabolic fluorescent troffers. LT5 can be specified in sculpted or inverted V designs in 4-, 8-, 12- and 16-ft. lengths. Ceiling-suspended and wall-bracket models are available and utilize two parallel T5 compact fluorescents. UL- and CUL-listed. Circle No. 66



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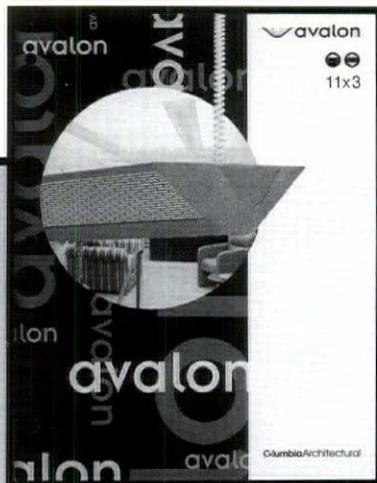
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products

DIRECT/INDIRECT

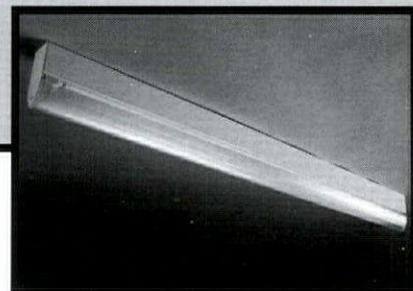
Columbia Architectural's brochure details the new Avalon line of suspended direct/indirect fixtures that feature four light-shielding options. The eight-page, color brochure includes photos of the fixture's shielding options, four lamping options and two reflector options and provides information on Avalon's quick-locking connector system. Specifications and ordering information included.

Circle No. 67



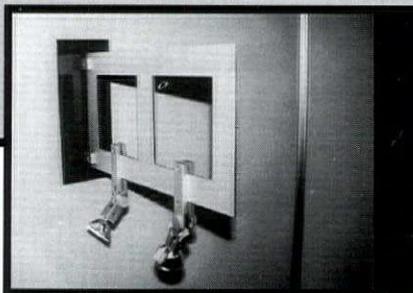
CLEANROOM FIXTURE

The Airelume IV low-profile cleanroom lighting fixture from Guth Lighting is ideal for applications with low ceiling heights; its 4³/₈-in. design minimally invades ceiling space. The fixture can be mounted independently or joined in a continuous row without external joiners to emit glare-free downlight. Airelume IV is a sealed airfoil shape available in 2-, 3-, 4-, 8-, 12- and 16-ft. extruded aluminum lengths; painted cold-rolled steel and stainless steel models are offered in 2-, 3- and 4-ft. lengths. UL- and CUL-listed. Circle No. 68



CEILING & WALL

The Alulite Individual Lighting series from Industrie und Design Licht (IDL) features a ceiling and wall system. Alulite light projectors are mounted in one, two or four square recesses and can be installed on the wall or ceiling. Transformers (60W to 150W) are concealed behind a screen, which is attached directly to the wall; the screens are offered in saffron yellow, dark red and sea green. UL-listed. Circle No. 69



EMERGENCY LIGHTING

The Emergency Lighting Transfer System (ELTS) from ETC provides automatic transfer of branch circuits from normal to emergency power when normal power fails. Each system consists of power transfer switches and a control circuitry interconnected to provide automatic protection. The ELTS will transfer critical lighting load branch circuits from dimmers to secondary control outputs to a second power source in the event of a loss of power to the dimmer rack, a normal system failure, a panic condition or activation of a fire alarm. UL-listed. Circle No. 70

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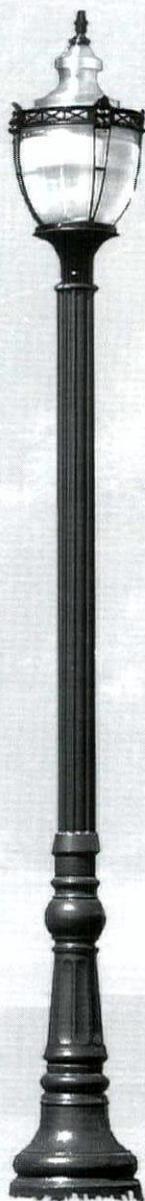
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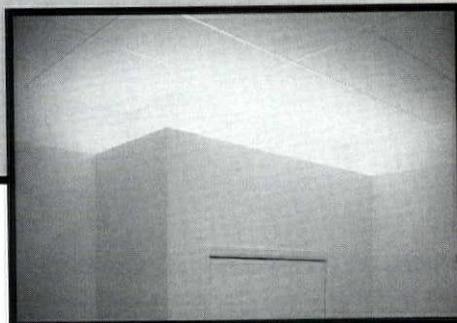
FLUORESCENT DOWNLIGHTS

Hubbell Lighting's compact fluorescent downlights have been newly engineered to take advantage of the latest triple-tube lamps, which are 25 percent shorter. One 32W compact fluorescent combined with Hubbell's engineered optics can replace a 150W A-lamp and last up to 10,000 hours compared to 750 hours for a standard incandescent. The D3 series comes in 18W, 26W and 32W models with standard electronic ballasts. Each fixture has 2 1/2-in. adjustable universal mounting brackets with 25-in. telescoping hanger bars. Open, lensed or baffle reflector styles. UL-listed. **Circle No. 71**



COVE LIGHT

Columbia Architectural Lighting's PIC (Perimeter Indirect Curve) Cove light is designed for horizontal and vertical architectural coves for commercial or residential applications. The fixture measure 7 1/4 in. wide by 2 7/8 in. deep and is available in standard lengths of 2, 3, 4, 6, or 8 ft., as well as custom lengths. Three lamping options are available: one T8 linear fluorescent; two T8s; or one T5 twin-tube lamp. UL- and CUL-listed. **Circle No. 72**



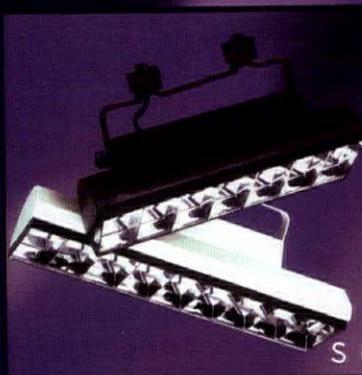
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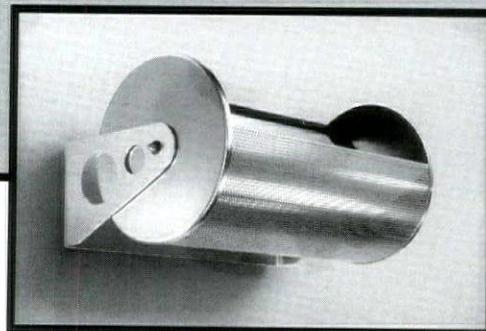
SMART CONTROLS

TimeSet from **Lightlier** is an intelligent control device that automatically turns lights on or off in office, retail or commercial environments with the ability for manual override control by occupants still in the building. By overriding the master setting, occupants can keep lights on in their specific area without using unneeded lighting in other parts of the building. **Circle No. 73**



CYLINDRICAL UPLIGHT

The Dotted Line from **Elliptipar** is a perforated aluminum cylinder with a brushed aluminum yoke housing an extruded aluminum reflector. Two styles are available: 137, ideal for large spaces; and 133, a compact wall washer or uplight. Both styles can appear non-illuminated or luminous, and can be ceiling- or wall-mounted. An optional white semi-gloss baked powder enamel. UL-listed. **Circle No. 74**



New Books from Architectural Lighting

Architectural Lighting is proud to offer these two new books developed jointly with UpWord Publishing, Inc.:

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by Russell L. DeVeau

This new text provides both scientific and practical fundamentals regarding the technology and specification of fiber-optic lighting—covering components, systems, principles of operation and more. One of the first clear and comprehensive books on the subject, it is sure to be a valuable reference on this dynamic emerging technology.

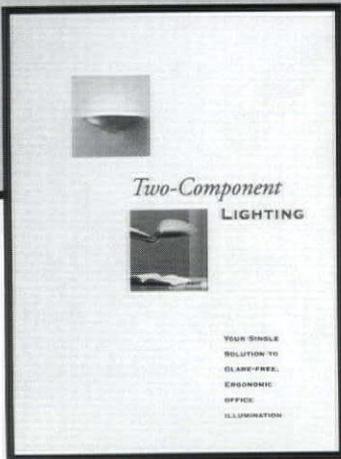
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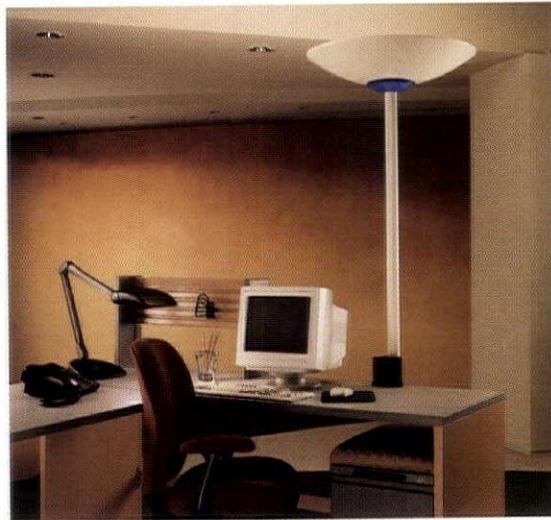
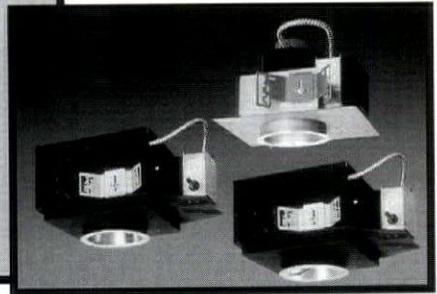
TASK LIGHTING

A new brochure details Luxo Corp.'s Two-Component Lighting Series of integrated indirect and task lighting fixtures. The colorful, 12-page brochure features application photos illustrating how the indirect and task fixtures work together to provide even, energy-efficient lighting. In addition, there's product information for the five families of indirect fixtures and six lines of task fixtures. **Circle No. 75**



PAR LAMP FIXTURES

Arcrites from **Edison Price** is a complete line of downlights, accent lights and wall washers for use with metal halide PAR20 and PAR30 lamps. Arcrites are available in 4-, 5- and 6-in. apertures and use 39W and 70W lamps. Color temperature is 3000K. Reflector finishes include clear aluminum, champagne gold and black. UL-listed. **Circle No. 76**



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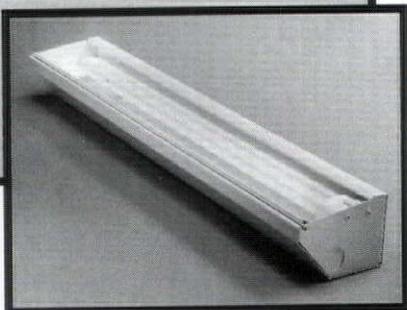


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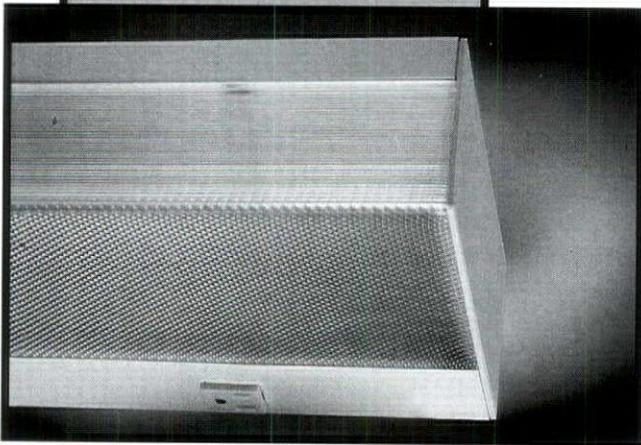
COVE LIGHTING

The Mini Cove Light from **Engineered Lighting Products** is specifically designed for small coves. The fixture houses an integral ballast and measures 2 3/4 in. deep and 4 in. wide. The fixture is also offered in 2-, 3-, and 4-ft. lengths for use with biax, T8 and T5 compact fluorescent lamps. UL-listed. **Circle No. 77**



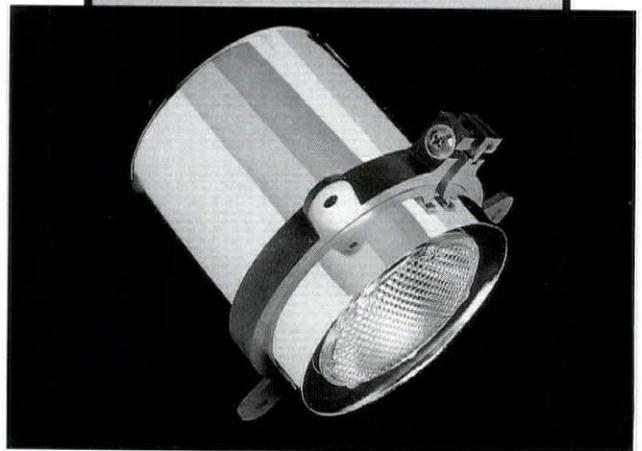
INDIRECT/DIRECT

Columbia Lighting's WAL Series comprises single- and two-lamp wall-mounted direct and indirect/direct lighting wall brackets. The series features two direct downlight models and two combination indirect/direct up/downlight models. Available in 2-, 3- and 4-ft. lengths. Downlights are available with T8 or T12 linear fluorescent or twin-tube fluorescent lamps and feature a one-piece acrylic diffuser. UL-listed. **Circle No. 78**



ACCENT LIGHTING

Specialty Lighting's Recessed Canister accent lighting fixtures provide spots of illumination to display cases, computer centers, case goods and other interior accent lighting applications. The fixture features a compact 3 1/4-in. diameter housing that is available with or without a self-trimming flange. A choice of mounting options are available; fixtures accommodate 25W, 40W and 50W incandescent lamps, or reflector and PAR halogen lamps. UL- and CUL-listed. **Circle No. 79**



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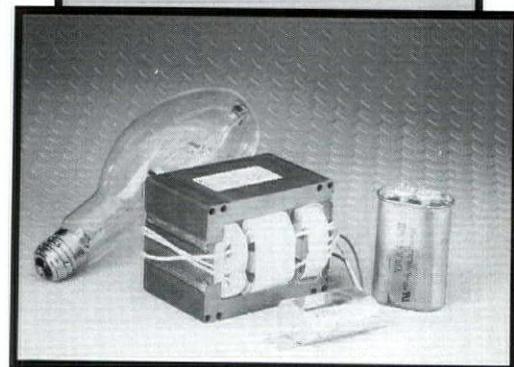


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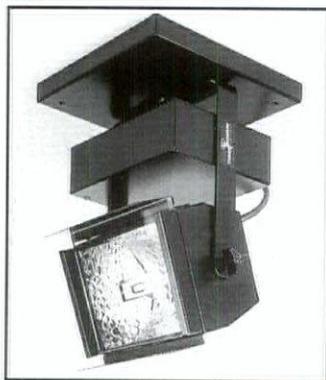
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ETHICS IN LIGHTING

BY GARY STEFFY, IES, FIALD

Ethics are standards or principles of good behavior. Rules and regulations alone won't develop or redevelop an individual's ethics. The general corporate tenor has much to do with how an employee behaves ethically. In a recent survey by the Ethics Officer Association and the American Society of Charter Life Underwriters, 87 percent of the respondents acknowledged that pressure to perform led them to commit unethical or even illegal acts.¹

Apparently, in today's political climate, ethics are defined more by what is legally "right" rather than what is righteous. Clearly, as headlines attest, some of our country's top politicians conclude publicly that if no law is broken, then they or their counterparts are subscribing to the highest moral and ethical standards. It's too bad they've been able to "persuade" the public into equating what is legally right with righteous behavior. Yet we all know, or at least knew at one time, right from wrong, and certainly the code of conduct in social and business settings.

Ethical Lighting Practice and Construction. Lighting design should be based on users' needs. Admittedly, it may be impossible to literally meet at reasonable length with any or all of the intended users of a given space, area or building. The learned, independent (free from external control, constraint, pressure) designer/design team, however, will pull together a host of criteria applicable for the majority of the audience intended to use a finished project. This includes such definitive issues as codes, ordinances and legislative acts (i.e., NEC, ADA, EPACKT, etc.) but more broadly covers the human issues of quantity of light, luminances, luminance ratios, luminance contrasts, chromatic contrasts and subjective impressions. Criteria related to initial and operating costs, as well as schedule, will be gleaned from the client.

The real role of the designer/design team is to bring together all of these criteria and prioritize them for the client. Ultimate selections and layouts of lighting equipment are then based on this prioritized criteria. It is the ethical responsibility of those in the construction phases to respect this process and carry forward the resulting lighting design plans and specifications. Ethical standards of conduct do not permit changes to the plans and specifications issued by the design professionals. Nor do they permit overcharging for simply complying with a predetermined design. Yet overcharging occurs.

And submittal and field changes are made all the time that seriously and negatively impact the lighting design intent. Why? It seems that money (more of it), heritage (less of it), value engineering (rationalization for redistribution of money) and specifications (poorly written or not upheld) have all contributed to the installation of bad lighting and/or to the lousy installation of lighting, or to what amounts to extortion for the installation of the specified goods.

There is a tendency to shrink, hedge, fudge or abuse ethics.

Money. Ethics are apparently used as a commodity. For the more avaricious, ethics are used as a precious commodity.

Heritage. There is a tendency in the construction industry to

leave little or no heritage or legacy (i.e., "This is a wonderful environment," or "Wouldn't it be nice to work here") for the immediate users, let alone future generations to enjoy. Instant gratification—more to the point, instant financial gratification—is today's *modus operandi*, which leads back to money.

Value Engineering. Essentially, *value engineering* in the construction business means *cost reduction*, sort of. Indeed, there are times when cost reduction is achieved while simultaneously improving profit margin—so the client doesn't get the full benefit of substitutions initially, and typically gets either no benefit from substitutions over the life of the installation

or actually loses money over the life of the installation to compensate for shorter lamp, fixture or ballast life, more difficult maintenance, greater staff turnover and reduced productivity. And that brings it back to money again.

In the context of manufacturing, though, "...value engineering begins with learning and understanding completely the required and desired functions of the product and its parts, followed by discovering how to provide these functions for the least cost."² So, cost reduction only comes after the product team learns and understands completely the product criteria. For that to happen in building construction, the construction managers, general contractors, value engineers, contractors, reps and distributors need to have all of the programming and criteria history that the design team had in order to develop the design. This means they need to have attended all of the design meetings, as well as the presentations to the owner/user, and have become intimately familiar with the philosophy of design for the users of the built environment. Further, it means there can be no

"ETHICAL STANDARDS DO NOT PERMIT CHANGES TO THE PLANS AND SPECIFICATIONS OF THE DESIGN PROFESSIONALS."

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external controls, constraints or pressure on these team members—product purchasing cannot be part of their responsibilities.

Holding Specifications. So, value engineering in today's construction environment means projects where specified dimming ballasts and controls might be substituted—only to be ripped out by the owner a few years after installation and replaced by the originally specified hardware simply because the substitutions didn't work well or failed. This can happen, say, when designers succumb to the "go along to get along" axiom during construction; or when the manufacturer of the substitution makes claims that are found later to be unsubstantiated.

Value engineering as defined in today's construction environment means projects where specified in-ground uplights might be substituted—only to be replaced by the owner a few years after installation by the originally specified hardware simply because the substitutions didn't work or filled with water or couldn't take the abuse of lawnmowers. This happens when the designer is only involved through the design development phase—writing a solid, defensible specification that gets churned/spurned by the value engineering process later.

Value engineering as defined in today's construction environment means projects where specified downlights and adjustable accents might be substituted—until, hopefully, the owner is educated on *actual distributor net pricing* on the substitute, and the owner subsequently insists on either the full discount due on the substitutes or a return to the originally specified hardware based on its *actual distributor net pricing*.

What's Happened. The industry has been allowed to devolve (hopefully it didn't start this way) into a Byzantine arrangement of pseudo pricing structures, cost-reporting techniques, rep credit structures and "value engineering" that encourages abuse and purposely keeps the public in the dark.

Surprisingly, the U.S. Justice Department has never scrutinized these practices. Designers allow specifications to be misconstrued by listing nearly every imaginable vendor for a potential luminaire type. (Rather they should explain and, if necessary, rationalize and struggle with the client on criteria priorities and list the one [or several] manufacturer's hardware that can meet the criteria with a given layout in a given architectural or landscaped setting).

Designers often shirk responsibility by calling out "or equal" and allowing those unqualified to interpret from there. Designers don't hold specifications for fear of losing projects altogether or in order to help keep the project on

some unrealistic and ultimately unrealized schedule.

Resolution. Restructure the representation and distribution of lighting equipment. Further, establish and publish factory pricing (today known as the distributor net pricing which is quoted from ethical reps) for all goods leaving the plants. Then it is incumbent on the buyer to get the best price from the seller.

Do away with value-engineering as we know it. Define value engineering as it should be defined—discovering how to provide the required and desired functions of the lighting over the lifetime of a project for the least cost—initially and operationally. This is exactly what learned, independent (free from external control, constraint, pressure) lighting designers, architects, engineers and interior designers now do.

Designers must aggressively hold specifications. If substitutions are even considered, then the cost of their consideration by the design team must be borne by the party offering the substitution. In addition, a complete verified accounting of the initial cost savings due the client and related life cycle costs must be presented.

It's imperative that we practice ethical behavior. In the book *Moral Mazes: The World of Corporate Managers*³, five "tests" of ethical choices are outlined:

- Is the action ethical?
- Is the action legal?
- Does the action meet organizational policies?
- Will the action harm anyone or any entity?
- Who or what benefits or is harmed by the action?

Lighting professionals must do what's right—what's right for the users of the built environment. Ultimately that is what results in improved satisfaction with our environments

and leads to comfort and productivity gains. ■

Sources:

¹Joan Connell, *The Ethical Office, Dilbert and Dogbert* (<http://www.msnbc.com/new/82154.asp>, MSNBC, June 26, 1997).

²Robert J. Carrico, *Value Engineering and Systems Thinking: Tools for the Learning Organization in the Technology Century* (Detroit: Engineering Society of Detroit, pp 19-21, Volume 2, Number 1, 1997).

³Robert Jackall, *Moral Mazes: The World of Corporate Managers* (New York: Oxford University Press, 1988).

Gary Steffy, IES, FIALD is principal of Gary Steffy Lighting Design Inc. in Ann Arbor, MI.

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REGISTRATION FORM

Please include this form with your entry.
You may copy this form for additional entries.

Entry Fee (per entry): \$35 IALD Corporate Members
\$50 IALD Members
\$75 Non-Members

Your name _____

Address _____

City _____ State _____

Zip Code _____ Phone Number _____

Title of Project _____

Location _____

Date of Completion _____

Lighting Designer _____

Architect _____

Senior Designer _____

Engineer _____

Owner _____

Make sure you have included:

Brief Keyed Description Slides Return Envelope Registration Form Entry Fee

PROGRAM DESCRIPTION

The Lighting Awards program was established to increase awareness of quality lighting design by recognizing lighting installations which display high aesthetic achievement backed by technical expertise, and exemplify a synthesis of architectural and lighting design process. As a collection of work, the award projects illustrate the diversity of techniques used to create outstanding light design.

ELIGIBILITY

Anyone may enter a project for an award. The project must be a permanent architectural lighting design solution, interior or exterior, for which construction was completed after 1 June 1993. Lighting products, lighting equipment or lighting design for theatrical performances are not eligible.

JUDGING

Projects will be judged individually based on aesthetic achievement and technical merit in accordance with the designer's concepts and goals. This is no competition, there is no minimum or maximum number of awards granted.

AWARDS

There are two types of awards, Awards of Excellence and Citations. Award winning projects will be recognized at the IALD Awards Dinner and Presentation May 28, 1998 in conjunction with LIGHTFAIR International in Las Vegas, Nevada. Winning projects will be published in leading architectural and design publications and included in the IALD slide library.

SUBMISSION REQUIREMENTS

All submissions must be in an 8 1/2 x 11 format. **No mention or identification of a specific lighting project name, design firm, or design firm may appear as any part of the presentation.**

Please include **all** of the following:



WRITTEN BRIEF: A (50 word max.) synopsis of the special challenge of the project and the excellence your design solution exhibits.



KEYED DESCRIPTION: A one page (800 word max.) technical and conceptual summary of the project that is **keyed to the slides** you have submitted. Incorporate a description of the architectural and lighting design concept, special energy constraints and the design solution.



SLIDES: A maximum of ten (10) 35mm slides of the project. Originals or high quality duplicates are required. The quality of the photography is important in the judging process. Professional photography is advisable. If plans and drawings are required to describe the lighting solution, we recommend photographing essential information and including them on slides. All slides must be labeled with project and firm name. With slides positioned right reading, **number** each slide in the **upper right** corner, and place **project name** in the **upper left** corner. Photographs, drawing and/or magazine articles will not be considered.



RETURN ENVELOPE: A self-addressed stamped-envelope for the return mailing of your submission. Foreign submissions should include a self-addressed express mail form. If you do not wish your submission to be returned, please indicate so in writing and include with submission.



REGISTRATION FORM: A completed registration form.



ENTRY FEE. Payment is by check or money order only. Checks must be payable in United States currency and drawn on a U.S. bank. **Make payable to IALD.** A single check may be written for multiple entries. Please do not send cash.

Entries must be submitted in requested format or they will not be considered.

Address entries to:
IALD Awards Program
International Association of Lighting Designers
The Merchandise Mart, Suite 487
200 World Trade Center
Chicago, IL 60654 USA

Telephone 312-527-3677
Facsimile 312-527-3680

DEADLINE

Submission must be received no later than March 2, 1998

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Call for Entries courtesy of *Architectural Lighting* magazine.

Detach and return

QUALITY CAN COME FROM COOPERATION

BY JOHN NADON

Among the many issues facing the lighting professional today, perhaps none is as significant as the obvious confrontation that occurs when the desire for quality runs headlong into the every-increasing technological change that is transforming our industry. The lighting fixture manufacturing business is being transformed from a simple, relatively unsophisticated metal-bending business into an increasingly complex assembler—and more importantly, integrator—of advanced technology components. While the impetus of this change has manifested primarily in lamps and ballasts (and controls), each of these makes increasingly complex requirements on actual fixture design.

Talking to lighting professionals, I regularly ask them about what they perceive as the working relationship between ballast, lamp and fixture manufacturer design engineers. Invariably, they describe a concurrent design process wherein the lamp people develop lamps in close collaboration with ballast and fixture manufacturers, sharing research and development as well as testing responsibilities to assure proper understanding of the total installed system dynamics. Unfortunately, this has historically not been the case and it is still, to a great extent, not the case today.

The fact of the matter, despite some interchange, is that much of what each manufacturer designs is done in a vacuum. Let's look at a simplified, but typical, example of how a new light source, ballast and fixture are produced. First, the lamp is designed. The ballast is designed based on a series of design guides provided by the lamp manufacturer. The lamp is engineered and tested to provide data, then the lamp engineers visit the fixture manufacturers for presentation and sample demonstration of the lamp-ballast system. The fixtures are designed on design guides provided by the lamp and ballast manufacturers. In essence, it is a sequential process. Information is shared, but critical information is not.

This occurs primarily because our industry is highly competitive and we believe that our companies have a distinct competence; to share too much is perceived as giving up that advantage. But it is this lack of communication that often results in technical problems that are shipped to the field, installed and come back to haunt both the owner and the specifier.

Here is an example: When quad tube technology was introduced, it was sold to the specification community before any fixtures were actually in production. This is quite often the case with new lamp technologies as manufacturers seek to get the jump on their competitors. As a result, the lamp was sold on bare performance before anybody truly knew what happened in actual operation in an installed fixture. The lamp was introduced as providing a certain quantity of lumens. In the earliest stages of fixture development, there was a poor understanding of what the impact of heat would be on the lumen output of the fixture. Specifier complaints about low light output, relative to photometric reporting, brought the lamp and fixture manufacturers to finally study the issue, widely disseminate information, and finally begin to produce fixtures that could produce light levels that met expectations based upon lamp design lumens.

Why wasn't thermal effect (and, for that matter, lamp orientation—vertical bare lamp testing versus regular application in the horizontal) discovered as a problem before release to the field? Why, despite repeated requests from fixture manufacturers over the last decade, when the most commonly applied lamp orientation has been horizontal in a reflector, are we still doing photometry using base-up vertical design lumens? (To this day independent labs print disclaimers about horizontally lamped fixtures as an addendum to their test reports.)

Why are other issues currently in study, like end-of-life in T4 compact fluorescents (using both magnetic 277V high-power-factor corrected ballasts or electronic ballasts) coming into view so long after product release?

I believe the answer is in how product development occurs presently, the lack of communication and quality of communication in the industry, and the growing complexity of the lighting system (fixture) itself. And while over time various technical problems are corrected, they go on for long enough to potentially create enormous problems for designers and their clients.

Besides the obvious fact that we are not maximizing the quality of lighting our industry can offer—and creating an unfair situation for the specifier and the owner—the lamp, ballast and fixture manufacturers now have an even bigger stake in cooperation. There are some important technical

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issues that our industry must deal with, and soon. With the increasing rate of advancement of technology, all of us are being impacted by rapidly decreasing product cycles. To be successful going forward in providing quality products without inherent system incompatibilities, such terms as sequential design, need-to-know-basis-only information, and so forth will have to be eliminated from our vocabularies. On top of that, with life cycles shortening to the extent they have, manufacturers cannot be profitable shipping field problems anymore; there isn't time in a basic product's life to fix the problem and get to payback.

Because of these problems, we have instituted a program at our company called Integrated Systems Design (ISD). The idea is to communicate to our own in-house design and engineering staff that everything we design must be considered as part of a system. The idea is that the completed fixture is only a component to be used in the building system. By implementing a design process that attempts to anticipate the variety of potential problems that can occur in a system design, we are able to make products with fewer problems getting out to the field and improve quality. I know that many of our competitors are doing the same thing for the same reasons. But the reason I bring up this program is to pay tribute of sorts to one of the lamp manufacturers that has responded to our program; hopefully, the story I am about to tell will encourage other lamp manufacturers to communicate with us in a more open way, earlier in the design process, and in more depth and detail.

Our company was proud to be asked by GE Lighting to be one of several partners in creating fixtures for their Heliac lamp design. Forget the fact that this product had to be canceled due to technical problems in its manufacture. Consider this: The product was concurrently designed, with GE offering us much greater detail and support than usual, and the result was that the relative improvements in bare lamp performance of the Heliac over existing bare lamp types was exceeded by the performance of Heliac in fixture versus competing lamp types in fixture. This was a first. We made a fixture that improved the lamp's performance relative to other lamp types—not just maintaining its relative bare lamp performance superiority, but actually enhancing the measure of that superiority. In addition, at each step in the concurrent design process, we were able to work directly with GE engineers on issues of ballast performance and thermal characteristics, et cetera. This means that we were bringing ultimately a solution to the market, not just another potential problem.

Even the fact that GE decided to cancel the program was a first. The first company GE spoke to was ours at a meeting in our headquarters. They laid bare the details of their manufacturing problems. They were open and they were honest. They said they couldn't, based on the state of the art in manufacturing, make the lamp to a consistent standard—and based on what they knew, they could not economically do so. Honest simple explanations went a long way in easing our decision to exit with GE from the project despite the costs already incurred. This was an unusual decision and a difficult one for GE, I'm sure. In the past, new lamp technologies may have gone out to market before inherent or potential problems have been fully understood, causing specifiers and owners enormous difficulties.

The fact that GE determined that a lamp type couldn't be made consistently so as to assure its satisfactory operation in the field, the fact they discussed this with partners and allowed us time to react (including notifying specifiers to check old specs and change our Heliac model numbers over to quad or triple tube numbers), the fact that they have helped to communicate broadly to the field the discontinuance of their product before release—all of this was significant.

GE Lighting will continue to work with us within the context of our ISD philosophy. We are grateful for the support, and while the removal of the Heliac lamp from the market is an unfortunate event, we found success in it in that we have built a new kind of relationship with a lamp manufacturer, one that works. I encourage all lamp and ballast manufacturers to take advantage of this model and begin to work openly with the fixture manufactur-

ers. For if we can create an open, accurate and in-depth flow of information between our design disciplines, establishing a concurrent design process starting with lamp conception, we can better assure an overall improvement in quality in our industry—for the benefit of lighting professionals and for their clients. ■

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ONE THAT WORKS.

John Nadon is marketing director for Prescolite. His perspective is based on 20 years' experience in design, sales and manufacturing.