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2002

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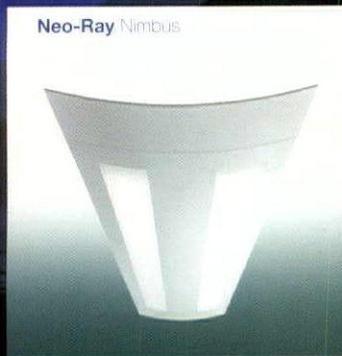


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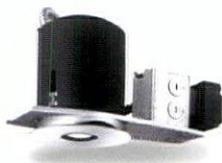
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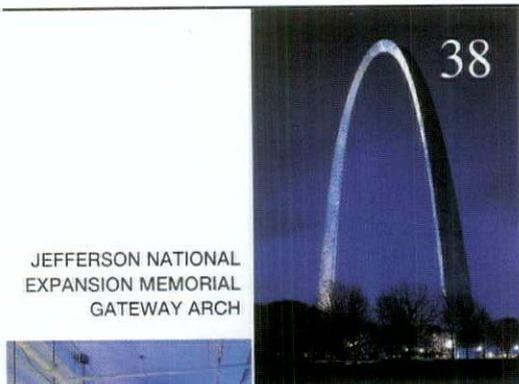


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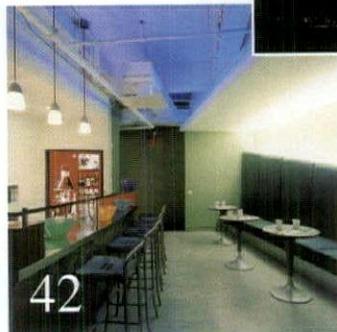
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38



42

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## DESIGN FEATURES

- 32 Tribute in Light**  
Six months later, a community remembers the victims of 9/11 and finds comfort in light
- 34 Bank Statement**  
The integration of light and architecture fulfills this institution's mission to succeed
- 38 Monumental Endeavor**  
Architect Eero Saarinen's famous Midwest Arch is lighted, drawing visitors—and praise
- 42 Media Savvy**  
The ultra-modern offices of Condé Net called for lighting that was not just hip—but literally cool

## LIGHTFAIR 2002

- 46 Events, Schedule & San Francisco Projects

## TECHNIQUE

- 56 Show & Tell: Museum Lighting

## TECHNOLOGY

- 66 The Status of White LEDs in the Marketplace

## DEPARTMENTS

- 8 Editor's Note
- 10 News
  - 10 The Inbox
  - 16 Feedback
  - 18 Datebook
- 26 Profiles Suzan Tillotson, IES, IALD
- 30 Spotlight Blueprint Special
- 74 Architectural Lighting Product Guide
- 86 Endpoint The Value of a Professional



46

LIGHTFAIR IN SAN FRANCISCO



56

MUSEUM LIGHTING TECHNIQUE

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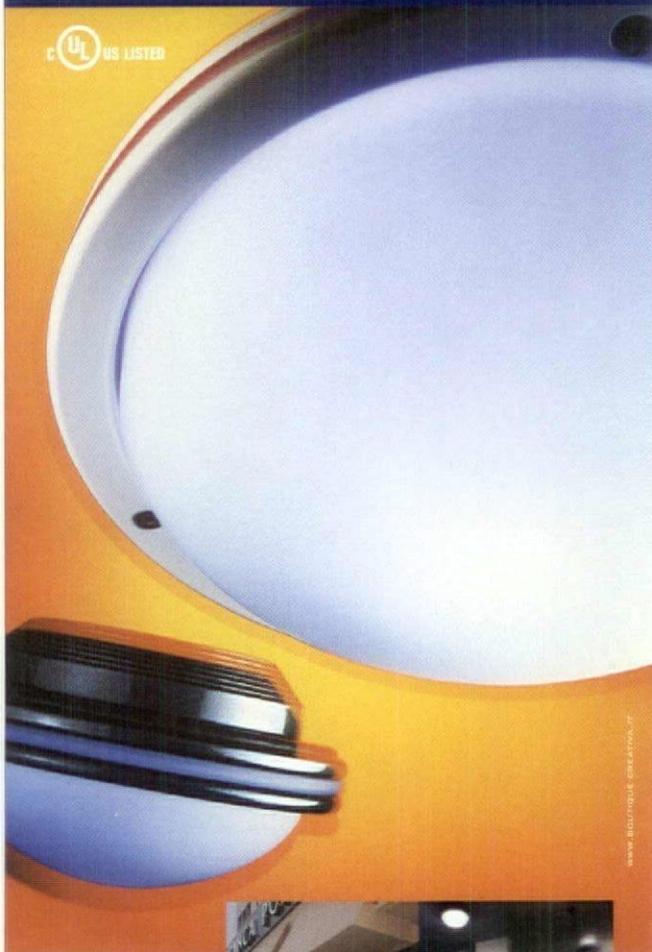
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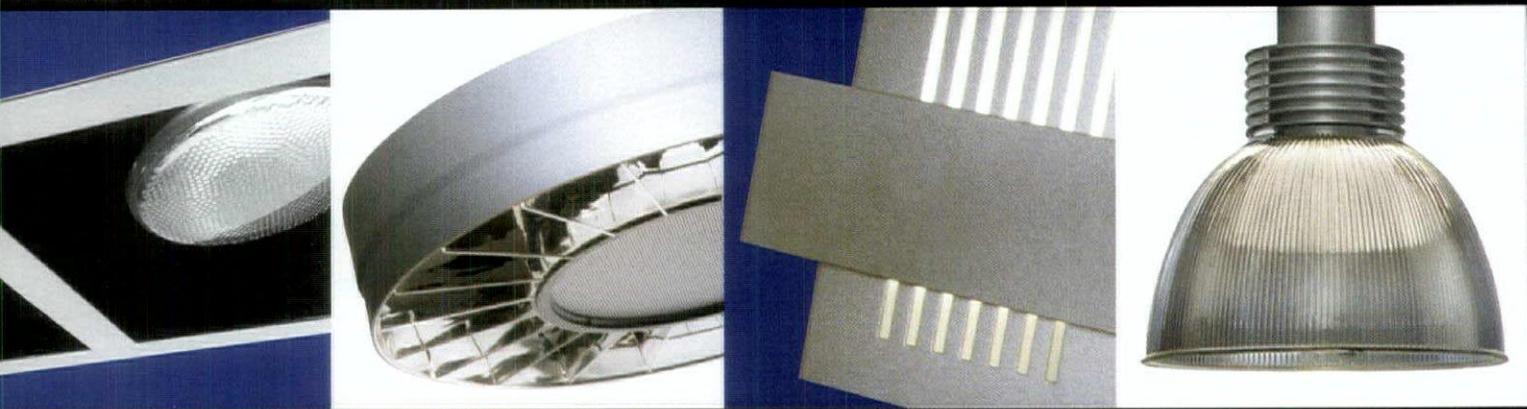
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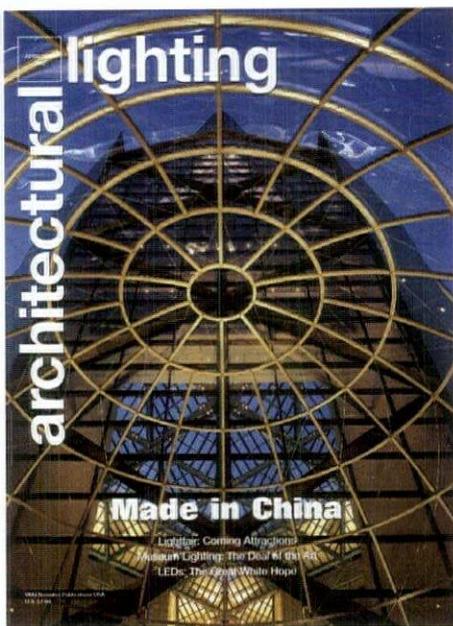
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Can it possibly be that time of year again? Lightfair is rapidly approaching. So much to do, so little time ...

I just returned (yesterday, as a matter of fact) from Frankfurt, Germany where I attended the bi-annual Light + Building Show. In its second year—and my second time there—I think there's only one word to describe the premier international trade event: *overwhelming*. For those of you who also crossed the Atlantic to



COVER PHOTO: © KERUN IP

walk—and walk and walk—the show floors (note the emphasis on the plural), I'm sure you'd be in agreement with my word choice. For those of you who did not get the opportunity to attend this year, let's just say, mark your calendars for 2004. You won't be disappointed!

Rather, I promise you'll be inspired. After getting past the sheer enormity of the show—where else can you walk through manufacturers' exhibits that are more like city blocks than booths, cocktails and music included—the fresh and innovative designs and high-tech offerings will leave you in awe. Look for an in-depth report on Light + Building in the June Lightfair at-show issue of *Architectural Lighting*—in addition to hundreds of product offerings from our own U.S. manufacturers.

In the meantime, take a minute to peruse this issue for design ideas, techniques, opinions and particularly, the report on LEDs by Craig DiLouie—we're sure it's something to be talked about ...

See you soon in San Francisco!



Christina Trauthwein,  
Editor-in-Chief



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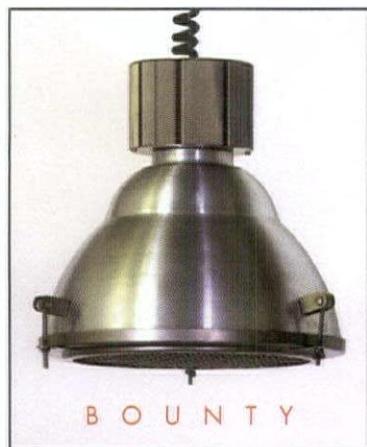
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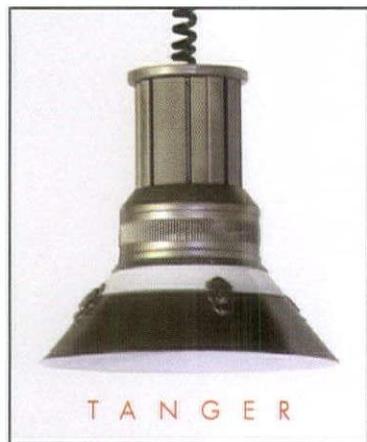
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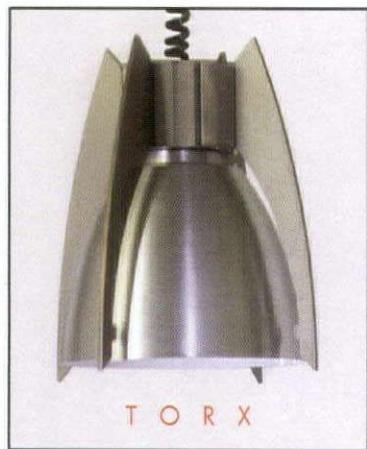
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## the inbox

### MERGERS & ACQUISITIONS

**Illuminating Experiences** of Highland Park, NJ and Hamden, CT-based IL America have merged to form Illuminating Experiences LLC, a subsidiary of Nemo S.p.A. of Rovellasca, Italy, which, in turn, is a part of the Gruppo Cassina. Bernard and Barrett Gross, the former owners of Illuminating Experiences, will continue to manage the new company at the Highland Park location, while the IL America offices and warehouse will be closed. Illuminating Experiences will distribute the Nemo Italianaluce product line in the U.S. as well as the Meltemi line, which was purchased by Nemo in 2001. To contact Illuminating Experiences, phone (732) 745-5858 or fax (732) 745-9710.

**Hubbell Inc.** has announced that it has signed a definitive agreement to acquire USI's LCA Group Inc., the domestic lighting division of U.S. Industries, Inc. The purchase price will be \$250 million in cash subject to adjustment based on certain circumstances. The transaction, which is subject to customary closing conditions, is

expected to be completed in the second quarter. USI lighting group, a full-line lighting product manufacturer with 2001 sales in excess of \$575 million, serves a series of lighting markets under such brand names as Columbia Lighting, Dual-Lite, Prescolite, Kim Lighting, Spaulding Lighting and Progress Lighting.

**A.L.P. Lighting Components, Inc.** has announced the acquisition of the assets of the Triboro Electric Corp., as owned by AO Venture Capital Partners. Following the acquisition, A.L.P. will rebuild the Triboro brand and take control of its product lines, including incandescent, fluorescent and HID lampholders, switches, convenience outlets, cord sets and bulk wire lines. For more information, phone (773) 774-9550 or visit [www.alplighting.com](http://www.alplighting.com).

**Clarus Lighting** has acquired the manufacturing assets and designs of Casella Lamps, a manufacturer of decorative and specialty lighting. For information, contact Clarus at (888) 252-7874, fax (888) 489-9543 or visit [www.claruslighting.com](http://www.claruslighting.com).

### COOPER CALLS FOR ENTRIES

Cooper Lighting has announced a call for entries for its 26th annual national lighting design competition. Now called the Cooper Source Awards, the competition is open to any lighting designer, architect, interior designer or design professional who uses Cooper Lighting brands in an interior or exterior permanent application. Students in the design disciplines are also eligible to enter conceptual work in lighting, which will be judged in a separate student category.

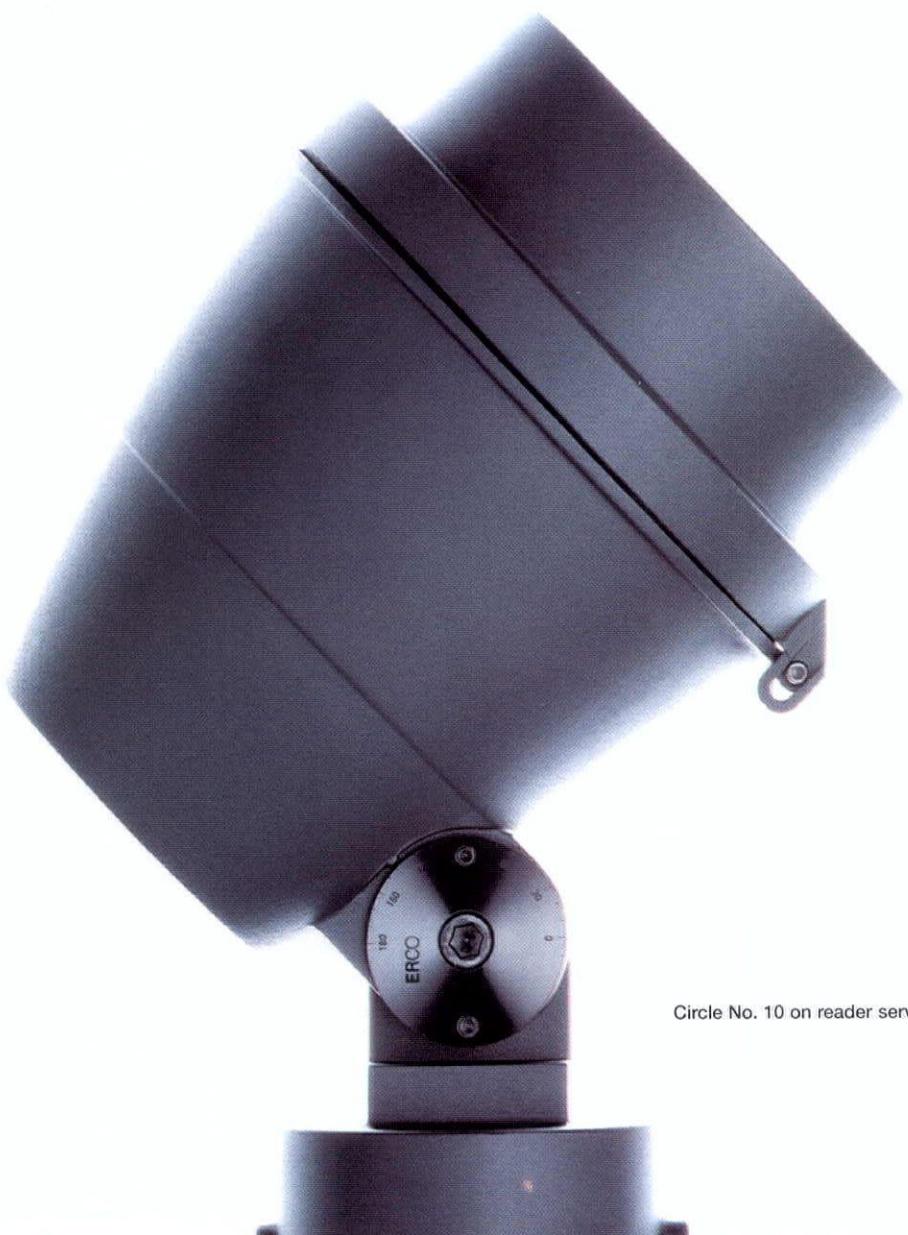
Judging for the competition will take place in November 2002. Student winner(s) will receive trophies and monetary

awards of up to \$1,500 and professional winners(s) will receive trophies as well as local and national recognition through publicity and advertising. First place winners will also receive an all-expense paid invitation to attend a lighting seminar at Source, Cooper's educational facility. The deadline for entries is October 25, 2002.

For more information, visit the company's website at [www.cooperlighting.com](http://www.cooperlighting.com) or contact Cooper Lighting at 1121 Highway 74 South, Peachtree City, GA 30629; phone (770) 486-4800, fax (770) 486-4321, email [talktous@cooperlighting.com](mailto:talktous@cooperlighting.com).

### TIR PARTNERS WITH LUMILEDS

TIR Systems Ltd. has announced a marketing partnership with Lumileds LLC for the marketing and sales support of Lumileds' Chip Strip product line. The partnership combines TIR's experience in marketing and supporting lighting products in the architectural and corporate identity markets with Lumileds' strength as a leading manufacturer of high-power LEDs. As part of this agreement, TIR assumes worldwide marketing responsibility (Australia and New Zealand excluded) for the Chip Strip product line, which will continue to be manufactured by Lumileds. For more information, phone (604) 473-2318.



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## COLOR KINETICS AND TARGETTI ANNOUNCE PARTNERSHIP

Color Kinetics Inc. and Targetti have announced an OEM partnership, through which Targetti will incorporate Color Kinetics-patented Chromacore intelligent LED illumination technologies into a new line of custom fixtures. The two companies also plan to co-develop Chromacore-based "designer" lighting fixtures. The new product line is scheduled to launch in the second half of 2002 and will be available through authorized Targetti and Color Kinetics distributors.

## HOLOPHANE OFFERS LIGHTING SEMINAR

Holophane is scheduled to hold a three-day "Lighting of Schools" seminar June 24-26 for architects, engineering consultants and other professionals involved with specifying industrial and commercial lighting systems. The session will take place at Holophane's Light & Vision Center in Newark, OH and provide an overview of lighting technology with detailed discussions on lighting by application. Topics to be covered include optical control and photometrics, lamps, ballasts, materials and visual considerations. Architectural outdoor, area outdoor, indoor sports and physical plant and maintenance lighting applications will also be discussed.

The seminar is free and Holophane will provide a travel credit of up to \$250. The company will also supply all hotel, meal and transportation amenities once participants arrive, including airport arrival and departure service for Port Columbus International Airport. Reservations are required as space is limited to 26 participants. For more information, contact your local Holophane sales representative or call Katie Barber at (740) 349-4258 or fax (740) 349-4474.

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## ASID & IIDA EXPLORE JOINING FORCES

The American Society of Interior Designers (ASID) and the International Interior Design Association (IIDA) have entered into discussions about joining forces to form a single interior design association. The conversations have been exploratory in nature and were designed to determine if one organization representing the interior design profession is best for both organizations' members and the profession as a whole. In the event of a formal decision to merge, professional members from both ASID and IIDA would vote to approve such an alignment. Both organizations have agreed to continue discussions and are soliciting feedback from their members, chapters, the media and other stakeholders. Comments can be emailed to [asid@asid.org](mailto:asid@asid.org) or [feedback@iida.org](mailto:feedback@iida.org).

## EPA AND DOE NAME PHILIPS 2002 ENERGY STAR PARTNER

The Environmental Protection Agency and Department of Energy have named Philips Lighting Co. an Energy Star Partner of the Year for its commitment to making and promoting energy-efficient products that save money on energy bills and reduce greenhouse gas emissions. The company was recognized for the Philips Lighting Formula—an Energy Blueprint for the Nation, which replaced lighting products used on a block in Berkeley, CA with energy-efficient options, saving up to 45 percent of lighting-related electricity. Philips was recognized March 26 at a special Energy Star 10th anniversary awards ceremony in Washington, D.C.

### LURALINE ANNOUNCES WINNERS

Luraline Products Co. has announced the winners of its first annual "It's Your Light" student design competition. Takeshi Ohara, a student at the Art Institute of Fort Lauderdale, FL, took top honors with an outdoor lighting fixture design that was inspired by a long blade of grass waving in the wind. Ohara's fixture angles over the sidewalk or grass to illuminate it and features dual light sources to down-light the sidewalk and green glass to cast a glow onto the grass. Ohara will receive a \$1,500 cash prize, while his school will receive \$1,000.

If chosen for production, "Overgrown Weed" will join Luraline's Designer series of lighting fixtures. For more information, phone (800) 940-6588 or visit [www.luraline.com](http://www.luraline.com).

### ON THE WEB

**LEDtronics** has announced that informational videos featuring LED lighting solutions are available for online viewing at [www.ledtronics.com](http://www.ledtronics.com). In addition to providing close-up views of LED products, the movies feature installation and application demonstrations and serve as educational tools on the advantages of using LEDs over incandescent lighting. Visitors to the site can choose from several player formats and connection speeds for optimal viewing.

**The Lighting Controls Association (LCA)**, administered by the National Electrical Manufacturers Associates (NEMA), has launched [www.AboutLightingControls.org](http://www.AboutLightingControls.org) to provide education to industry professionals involved in building management, design and construction. The site covers application issues as well as issues related to controls specification. A product matrix providing a standard interface facilitates access to product specifications, educational resources and application support from various controls manufacturers.

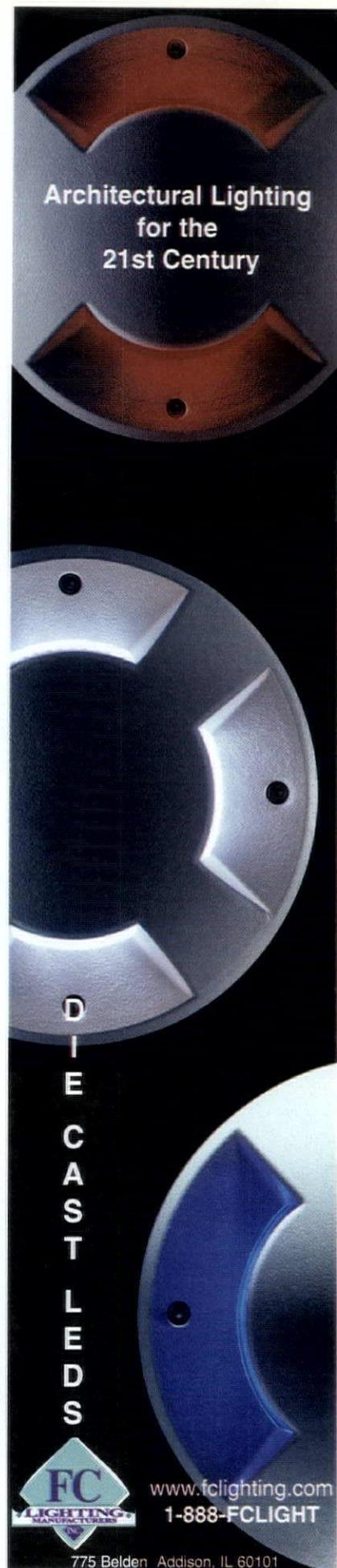
**Lightolier** has introduced the Comprehensive Lighting Selector (CLS) website at [www.lightolier.com](http://www.lightolier.com). Designed to mirror Lightolier's printed material, CLS contains product specification sheets, instruction sheets, photometry and product photos for the company's complete line of products.

**Lithonia Lighting** has added an Environmentally Friendly Outdoor Lighting section to its site at [www.lithonia.com/CutoffLighting](http://www.lithonia.com/CutoffLighting). The section provides information on quality outdoor lighting standards, trespass issues, design recommendations, luminaire cutoff classifications and products equipped with application-specific optical systems.

**Lighting Services Inc** has announced the launch of a newly designed website at [www.LightingServicesInc.com](http://www.LightingServicesInc.com). Features include QuickTime virtual reality viewing of the latest products, .pdf downloads of product information in formats for Asia, Europe and North America, IES format photometric files, DXF files and files compatible with LightScape software.

**GE Lighting's** site has added the GE Lighting Auditor (GELA), which calculates lighting usage, offers energy-efficient options and computes savings for businesses, homes and schools. GELA can be found at [www.GELighting.com](http://www.GELighting.com).

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## ON THE MOVE

**Patdo Light Studio** has relocated its Westchester, NY showroom and design studio to 25 South Regent Street, Port Chester, NY. The company has also opened a second design studio at 13 Crosby Street, New York 10013; phone (212) 334-5060.

Varon subsidiary, **Rockscapes, LLC**, has completed the move of its manufacturing facility and headquarters to a new 20,000-sq.-ft. building in Chatsworth, CA. Acquired in 2001 by Varon, Rockscapes manufactures commercial and residential landscape lighting fixtures that are known for being constructed of rust-resistant solid brass with non-peel, non-pit finishes. The company can be contacted at 9185 Kelvin Avenue, Chatsworth, CA 91311; phone (800) 677-6811, (818) 882-2955, fax (818) 882-7136, [www.rockscapes.net](http://www.rockscapes.net).

## PEOPLE IN THE NEWS

SPI Lighting has named **Geoffrey Marlow** VP of sales and marketing.

**Brian R. Dundon** joins Advance Transformer Company, a division of Philips Electronics North America Corp. as president; he will also serve as CEO of Philips' Business Unit Lighting Electronics, North America.

W.A.C Lighting has promoted **Marc Pfeiffer** to eastern regional sales manager.

**Edmund Farmer** has been named director of product management at Verilux, Inc.

**Jim Waterhouse** joins A.L.P. Lighting Components, Inc. as western regional sales manager.

Targetti North America has named **Robert W. Paul** and **Edward C. Duncan** design engineer.

Patdo Light Studio has promoted **Lana L. Lenar** to project manager; **Jee Young Park** has joined the Patdo Light Studio's New York office.

**Ed Weaver, AIA, Viola Mitchell, Jeff Cohen, Kaylen Eckert, Edward Stewart, Anthony Patterson** and **Jake Holmes III** have joined DMJMH+N, Inc.

Buscaj Andrews Architecture and Design has promoted **Erin Petersen, AIA** to studio manager.

## NEW FIRMS OPEN FOR BUSINESS

Jeanne Mercer Ballard, NCIDQ, LC has launched **Envi Studio Inc.**, a commercial interior and lighting design firm located at 163 Talbert Road, Mooresville, NC 28117. To contact Envi Studio, phone (704) 662-9992 or email [envi@dangerous-minds.com](mailto:envi@dangerous-minds.com).

**Pan Tilt Studios** has also announced its formation in Ontario, Canada. The company is a lighting design consultation and simulation studio offering services such as off-site programming, visualization and CAD drawing services. Pan Tilt is located at 87 Wade Avenue, Suite 101, Toronto, Ontario, M6H 1P5, Canada. To contact the company, phone (866) PAN-TILT or visit [www.pantiltstudios.com](http://www.pantiltstudios.com).

## TEAM IMAGINATION CELEBRATES ANNIVERSARY

Team Imagination, Inc., a full-service lighting design production group, is celebrating its seventh anniversary by opening a third office in Orlando, FL. The new office is located at 215 Celebration Place, Suite 500, Celebration, FL 34747; phone (321) 559-1070. For more information about the company, visit [www.teamimagination.com](http://www.teamimagination.com).





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## TO THE EDITOR:

In response to the Endpoint article "What's In A Name?" in the March 2002 issue, David Bergman's comments were right on target regarding the use of the terrible "f" word. Like many of my design associates, the term "fluorescent" evoked all those dreadful mental pictures he recalled of cold blue flickering light that permeated houses and public spaces dat-

ing back to the 1940s. (Yes, I know, before most *anybody's* time!) And I was just as guilty as anybody when it came to knee-jerk reactions to the idea of putting any of that in any of *my* carefully designed environments. I would do anything to sidestep the energy requirements rather than use any kind of fluorescent lighting in an office, kitchen, bath or laundry room.

*God forbid* any other space inhabited by sensitive humans, even to the extent of forcing my clients to buy the much more expensive, heat-producing halogens. Because as a fine artist as well as I designer, I simply would not give in to the poor color renditions those ugly sticks provided.

Then one day several years ago, I discovered the wonderful recessed quad lights with their great array of specular and anodized reflectors and baffles ranging from clear, to gold to black. And lo and behold! Unless you stood directly under them and craned your neck straight up, you would never know they weren't those potty round bulbs of Mr. Edison's first efforts! Colors appeared almost perfectly normal and warm, and then I found that if you placed them in other fixtures where the shape of the bulb was completely disguised, you still couldn't tell the difference. What a transformation to my thinking!

There are still some areas where even the latest fluorescents just don't quite do the trick, but they seem to be receding in numbers and applications. So yes, I'd say a re-naming is definitely in order, but like Mr. Bergman, I'm stuck for that perfect, motivational, marketable, all-encompassing name—except, how about "TodayLight"?

Norma Byrd, ASID  
San Diego, CA

### David Bergman responds:

Dear Norma,

*It's always good to hear from the "converted." I like your nomination of "TodayLight," and it prompts me to suggest that we create an ad hoc focus group of Architectural Lighting readers sending in their nominations.*

*Let's make "TodayLight" the first nomination and I'll keep the ball rolling by adding a variant: "Life Light."*

*Send in your suggestions!*

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## datebook

### 2002 SCHEDULED EVENTS

**May 15** DLFNY: "Merging Light and Office Furniture," New York. Contact: (212) 613-1599, [www.dlfny.com](http://www.dlfny.com).

**May 18-21** International Contemporary Furniture Fair, Jacob K. Javits Convention Center, New York. Contact: (800) 272-SHOW, (914) 421-3206.

**June 3-5** Lightfair International, Moscone Center, San Francisco. Contact: (404) 220-2221, [www.lightfair.com](http://www.lightfair.com).

**June 16-18** Southeast Regional IESNA Conference, Asheville, NC. Contact: Danny Yanusz (336) 605-5888, Jim Edmonds (336) 917-2011 or email [dyanusz@professionallighting.com](mailto:dyanusz@professionallighting.com).

**June 17-19** The Electric Show 2002, Jacob Javits Convention Center, New York. Contact: (800) 927-5007.

**June 19** Lumen Awards Banquet, New York. Contact: (718) 951-6773, [www.iesny.org](http://www.iesny.org).

**June 24-28** LUX America 2002: The Sixth Pan-American Conference on Lighting, San Miguel de Tucumán, Argentina. Contact: (54) 381 4361036, [www.unt.edu.ar/facet/dlumin/index.html](http://www.unt.edu.ar/facet/dlumin/index.html).

**August 4-7** IESNA Annual Conference, Salt Lake City, UT. Contact: Valerie Landers (212) 248-5000, [www.iesna.org](http://www.iesna.org).

**September 6-10** Maison&Objet, Paris-Nord Villepinte, Paris, France. Contact: 33 (0)1 44 29 02 00.

**October 2-3** 2002 Design-Build EXPO, Adam's Mark Hotel, Denver, CO. Contact Patrick Wilson at (202) 454-7535.

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**October 18-20** LDI 2002, Las Vegas Convention Center, Las Vegas, NV. Contact: (800) 288-8606.

**November 3-5** Fifth Lighting Research Office Symposium: Light and Human Health, Grosvenor Resort, Orlando, FL. Contact: (216) 291-1884 [www.lightingresearchoffice.org](http://www.lightingresearchoffice.org).

### EDUCATIONAL FACILITIES

#### Cooper Lighting—Source

Peachtree City, GA  
[www.cooperlighting.com/education](http://www.cooperlighting.com/education)

- Fundamentals/Lighting Basics: August 21-23; October 9-11; December 4-6.
- Lighting Design & Applications, Interior Spaces: November 6-8.
- Lighting Design & Applications with e-tools: June 12-14; September 4-6; December 9-11.
- New Lighting Technology: September 19-20; December 19-20.
- Residential Lighting: September 13.
- Landscape Lighting Workshop: May 22-24; October 2-4.
- Lighting Design for Exterior Spaces: July 25-26.
- Commercial Lighting: September 12.

#### GE Lighting—GE Lighting Institute

Cleveland, OH  
(800) 255-1200  
[www.gelighting.com/na/institute](http://www.gelighting.com/na/institute)

- Fundamentals of Commercial and Industrial Lighting: May 20-24.
- Lighting Educators: June 26-28.

#### Juno Lighting IdeaLab

Des Plaines, IL  
(847) 827-9880  
[www.junolighting.com](http://www.junolighting.com)

- Residential Product Training: September 5-6.
- Industrial/Commercial Product Training: May 16-17; August 22-23.
- Retail Lighting Seminar: June 27-28.
- Precision Residential Lighting and Application Seminar: June 13-14; October 24-25.

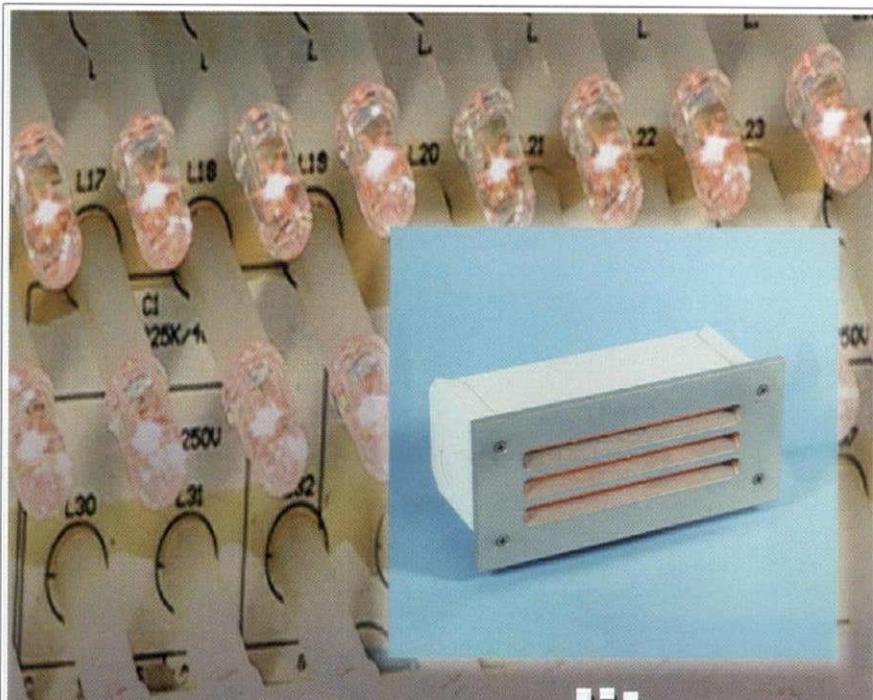
#### Lighting Design Lab

Seattle, WA  
[www.lightingdesignlab.com](http://www.lightingdesignlab.com)

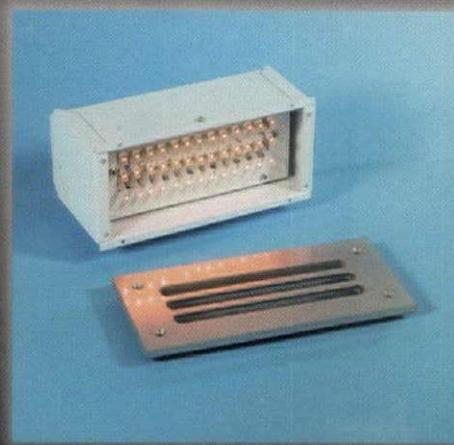
- Retrofits: (Bozeman) May 16; (Portland) May 21; (Eugene) May 22; (Boise) June 12; (Seattle) June 19.

- Lighting Application Workshop—Offices: (Bozeman) May 16; (Portland) May 21; (Eugene) May 22; (Boise) June 12; (Seattle) June 19.

*There are more educational listings on page 20.*



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

\*Light-emitting diodes

# datebook

**Lightolier—The Tech Center**  
Fall River, MA  
(508) 679-8131

**Lithonia Lighting Center**  
Conyers, GA  
(770) 992-9000

**Lutron Lighting Control Institute**  
Allentown, PA  
[www.lutron.com/lutron/lci](http://www.lutron.com/lutron/lci)

- Residential Lighting Control Technology Seminar: September 16-17.
- Commercial Lighting Control Technology Seminar: October 21-22.
- Advanced Residential Lighting Control

Technology Seminar: June 17-18; October 14-15.

- Advanced Commercial Lighting Control Technology Seminar: July 11-12; November 18-19.
- Residential Systems Contractor Training: May 21-24; June 25-28; September 24-27; October 29-November 1; December 3-6.

**Osram Sylvania—LightPoint Institute**

Danvers, MA  
(978) 750-2464  
[www.osramsylvania.com/lighting/educate/lp.htm](http://www.osramsylvania.com/lighting/educate/lp.htm)

**The Philips Lighting Technology Center**

Somerset, NJ  
(732) 563-3000  
[www.lighting.philips.com/nam/education/](http://www.lighting.philips.com/nam/education/)

**Prescolite—Concept Center**

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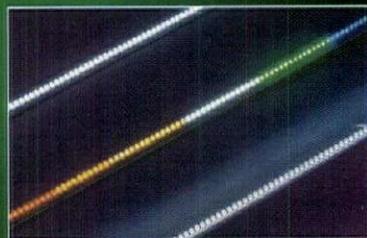
Miniature Based LED Lamps



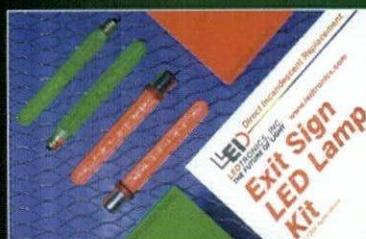
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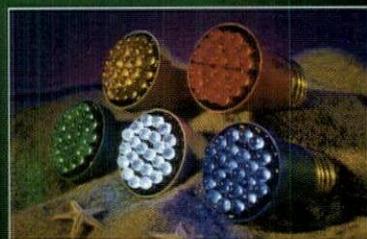
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*Don't miss Seeing, a temporary exhibition to be held June 29, 2002-January 31, 2003 at the Exploratorium in San Francisco's Palace of Fine Arts. Featuring 70 exhibits, which include multi-media and computer technology, the show will explore the phenomena of light and vision as well as social and cultural issues related to seeing. Catch a sneak preview of some of the exhibits during Lightfair and bring a copy of this page for a \$2 discount off adult admission. For more information, phone (415) 561-0363, fax (415) 561-0307 or visit [www.exploratorium.edu](http://www.exploratorium.edu).*

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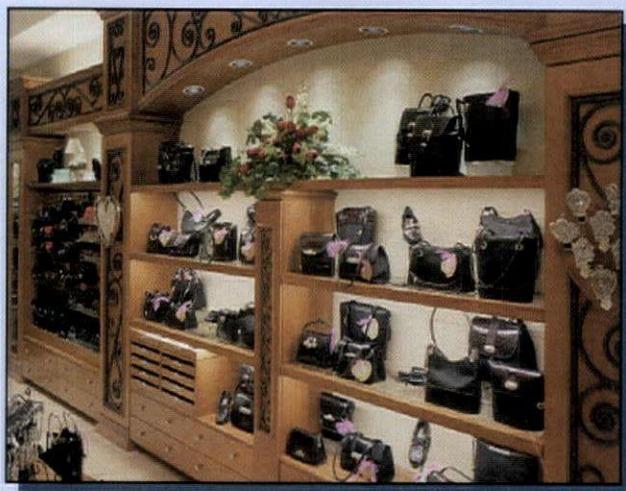
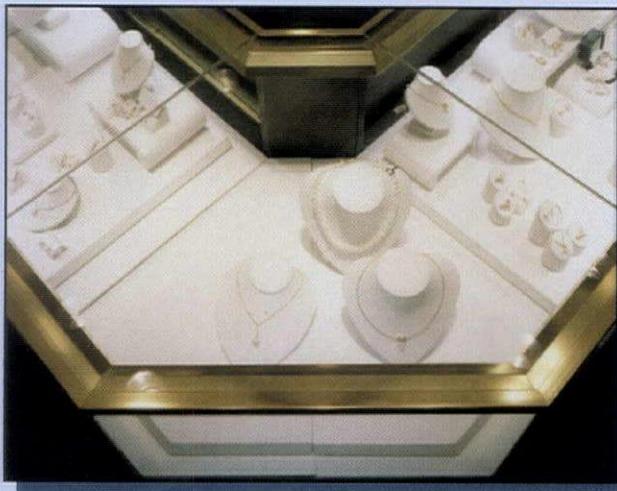
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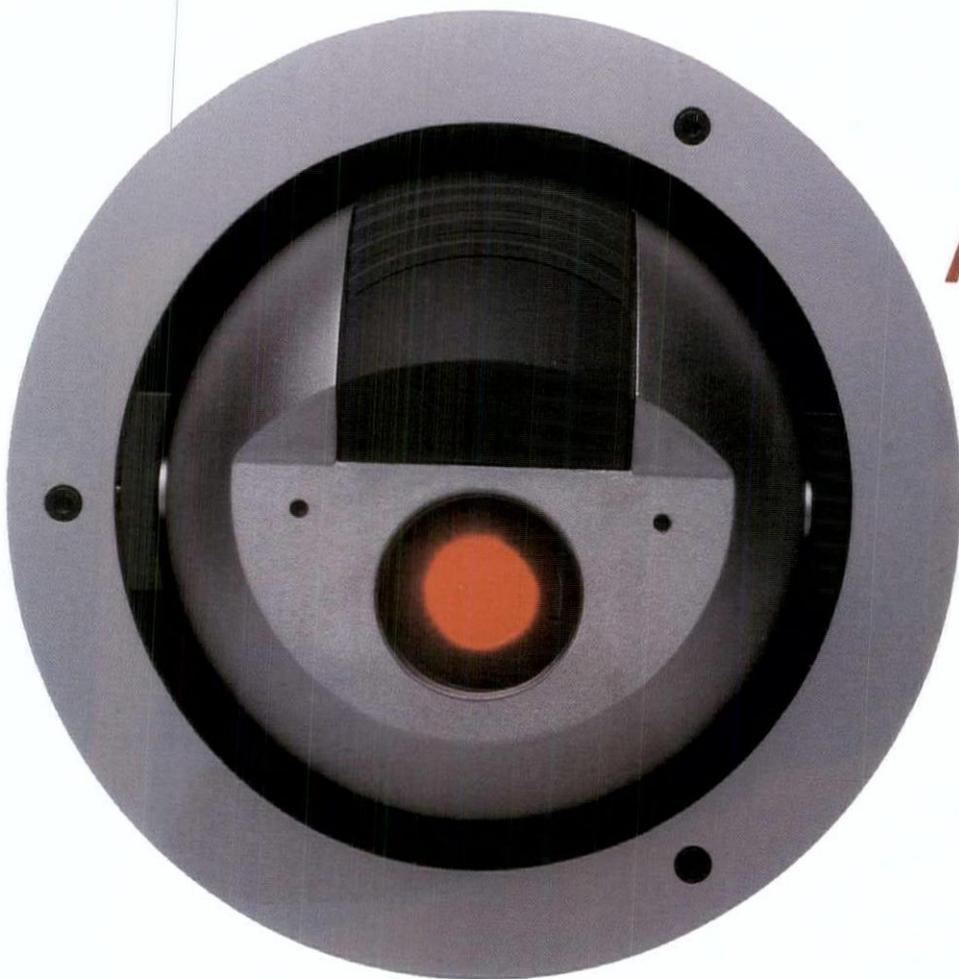
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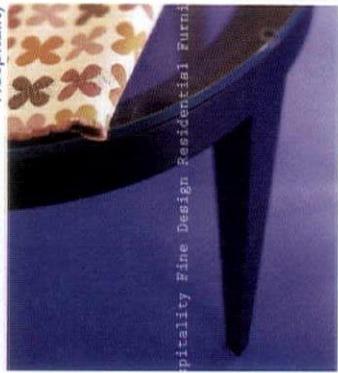
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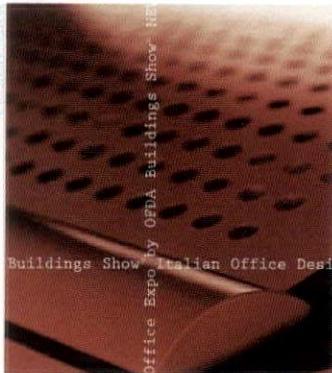
Residential



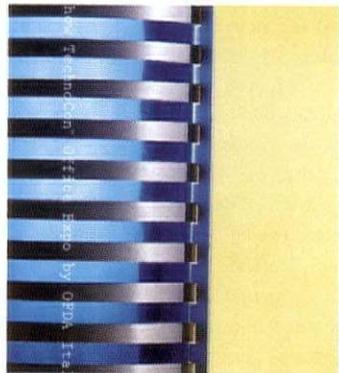
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*This month, Architectural Lighting chats with Suzan Tillotson, IES, IALD. Ms. Tillotson is a principal in the New York City-based firm of Kugler Tillotson Associates, Lighting Design. Her previous experience included project manager for H.M. Brandston & Partners Lighting Design and Flack + Kurtz Consulting Engineers. Ms. Tillotson has been an IES member for 20 years and a past president of the Southwest Louisiana Section. She has received numerous awards for her work and has guest-lectured at several major universities including Cornell. Ms. Tillotson has taught the New York IES introductory lighting course and numerous lighting design and rendering workshops. A graduate of Louisiana State University's School of Architecture, she holds a B.A. degree in interior design.*

—Christina Trauthwein

**Q: Why did you choose lighting design?**

**A:** Growing up, I liked to draw and paint and an artist is always conscious of light and all of its properties, so I just naturally gravitated toward lighting design. I went to architecture school, but there was no lighting program, so I transferred into the interior design program to learn more. Howard Brandston and James Nuckolls both came to Louisiana State University and lectured on lighting design and I was hooked. They were just so inspirational. When I graduated in 1981, there were limited career opportunities because of the slow economy so I went to work for an engineering firm, Levy-Kramer Associates, and did all of the lighting design. I then moved to New York City, which opened up a world of opportunities for me. After working for several firms, Jerry (Kugler) called me. Our design strategies and methodologies were so similar, and we've now been working together for 12 years.

**Q: What early experience had the most impact on you and how you conduct business today?**

**A:** When you're young and you first come out of school, you don't necessarily realize how political everything is and you tend to be incredibly honest and open with everybody. To a fault. The most trouble I ever got into was sharing project information with a contractor. And it came back to me later. You always have to remember your role and the way the chain of communication flows in a project.

**Q: What's the biggest misconception about lighting designers?**

**A:** That we're difficult. And maybe some are. It's really all about egos, which often collide because everyone has a different vision about what a space ought to be. I try to listen and am considerate of others' views. It's really important to our profession that we fight that misconception through education. Bring the architect and client on board with you, capture their interest and attention, even if that means continuously giving them examples and explanations until you can convince them. I'm very stubborn and persistent and I will keep showing them what it is I want them to understand until they come around. And if they don't come around, just be sure they know what they're getting.

**Q: What's the one thing you wish they already knew?**

**A:** If clients could just begin the process knowing what a

powerful tool lighting design is, then you're more than halfway there.

**Q: What inspires you?**

**A:** I am a huge fan of all of the arts. Whether painting, music, sculpture, you name it, there are always ideas from which to draw. I think about the order and hierarchies that exist in nature, land patterns and shapes. And lighting is also so emotional—if it makes you feel good, you've succeeded.

**Q: Best thing to happen in the profession recently?**

**A:** Oh, that's easy for me. Rem Koolhaas. In America, architecture isn't really the revered profession it is in Europe and I think that he's brought architecture into the mainstream. So many people know who he is. He's appealing to a new generation of architects. It's really exciting. They're interested in all of his thoughts and theories, not just his buildings and I think that's great. He's a celebrity and it's good for architecture.



**Q: Best development in technology?**

**A:** I'm most intrigued about LED technology and keep waiting for it to be developed further. Can we get them brighter and to stay bright? Better white color? Also, I'm hoping that the 3M film that's used in the TIR light pipe can become a bright sheet of light that we can use economically for large areas. These technologies are both energy-efficient and I think that more and more we have to be mindful of that.

**Q: What do you find most interesting about your job?**

**A:** We work with so many types of architects and they all have different visions and different talents and because of that, every project is a new challenge. I can use my creative vision and sensibility to transform spaces. Light fascinates me. You have the architecture but you can't see it until you turn on the lights. I think especially if you're a painter or artist you understand that so clearly.

**Q: What do you hate about it?**

**A:** Calling for money.

**Q: In your opinion, who do you think are the most influential designers?**

**A:** Herzog and de Meuron and Rem Koolhaas. I'm also a

(Continued on page 28)



# absolute zero.

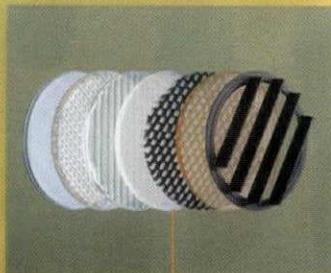
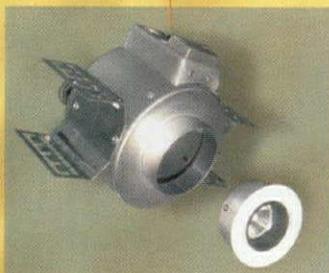
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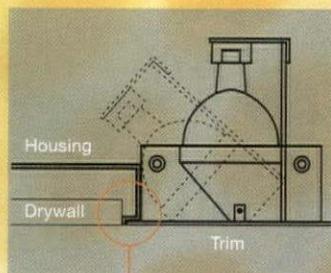
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**LUCIFER**  
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(Continued from page 26)

huge admirer of Edison Price. Let's see, Alvar Alto, Mies van der Rohe, Adolph Loos, Arne Jacobsen. They've all influenced me by bringing the whole process of design to new levels, whether it's philosophical or technical.

**Q: Any examples of architecture that move you?**

**A:** One of my all-time favorites is the Seagram Building. It's an incredible synthesis of architecture and light and it's

fundamentals. It's great to have a vision but you have to bring it to closure and not let it get diluted as value engineering and site coordination issues come up. We're fanatical about that. It's extremely difficult to hold on to the concept throughout the process.

**Q: What design issues do you emphasize to those who work for you?**

**A:** I used to say to be successful you

answer each one of the architect's goals and justify your decisions, then you're okay. But you have to keep evaluating them. And then on the client or end-user side, you go through the basics of the tasks to be performed, light levels required, the maintenance and usage, energy code issues, the image to be projected and the budget. It's very complex and if you forget one, the project can't be successful.

## "It's great to have a vision but you have to bring it to closure and not let it get diluted."

timeless. But there are so many exciting buildings being designed today. I think people are taking a whole new philosophical approach to design: It's not so much about the way things look but the way people interact with the building. Many of today's designers have a very artistic, inspired vision and create a building out of that notion. It might as well be a painting or the inside of a toy.

**Q: What philosophy governs your office?**

**A:** High standards. Attention to the

really must have a strong architectural background but that's not true any more. This sounds like a textbook, but whenever I begin a design, I have a list to constantly refer back to to see if everything's been addressed. On one side of the list are all the architectural issues and on the other side, the client issues. Six and six. The architectural issues are: design intent or vision, spatial hierarchies, materials and construction methodology, daylight integration and stylistic issues. If you're mindful of all these things and can clearly

**Q: What's the job-related object you couldn't live without?**

**A:** I always carry my protractor and scale in my bag. And I can't communicate without a roll of trace.

**Q: The job-related criteria that's a must?**

**A:** Design autonomy.

**Q: Any professional pet peeves?**

**A:** I don't like to be yelled at. I've been known to hang up on rudeness. Courtesy and tolerance are paramount. ■



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# BLUEPRINT SPECIAL

BY ALICE LIAO, SENIOR EDITOR

**THE CHALLENGE** When the town of Addison, TX announced a competition for a traffic rotary landmark design that would celebrate the community's growth and earn the town national recognition, landscape architects Michael Van Valkenburgh Associates and artist Mel Chin teamed up to submit the winning proposal, "The Blueprints at Addison Circle." Their concept, a 120-ft.-wide and 50-ft.-high blue metal structure would serve as the gateway to the new residential area and embrace the town's history and future with its five overlapping art "petals," each imprinted with blueprints rendered in metal of artifacts and buildings familiar to the town's denizens. Stephen Bernstein of Cline Bettridge Bernstein Lighting Design joined the effort when the design team recognized that the massive sculpture required a nighttime identity as well. Said landscape architect Laura Solano, "We believed that the piece could provide one experience by day and a completely different one at night, which would give people reason to return and see it in different conditions." Bernstein's lighting plan not only successfully crafts a dramatic presence for the sculpture after dark but in doing so, also allays concerns about stray light distracting neighboring apartments and motorists.



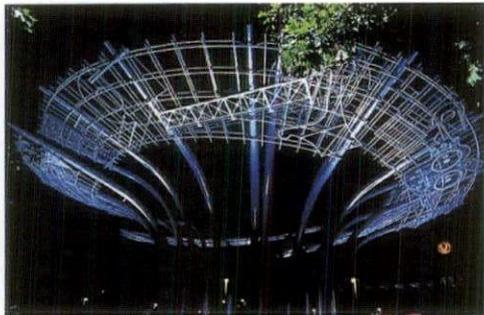
**DESIGN & TECHNICAL CONSIDERATIONS** Although the sculpture is situated on a traffic rotary, the town envisioned opening the entire area to pedestrian traffic on special occasions, complicating Bernstein's charge. An initial scheme of surface-mounted fixtures was discarded. "The architect told us that we really had to put the fixtures underground because the area would be used for different festivals and things might be set up there," said Bernstein. "They wanted to encourage people at certain times to occupy the road and the space under the sculpture." In devising a lighting system that would be buried in a gently sloping landscape, Bernstein worked with the architects and a fixture manufacturer to resolve issues of water drainage and to ensure that the subterranean fixtures would survive if flooding were to occur. "Once we found a fixture that we wanted to use, we collaborated with the manufacturer in adapting it for underground use," said Bernstein, "which meant, among other things, it had to pass UL submersible tests."

Above: Visually anchoring the sculpture are in-ground metal halide PAR20s, which light the back of the massive columns. Below: A ring of 1000W metal halide lamps in custom housings uplights the "petals."

**METHOD** To arrive at an appropriate lighting solution, the designers experimented with different approaches on a wood model of the sculpture. For accuracy, Bernstein recommended that the light wood be painted blue. "The perception of the sculpture, how it took light and its heft would appear very different in blue," he said. "Painting the model was helpful in the process of understanding how we should light the sculpture and how much light was appropriate."

Test runs with the model also enabled Bernstein to fully appreciate the scale of the sculpture, leading him to conclude that the gigantic structure required some visual anchoring. "Because of the size of the panels at the top, the columns that support them needed to be exceptionally large," said Bernstein. "We wanted to light these tree trunks in a way so that the sculpture wouldn't appear completely disembodied and would have a beginning and an end." Consequently, the lighting design calls for a series of metal halide PAR20s to be recessed in the ground behind each column. The fixtures splash light on the back of the columns at eye level to secure the sculpture firmly in the landscape.

Above, the arching petals and their blueprints of Addison's heritage come alive with the light of 1000W metal halide lamps in custom housings distributed around the base of the sculpture. Fully recessed in the ground, the housings are equipped with louvers to baffle the light and to allow pedestrians to safely walk over them. "With the fixture recessed in the ground, we also were able to use the sides of the housing to help shield and direct the light so that it only illuminates the petals of the sculpture," said Bernstein. The specific cutoff created eliminates stray light distracting motorists and neighboring residences. "The holder that we designed also served as a shield, which prevents residents from looking down into the fixtures from the apartments surrounding the circle, which was a big concern," said Bernstein. "It all worked out very nicely and the community is thrilled with the end result."



## DETAILS

### PROJECT

Blueprints at Addison Circle

### LOCATION

Addison, TX

### OWNER

Town of Addison, TX

### LANDSCAPE ARCHITECT

Michael Van Valkenburgh Associates, Inc.

### ARTIST

Mel Chin

### LIGHTING DESIGNER

Cline Bettridge Bernstein Lighting Design—Stephen Bernstein, IALD

### STRUCTURAL ENGINEER

LeMessurier Consultants

### ELECTRICAL ENGINEER

R. G. Vanderweil Engineers, Inc.

### CONTRACTOR

Westerchil Construction Co.

### SCULPTURE

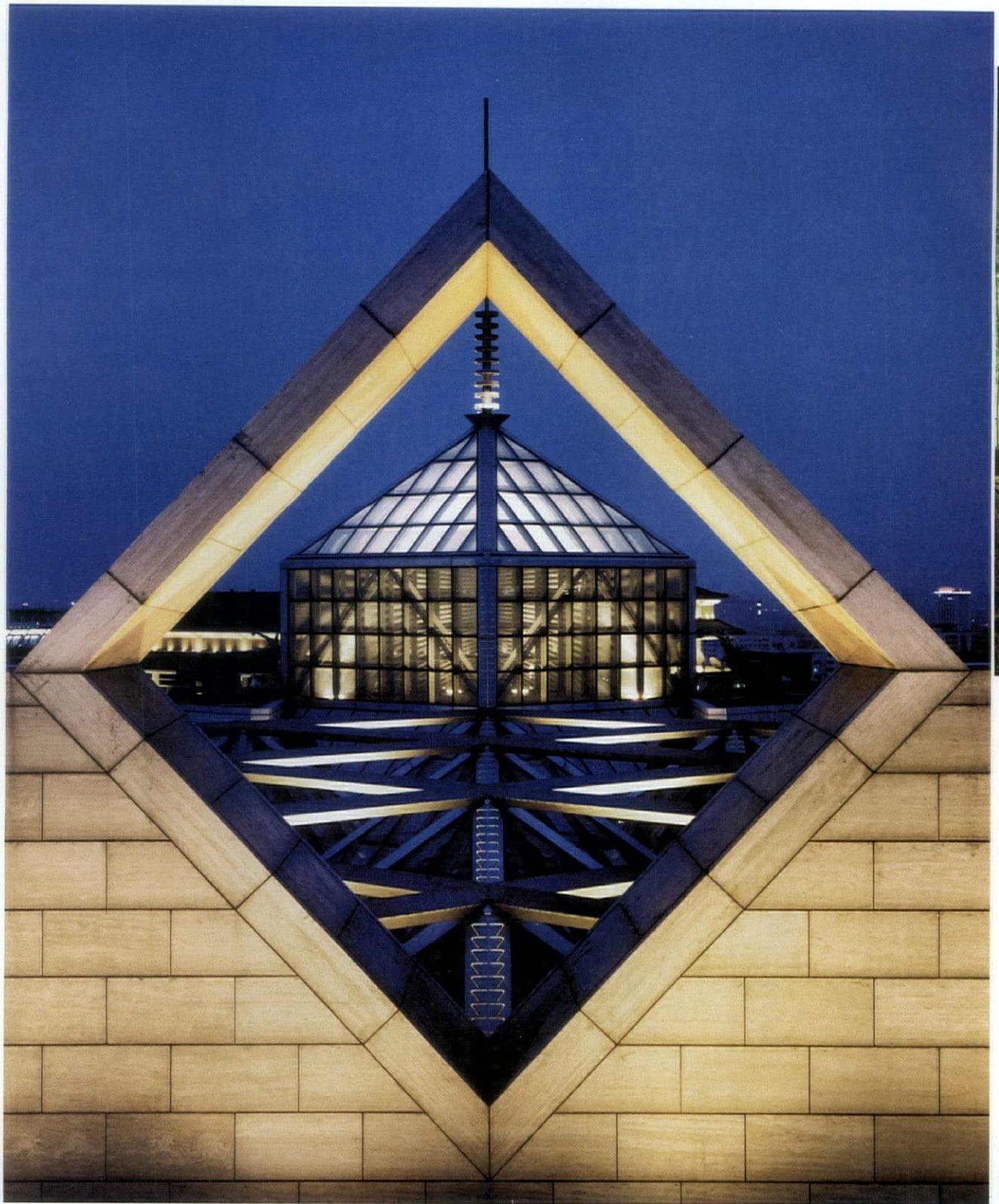
FABRICATION  
Big D Metalworks

### PHOTOGRAPHER

James Knowles

### LIGHTING

MANUFACTURERS  
Stern; Greenlee; Venture; Philips



# Bank Statement

Although the effort was international, this bank headquarters has created a source of national pride

**O**n March 11, two beams of light temporarily joined the New York City skyline—a silent, yet symbolic reminder of the terrorist attacks on the World Trade Center six months earlier and a declaration of New York City's strength and unparalleled perseverance. The seemingly endless columns, depicted here in a rendering of the final project, were designed to invoke the look of the demolished towers and to be seen from about 20 miles away—an experience best viewed from a distance, to be shared by all those in the Metropolitan area as a community. And moreover, the skyward columns of light perhaps could be thought of as a large-scale version of the many candlelight vigils held to transcend the tragedy. It was intended that the tribute lend a sense of peace and order to help forestall the chaos of this experience.

The beacons, known as The Tribute in Light, appeared nightly from dusk to 11 pm through April 13. Two banks of 5000K, 7000W xenon spotlights generated the beams. Each 50-ft.-square grouping contained 44 fixtures configured to produce the greatest light density and was positioned adjacent to Ground Zero so as not to disrupt the ongoing damage assessment, debris removal and reconstruction efforts at the site. The well-defined, directed beams of light rose from vacant Lot 26 and projected about a mile into the night sky, forming almost ghost-like silhouettes of the felled towers.

Lighting designer Paul Marantz, FIALD, commissioned to execute The Tribute in Light, said in a press conference prior to the unveiling, "In our culture, the idea of light equals life, love and regeneration and is

of great poetic value to us. What we may eventually build as a physical and permanent memorial may take time to contemplate, but light is a wonderful temporary solution. The spiritual nature of light—pointing toward loss and a symbol of hope as well—is a dual interpretation that will hopefully resonate in people."

Light is so universally embraced as inspirational, and this project was truly about light itself in the absence of architecture. Whether it did inspire or just consoled, the Tribute served to commemorate the lives of those lost in the tragedy. "Our hope is that The Tribute in Light Memorial provides a small amount of respite...and that it expresses the power of art to heal and serve as a symbol of the spirit and courage of America and the resilience of New York City," said Mayor Michael Bloomberg, days before the ceremony to switch on the lights.

The Tribute in Light Memorial was made possible through the generous support of The General Electric Company, Deutsche Bank, AOL/Time Warner and Con Edison, among others. The creative team for the project consisted of architects John Bennett and Gustavo Bonevardi, artists Paul Myoda and Julian Laverdiere, lighting designer Paul Marantz, FIALD and architect Richard Nash Gould, and was organized by the Municipal Art Society of New York with artistic support from Creative Time, both of which are nonprofit cultural institutions. All lamps were supplied by General Electric and fixtures by Space Cannon, whose fixtures had most recently been used at the Winter Olympics in Salt Lake City.

—Christina Trauthwein

Photo: Charles Nesbit. © The Municipal Art Society





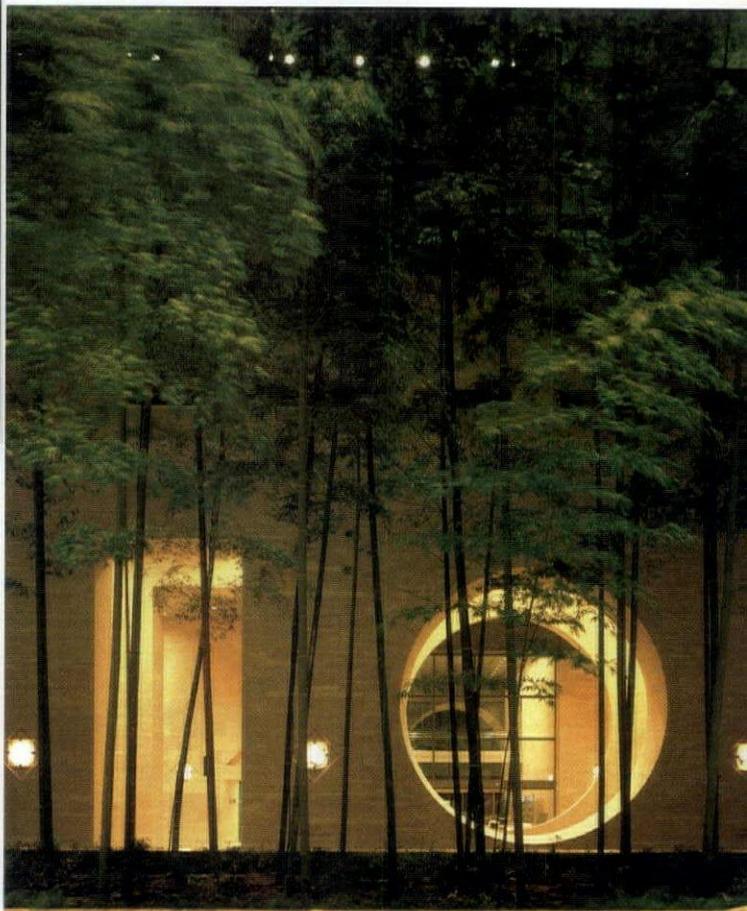
Opposite: The top chord of the skylight truss and the entry pavilion are illuminated from below to impart a dramatic presence to the building after dark.

Left & below: Lower light levels in the atrium than initially planned lend prominence to the key features of the space and add richness by enabling a layered lighting effect to be created. Bathed in a warm glow, the back travertine wall presiding over the banking area and a large chandelier serve as a focal point for the atrium. In front, bamboo illuminated by halogen light surround a reflecting pool containing underwater fixtures that splash light onto a composition of stones.

BY ALICE LIAO, SENIOR EDITOR

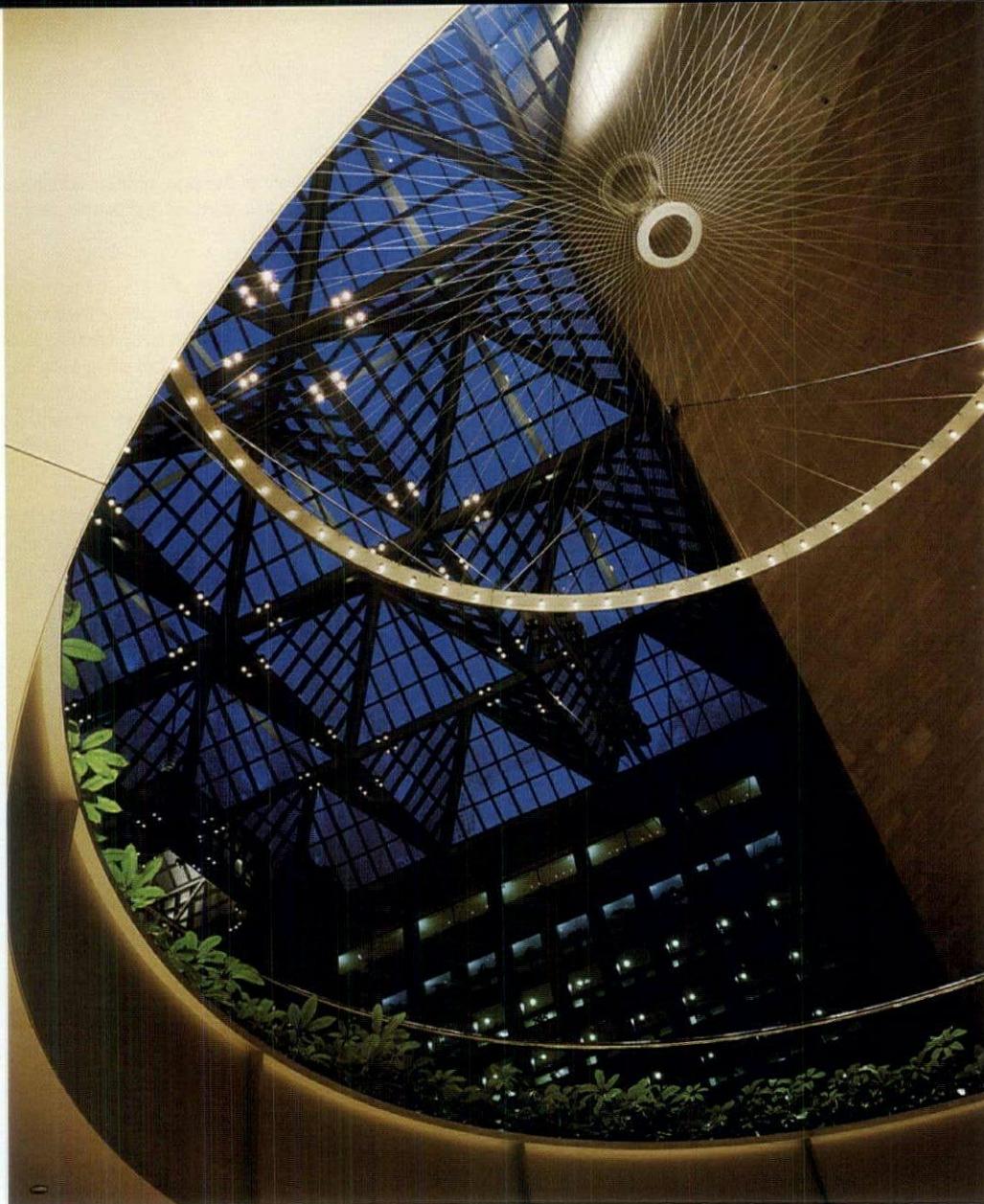
**E**ven for those of us who are Chinese and who embrace the 5,000 years of culture and history that is our proud legacy, those three words found imprinted on the little gold labels at the bottom of so many of our knickknacks can still summon up doubts about quality and workmanship. Well, the world is changing—has been for some time now—and while developments in architecture may or may not be an indicator of trends to come or of trends in motion, one of Beijing's latest additions to its rapidly modernizing cityscape should certainly help dispel the lurking myth about things "Made in China." Designed by the Pei Partnership and lighted by Jerry Kugler of Kugler Tillotson Lighting Design, the new Bank of China Head Office, which opened its doors last year, not only raises the bar with its technical execution and high-tech capabilities, but in a city known historically for its walls, pushes the boundaries of architectural expression with a design that invites and welcomes bank patrons and employees as well as the community at large.

On par with the Bank's mission to become a financial powerhouse in the international arena, the building exudes a mix of strength, urban polish and openness, a reflection of the importance of technology and people in the Bank's quest for success. Although limited by city ordinances to a height of 150 ft., it impacts with its size, measuring 1.88 million sq. ft. and occupying a full block in Beijing, the rough equivalent of four New York City blocks. Yet despite the daunting dimensions, the structure beckons with its warm, travertine-clad exteriors and generous expanses of glass, allowing passersby a view inside. Formed of two L-shaped wings wrapped around a



30,000-sq.-ft. atrium, the architecture is firmly rooted in China, resembling in plan a traditional *siheyuan*, a courtyard house still found throughout the country, and resonating with thematic references to the country's rich culture. Speaking to the Chinese love of nature, the atrium features a traditional garden of 50-ft.-tall bamboo and stones steeped in a reflecting pool.

In devising an appropriate lighting solution, Kugler had to contend with the problems of working overseas. "Although the one commodity that is readily available in China is manpower, the workers may or may not be as skilled, because they don't have the experience," he said. "Consequently, one of the concerns we had to factor in from the beginning dealt with what we could or could not do. Could we achieve the desired effects if we used local fixtures and lots of manpower? Or did we need to find our fixtures elsewhere and could they be installed regardless of how much manpower was available?" Ultimately, the design team, unwilling to compromise in quality, opted to import much of the lighting equipment, a



decision that Chien Chung Pei describes as one of “shooting ourselves in the foot.” “You already have a lot of trouble installing this equipment in this country,” he said. “Now try to do it over there.” For assistance, a team from Hong Kong was brought in and with some guidance from Kugler, was able to ensure proper installation. Said Kugler, “Nobody on the team was willing to accept second-rate.”

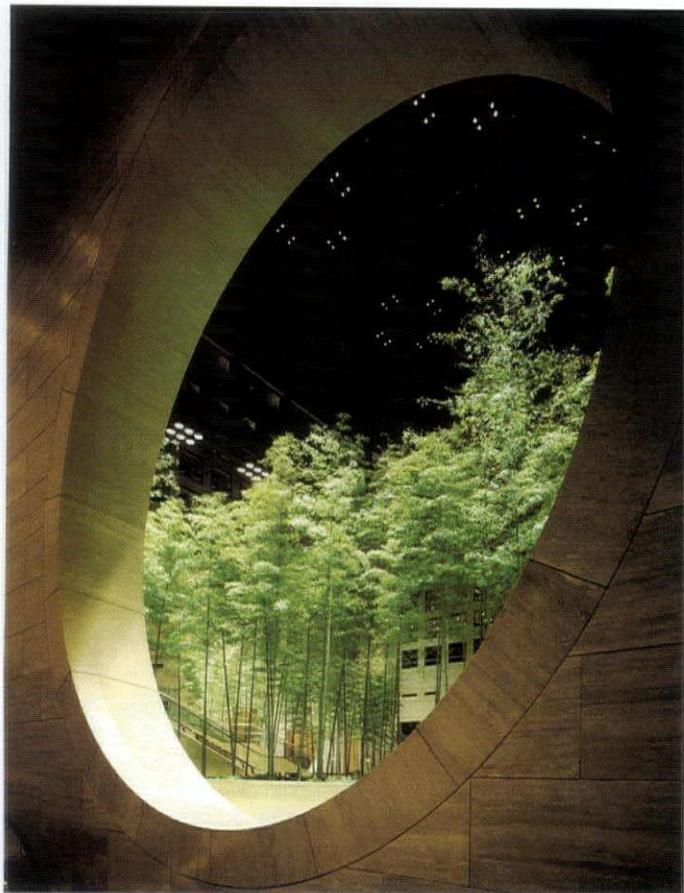
### SELF REVELATION

While Kugler’s lighting design encompasses the executive floors, major circulation zones and a 2,000-seat subterranean auditorium, where it truly impresses is in the public spaces on the ground floor. Here, instead of signage, it serves as a visual guide, drawing visitors into the building and its core spaces by establishing with varying light levels a hierarchy of architectural planes—an idea launched early on. “From the beginning, we discussed the idea of looking through the outer envelope of the building into the volume of the atrium, so that one is drawn through the diagonal axis of the space to the travertine back wall,” said Kugler. The movement toward the back wall seems fitting, as the facade overlooks the two banking halls located directly below on the ground and basement levels. Added Kugler, “That was not a concept that originated with me, but one that Mr. (I.M.) Pei clearly stated at

the outset. Mr. Pei understands light and lighting better than many architects.”

To lend prominence to the atrium and banking halls, the travertine-clad walls, which glow during the day, are allowed to fade into shadow at nightfall. Electing to keep light levels low on the exterior of the building, however, bucked conventional lighting practice in Beijing, which according to Chien Chung Pei, tends to “blast light on the outside of buildings.” Kugler concurred, adding, “There’s a public attitude toward exterior lighting which is associated with prominence. It’s the idea that if it’s important, then it has to be brighter than everything else.”

Instead, the building reveals itself through a 195-ft.-high glass curtainwall that marks the executive entrance and is on axis with the inner travertine wall that demarcates the two banking halls. Fronted by a 30-ft.-diameter glass dome, the entrance is given emphasis by a series of low-voltage halogen fixtures mounted along a ring beam at the bottom of dome, which uplifts the curved ceiling. Immediately inside the building, additional low-voltage fixtures in vertical troughs that are discreetly carved into the side walls crosslight and bathe the large planes in an even wash of light. According to Kugler, locating the fixtures under the bridges would have produced shadows and achieved only partial illumination of the walls.



Opposite: The 30-ft.-diameter chandelier is spoked like a wheel and contains MR16 lamps to illuminate the plants below. Its cables and rim glisten and glimmer with the 16 PAR64 halogen fixtures that are mounted above.

Left: Moon gates visually connect the atrium with the adjacent spaces and produce an appearance of layers of light.

## THINKING OUTSIDE THE BOX

For ambient light in the atrium, the lighting solution mounts quads of PAR56 downlights on trusses that form the skeleton of the skylight above. To preserve a clear view of the 165-sq.-ft. glass expanse, a key feature of the space, Kugler took special care in restricting the fixtures to discreet groupings that, when seen from a 150-ft. distance, almost seem to disappear in the trusswork. "Years ago, I.M. Pei described random tracklights as 'birds on a wire,' which stuck in my mind," said Kugler. "We didn't want to have too many objects silhouetted against the skylight, which would defy the orthogonal organizational grid of this building."

An initial concept supplemented the downlighting by directly illuminating the atrium's perimeter walls. However, with sufficient light reflecting off the floor, the design team decided to punch up light levels in the interstitial space that connects to the atrium and is visible via a pair of "moon gates." Acting as windows, the circular cutouts visually tie the atrium to its neighboring spaces and convey a sense of depth through the layers of light. "Although the light levels on the perimeter walls are slightly lower than originally conceived, everyone from the design side is pleased about the layering effect that eventually superseded simply reinforcing the interior envelope of the atrium," said Kugler. "The contrasts in brightness lead one's eye out of the atrium onto the building's other axes where additional entries are situated." As day moves into night, a reversal of light and shadow occurs, transforming the bright, sunlit atrium into a dusky stage for the main attractions of the space, the Chinese garden and a gigantic chandelier suspended over an oculus in the floor.

At night, the bamboo shimmer with dappled light from halogen uplights buried in the ground cover. They form a diaphanous curtain that surrounds the 15-in.-deep reflecting

pool in which seven groups of stones are composed to evoke a feeling of balance and harmony. Transported over 1,800 miles from Yunnan Province, the stones individually weigh five to 10 tons and are uplighted by halogen fixtures located underwater at their bases. To ensure the health of the bamboo, horticultural experts from both the U.S. and China were consulted on appropriate lighting conditions—with conflicting recommendations. "The acknowledged expert in Florida recommended 300 fc of light and HPS lamps," said Kugler. "But Dr. Tsao in China was concerned that we would kill the bamboo with so much light and suggested lower levels. In the end, we struck a middle ground." Metal halide fixtures on a suspended truss supply "gro-lite" to the trees in addition to enhancing their natural drama. Both Kugler and Pei are quick to point out, however, that the trees were planted in the space a year before any lighting was installed and still managed to survive.

Spoked like a wheel and inspired by the ever-present bicycles that remain a popular mode of transportation in the city, the 30-ft.-diameter chandelier is suspended over a light well that visually connects the upper and lower banking halls. MR16s on the underside of the fixture light the greenery surrounding the light well, while from above, 16 PAR64 downlights direct light down through the cables and into the lower banking hall. Commented Kugler, "One important function of the 16,000 watts of light was to make the cables glisten and the rim of the fixture glow: that's why the object shimmers." The fixtures are typically turned on in the evenings and on overcast days, but, as Kugler noted, "Beijing has a higher percentage of overcast days than New York, so they're often kept on just to overcome all the grayness."

Other highlights of the lighting design include a series of glowing alabaster disks that punctuate the atrium walls and reiterate a motif commonly found in Chinese art, which places a circle inside a rotated square. The disks are mounted flush with the wall surface and are lighted by halogen lamps contained in bowls carved into the travertine stone. Above, to create the impression of the building continuing beyond the skylight, the top chord of the skylight trusses is lighted by lamps concealed in the bottom chord of trusses. For maintenance, the interior fixtures mounted on the trusses are accessed by gondolas that extend from the wall. ■

## DETAILS

**PROJECT** Bank of China Head Office **LOCATION** Beijing, China **ARCHITECT** Pei Partnership Architects—Chien Chung Pei, Ralph Heisel, Gerald Szeto **LIGHTING DESIGNER** Kugler Tillotson Associates, Inc.—Jerry Kugler, Alistair Wandesforde-Smith **PHOTOGRAPHER** Kiyohiko Higashide; Kerun Ip **LIGHTING MANUFACTURERS** Erco; Lutron; Widelite; Lighting Services Inc; Hydrel; Bega; William Artists (custom fixtures)

# Monumental Endeavor

After many years and much debate, this Midwest icon gives new meaning to the term “night vision”

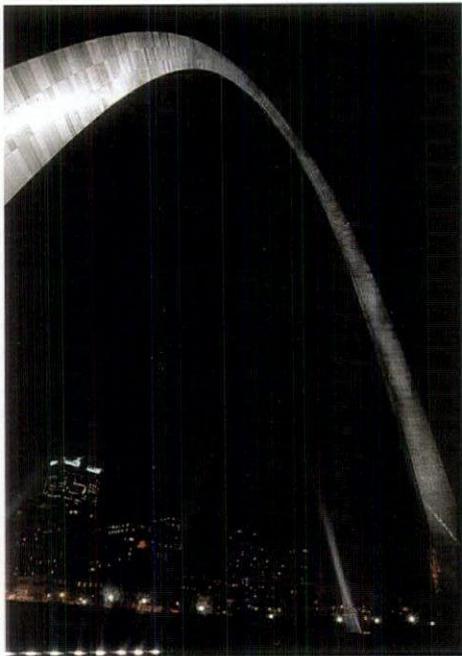
BY CHRISTINA TRAUTHWEIN, EDITOR-IN-CHIEF

**S**tanding 630 ft. high, Eero Saarinen’s Jefferson National Expansion Memorial Gateway Arch, named for President Thomas Jefferson, has always received notice as a significant architectural icon for St. Louis, MO. And now, as this structural celebration of America’s 19th-century westward expansion is illuminated for the first time in its 35-year history, the great architect’s vision *commands* attention. The lighting design that reveals the stainless-steel monument relies on a system that is virtually invisible by day, as required by the National Park Service, yet dramatically—and respectfully—brings the famous structure, and the surrounding downtown area, to life at night. And while the actual design seems to be perfectly executed and rather simple in approach, the project, which included over three years of mockups and computer analysis, presented more than a few challenges for lighting design firm Randy Burkett Lighting Design, Inc.

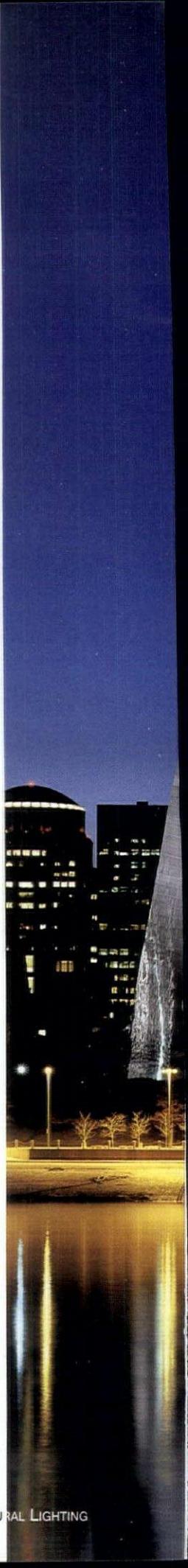
In devising an appropriate lighting solution, the design team had to remain mindful of issues specific to this application, ones that are not typical of many lighting projects, proving that the job required more than just technical deftness. It also begged a responsive and sensitive design. In addition to the technical challenges—such as ensuring the absence of reflected glare to surrounding highways—archeological concerns, bureaucratic hurdles, resistance from site historians and complications of migratory waterfowl underscored the project as an extraordinary undertaking...and anything but a simple task.

“The Gateway Foundation, an organization that funds civic projects in the St. Louis area, came to us and asked if the Arch could be lighted,” said Randy Burkett, FIALD. “It just so happens that during interviews with remaining members of the original architectural design

team, it was discovered that there was an initial desire to illuminate the Arch but no one was really sure it could be done.” Burkett explained further, “Throughout its history, more than a dozen designs had been proposed for lighting the monument, and after the complete failure of several mockup attempts, the idea was abandoned. So, the first questions became *can* it be done and if so, can *you* do it?”



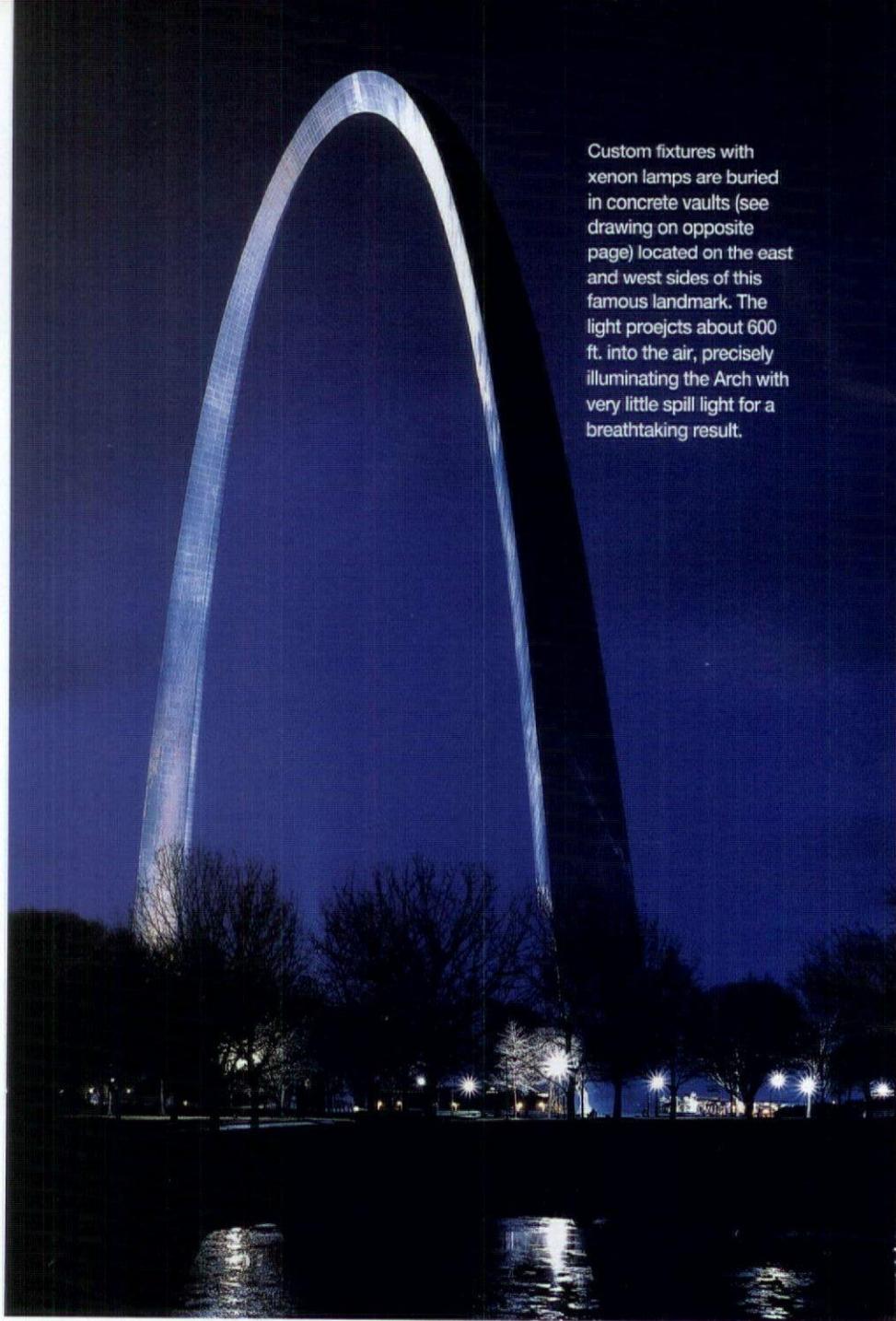
Photos: © Debbie Franke Photography





According to Burkett, there were three primary issues that answered why it hadn't been lighted prior to now. First, the technology was not available at the time of its initial construction in 1965 to light a structure of this size and have the beam control required—the equipment of the day just simply could not accomplish the job. Furthermore, its slim, catenary shape and the specular nature of its skin made reflection and the resulting glare an obstacle for illumination. “The surface has matured over time and it has become seasoned,” said Burkett, “so it takes light a little more graciously. It’s more forgiving, almost as a human face becomes when it wrinkles with time.”

And last, but certainly not least, was the issue of having to work through all of the requirements of the National Park Service and federal government, while contending with some architectural groups that, quite simply, did not want to see it lighted. “There was strong sentiment among these people that if it stood unlighted for 35 years, maybe we should just leave it alone,” said Burkett. In essence, the unlighted structure acts as a large reflector of downtown activity during daylight hours and at night, quietly stands in silhouette against the skyline. “It’s interesting to note,” said Burkett, “that the final design appeals to those on both sides of the argument—to light or not to light—as its illumination is limited to about three to four hours per night, then turned off.”



Custom fixtures with xenon lamps are buried in concrete vaults (see drawing on opposite page) located on the east and west sides of this famous landmark. The light projects about 600 ft. into the air, precisely illuminating the Arch with very little spill light for a breathtaking result.

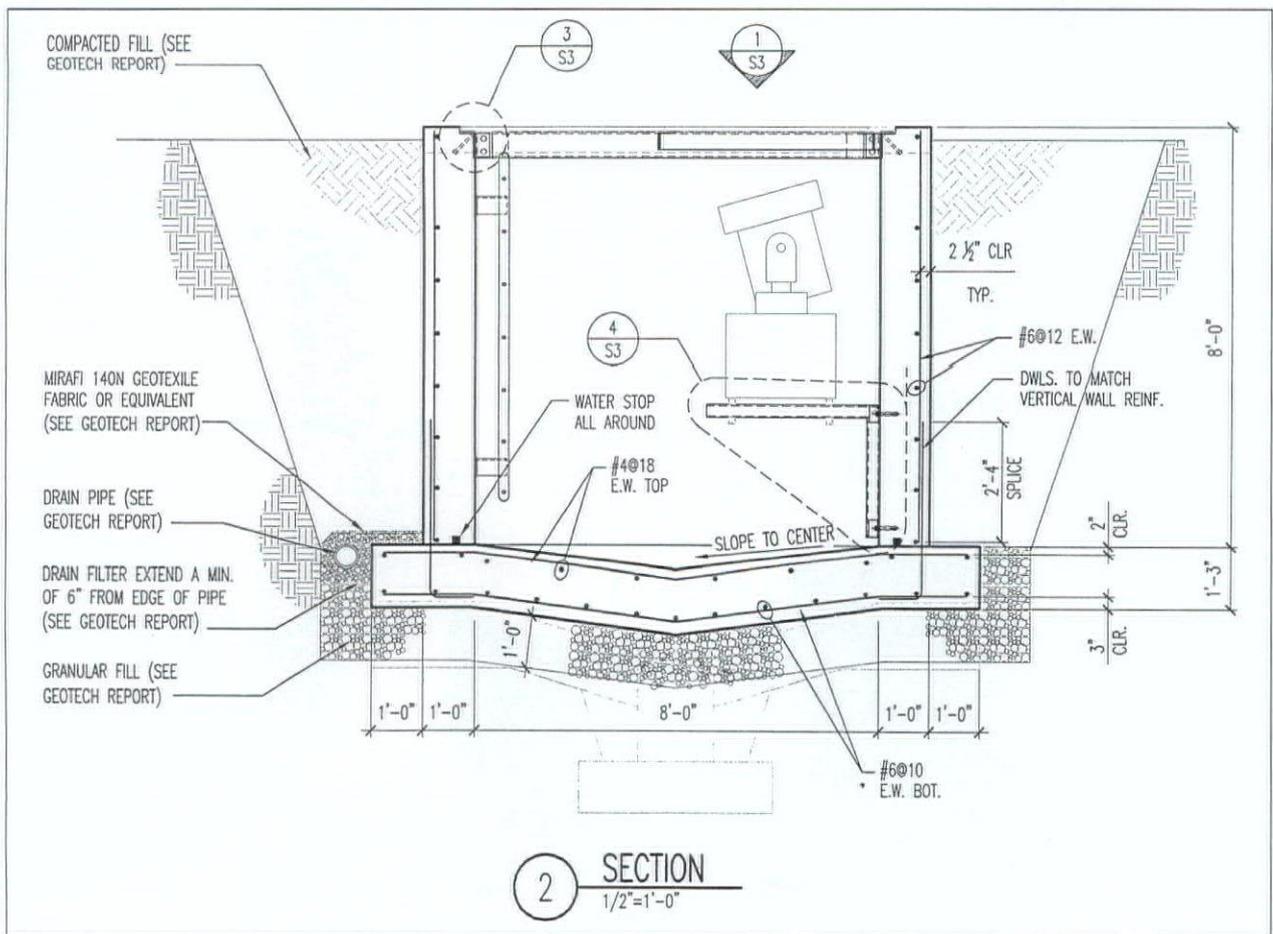
## FOR THE BIRDS

These challenges aside, there was yet another potential issue to address—and another group: the Audubon Society. “The Mississippi River is a major migratory corridor for waterfowl,” Burkett explained. “The Audubon Society and federal agencies required solutions to protect nighttime migrating birds from disorientation—which is particularly acute with fog or a low cloud ceiling—that might result in injury or death during bad weather.”

Burkett was determined to face the challenges and devise a successful solution. After a few weeks of discussion that ultimately convinced the Foundation and various government agencies it could be done, the long process began. “One of the most vivid recollections of this project is the first day we went to the National Park Service to discuss the concept of lighting the Arch,” said Burkett. “We were greeted with a healthy dose of skepticism, an outgrowth of years of having listened to ‘snake-oil salesmen’ pitch the perfect solution of

manufacturers seeking to sell floodlights on a high-profile project. Over the next couple of years, we gradually earned the confidence of the National Park’s team and as we closed in our final installation, they became the project’s most enthusiastic supporters. And that, to me, is one of the most satisfying aspects of this project.”

The design team realized the project’s goals with a clear solution: A computer-controlled lighting system utilizing 3000W short-arc xenon lamps and a laser-detecting ceilometer (used frequently at airports) that was modified to monitor a specific range of atmospheric conditions. When heavy fog or low clouds are detected, the lights are extinguished by the central computer control to minimize excessive sky glow or light pollution. “Up until now, it’s only happened three times,” said Burkett. “But there will be a total of four weeks per year—two in spring, two in late fall—when they will be turned off every night since that’s the heaviest migratory phase.”



## ASSUMING POSITION

During the three-year design process, full-scale mockups were conducted to idealize equipment positions. Several hundred views to the Arch were investigated by the team, roving up to 25 miles away. Over 200 hours of video was shot to later study the various strengths and weaknesses of each scheme in greater detail.

"Technically, we had to reach heights of 600 ft. with light fixtures mounted on the ground," said Burkett, "and there are only a few sources capable of giving us the amount of output and control we needed with very little spill light." There are 44 custom-designed fixtures mounted within four 8-x-10-x-55-ft. subterranean concrete vaults. "The excavation of the chambers required detailed archaeological reviews in the dig zones to assure that buried artifacts went undisturbed or when necessary, were relocated," said Burkett. "Previous Native American cultures and early city settlements were of principal concern."

Located on the east and west sides of the Arch, 115 ft. from the legs, each vault is covered with a high-strength, lightweight alloy, high-transmission grating. Above each fixture, an independently adjustable circular grating section permits variable orientation to maximize optical efficiency. Each fixture employs a computer-addressable and adjustable reflector system permitting precise columnar beamshaping (up to 30,000,000 center beam candlepower) and a mechanical dowser to effectively fine-tune intensity. Four special lens types are used to manipulate the beam—to elongate and soften distributions to match the curvature and height of the Arch—and minimize spill

light. On-board diagnostic chips report constant status to a centralized computer control.

## NO ARCH ENEMIES

"There were a lot of skeptical folks initially, particularly because of the failures in the past," said Burkett, "but the project really has become a critical success and the public sentiment is positive. It's elevated civic pride in downtown St. Louis and has helped to draw people back to the riverfront at night," said Burkett. "This is especially significant for a second-tier city like St. Louis, which always faces the challenge of keeping people within its border for entertainment and activity." In fact, one of the best testimonials Burkett received was from his client, the Gateway Foundation: "They've received about 150 pieces of correspondence and more than 140 were downright positive," said Burkett. "And the few that weren't only complained that it wasn't lighted longer each night." ■

### DETAILS

**PROJECT** Jefferson National Expansion Memorial Gateway Arch **LOCATION** St. Louis, MO **ARCHITECT** Eero Saarinen **LIGHTING DESIGNER** Randy Burkett Lighting Design, Inc.—Randy Burkett, FIALD, Susan Jennings, Ronald Kurtz, IALD **ENGINEERS** EDM Engineers **GENERAL CONTRACTOR** McGrath **ELECTRICAL CONTRACTOR** Kaiser Electric **PHOTOGRAPHER** Debbie Franke Photography, Inc.—Debbie Franke **LIGHTING MANUFACTURERS** Syncrolite; Vaisala; Ushio



# Media Savvy

Although the look is young and hip, the lighting of this Manhattan office blends style with good old comfort

BY JEAN NAYAR, CONTRIBUTING EDITOR

**M**aybe it's because new media types are a breed apart. Or maybe it's because most of the staff members are young. Whatever the reason, when the management of Condé Net, a digital media firm, asked New York-based lighting designer Susan Brady for an unconventional lighting scheme for their new offices, she took their request at face value—or rather almost at face value.

"Sometimes when people tell you what they want, you wonder if what they think they want is what they *really* want," said Brady, reflecting on the unusual call from the Condé Net team for cool lighting in their office space. The company is the digital media arm of Condé Nast, publisher of *Vogue*, *House & Garden*, *Allure* and numerous other fashion and lifestyle magazines. When Condé Nast recently moved its headquarters from Manhattan's Madison Avenue to Times Square, Condé Net moved into new offices nearby to be closer to its old media counterpart. According to Brady, Mancini•Duffy, the architects for the project, wanted to take advantage of the client's unconventional work approach and enlisted Brady's firm, Susan Brady Lighting Design, to produce a lighting scheme that would both play off and add to the ultra-modern work space they created for the digital media group.



Elevators open onto this corridor, which leads to the reception area in one direction and to a conference room in the other. A group of four exposed industrial 32W T8 fluorescent chrome channels mounted vertically on the wall marks the entrance to the conference room and establishes an industrial identity that prevails throughout the space. Blue-gelled fluorescents uplight the exposed ceiling reinforcing the cool light the clients requested.

Opposite: Gel-covered T8 fluorescents emanate blue light from above a sweeping suspended soffit toward an exposed ceiling in the reception area of Condé Net, the digital media arm of magazine publisher Condé Nast. Recessed in the soffit, 2-, 3- or 4-ft.-diameter circular acrylic fluorescent domes bring warmer diffused ambient light into the space and add to the pop-retro flavor of the entire office.

Right: In the office area, bands of diffuse blue light emanate above suspended soffits and supply subdued ambient light. Low-brightness aluminum louver fixtures containing triphosphor fluorescents—color-corrected to 4100K—provide neutral-colored light. The lighting designers used direct fluorescent fixtures to temper the feeling of excess brightness that indirect fixtures would have provided. Each desk also contains a standard task lamp. Rows of industrial pendant fixtures holding pairs of adjustable 50W PAR20s highlight circulation areas, demarcate filing areas and animate the workspaces with warmer light.





Left: In the cafeteria, the blue light that serves as a connecting visual theme throughout the facility, emanates toward the ceiling from above a partial dropped ceiling element over the banquette. Behind the banquette, fluorescents recessed in a dropped pocket topped with a diffuser fill the space with diffused, indirect ambient light. Pendants from the same family that appear in the reception area are fitted with 60W A-lamps and bring sparkle and warmth to the brushed metal countertop.

Below: In the conference room, an architectural cove defines the central floating ceiling element above the table and provides ambient illumination. Reinforcing the theme of circular lighting details, recessed 38W 2D, indirect fluorescent units are combined with rectangular MR16 halogen downlights in the center and single MR16s around the perimeter.



"This group tends to be young, hip, less serious and not as buttoned-up as your average corporate firm," said Brady. "When we surveyed their existing conditions and spoke to the people running the group, we found that so many of the employees turned the overhead lights off and worked in the dark or brought in table lamps. In response to these conditions, they wanted cool, daylight color-temperature light in their new space, which is something people just don't ask for." Taking this off-beat request into account and considering the fact that graphic and media types often prefer to turn the lights off while working on their computers, Brady devised a lighting design that incorporates sleek swaths of "cool" blue light along with a blend of various other types of illumination that make good old-fashioned common sense, even in the hippest of office spaces.

## LIGHT OF DAY

"The request for daylight color concerned me—I didn't want them to feel like they were working on the inside of a refrigerator," said Brady. "So, instead, I introduced a blue band of illumination hidden in coves and soffits that wraps around the space and establishes a common design thread throughout the floor. In the work areas, I brought in light that's warmer and more comfortable to work in—and together, the two types of light create an interesting juxtaposition."

In the reception area, two lamp channels with gel-covered T8 fluorescents emanate blue light toward an exposed ceiling from above a sweeping, suspended soffit. Recessed in the soffit, 2-, 3- and 4-ft.-diameter opal fluorescent dome fixtures provide warmer ambient light into the space. The circular dome—a popular element in the 1970s—is another design element that recurs throughout the space to reinforce the pop-retro flavor. Industrial-style pendants, in keeping with the loft-like ambience of the offices, are fitted with a 60W A-lamp to bring warm incandescent light to the reception desk and add a touch of sparkle to the diffuse light in the reception area.

In the office areas, which occupy three floors of an office tower on Broadway and 40th Street, bands of ethereal blue light glowing above dropped suspended soffits wrap around the office and supply

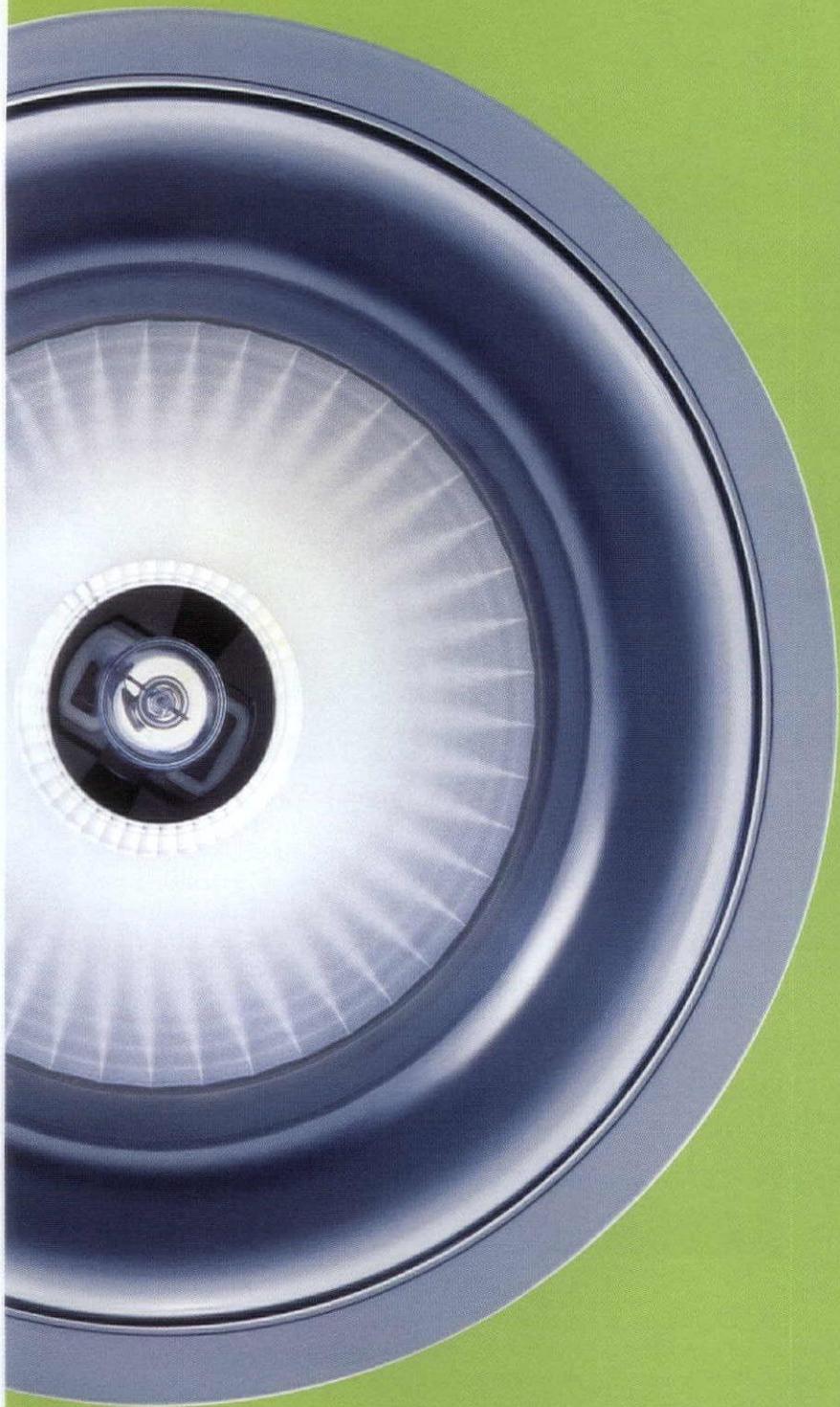
subdued ambient light. "I'm not sure if the staff dimmed the lights because they want more contrast with their computer screens or if it's because they're young and they just don't want as much light as someone in their mid-40s or older," said Brady. But to keep the perceived light level in check, she introduced low-brightness, aluminum louvered pendants containing 4100K color-corrected triphosphor fluorescents to bring in light that's "basically a neutral color, but not as cool as daylight," said Brady, noting that she wanted the fixtures to provide only direct light to temper the feeling of too much brightness that indirect fixtures would have created. Rows of pendant fixtures holding pairs of adjustable 50W PAR20s highlight circulation paths, demarcate filing areas and animate the work spaces with warmer light.

In the conference rooms, public circulation areas and cafeteria, the same conscientious mix of fluorescent ambient illumination and incandescent accent light used in coves or industrial fixtures subtly sets off the streamlined furnishings, simple flooring and metal accents in what Brady calls "the warehouse chic" atmosphere of Condé Net's new offices. ■

## DETAILS

PROJECT Condé Net LOCATION New York City  
 ARCHITECT/INTERIOR Mancini•Duffy LIGHTING DESIGNER  
 Susan Brady Lighting Design—Susan Brady, IALD, Donna  
 Summer MEP Robert Director Associates ELECTRICAL  
 CONTRACTOR John Gallin and Sons, Inc. GENERAL  
 CONTRACTOR Icon Interior Inc. MASTER ELECTRICIAN  
 Bill Mileham PHOTOGRAPHERS Stephen and Gil Amiaga  
 LIGHTING MANUFACTURERS Linear Lighting; Legion;  
 Artemide; RSA; USA Illuminations; D'ac Lighting

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# lightfair

# San Francisco

**M**ore than 17,000 architects, engineers and design professionals are anticipated at Lightfair International 2002, which will run June 3-5 at the Moscone Center in San Francisco. With 115,000+ net sq. ft. dedicated to the latest in lighting technology and information, this year's event will feature more than 400 domestic and international manufacturers who will showcase cutting-edge products in about 1,150 booths. A comprehensive conference consisting of 27 seminars will be presented in five different tracks including "Energy, Technology & Codes," "Sense & Sensibilities of Lighting," "Design Environments," "Exterior Lighting" and "Life of the Project...Design, Construction & Maintenance." In addition to offering AIA, ASID, IIDA and IESNA accreditation as well as NCQLP LEU credits, the conference will provide for the first time International Facility Management Association (IFMA) Certification Maintenance points.

This year is the last time Lightfair will visit the "City by the Bay" and *Architectural Lighting* highlights some of the scheduled events and special attractions planned for the 2002 show. For more information on any of the following events, visit Lightfair's website at [www.lightfair.com](http://www.lightfair.com). Information about attending, exhibiting, conference programs, workshops and seminars, travel, current exhibitors, special events, registration and more is included.

Make sure to stop by **booth 101** at the Moscone Center to visit the staff of *Architectural Lighting*!

## *IALD Awards Presentation and Celebration*

The IALD 19th Annual Lighting Awards Dinner will be held June 4 from 6:30 pm-12:00 midnight at the San Francisco City Hall. Join the industry in honoring this year's winners at the gala event cosponsored by the International Association of Lighting Designers (IALD) and *Architectural Lighting Magazine*. Proceeds from the event will benefit the IALD Education Trust fund.

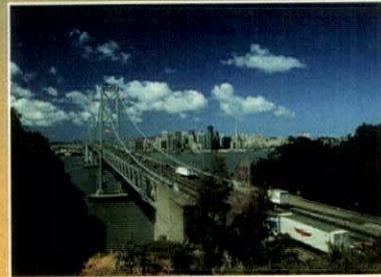
Judging for the IALD awards was held February 28-March 1 at the IALD office in Chicago. Respected professionals from the architecture and lighting design communities

judged the entries on their aesthetic and technical merits. Complete coverage of the winning submissions will be featured in the July/August issue of *Architectural Lighting*.

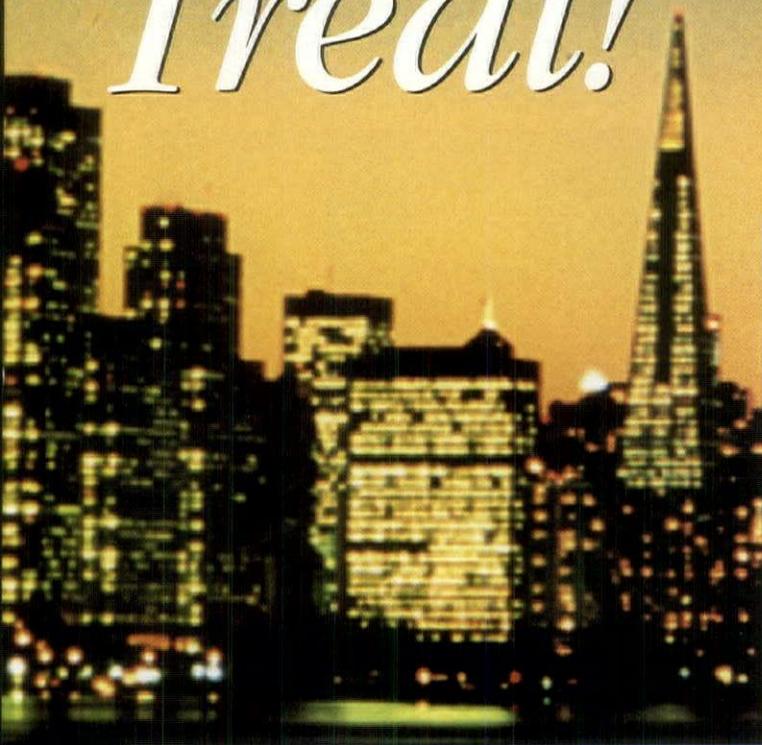


## Exhibit hours

**Monday, June 3:** 10:00 am-6:00 pm  
**Tuesday, June 4:** 10:00 am-6:00 pm  
**Wednesday, June 5:** 9:00 am-3:00 pm



# Treat!



existing lighting program. The second will support an introductory lighting program at a college or university currently with minimal or no lighting design offerings. Milham will also announce the winner of the \$7,500 Edison Price Fellowship, which is given to a lighting educator to further develop his/her teaching skills in lighting. Kevin Houser and Gary Gordon will share the outcomes of the University of Nebraska's Year 2000 Nuckolls Fund Grant, which was used to develop a series of learning exercises that enriched the educational experiences of students in the Architectural Engineering program. The presentation will highlight the benefits of collaboration between the academic and lighting design communities.

## June 4

Join Belfer Lighting from 7:00-8:00 am at the **Bay Walk in Memory of Craig A. Roeder**, which benefits the Nuckolls Fund for Lighting Education. Bring your running shoes, walking boots, rollerblades or bicycles for this sunrise stroll through San Francisco, which ends with a light and healthy breakfast at the Argent Hotel. For more information, visit the Belfer website at [www.belfer.com](http://www.belfer.com).

Join NCQLP president, Joseph M. Good III, LC and NCQLP officers and board members in recognizing the LC Class of 2001—the 5th!—during the **National Council on Qualifications for the Lighting Professions Lighting Certified Luncheon** from 12:15-1:45 pm. President Good will update all LCs on the latest NCQLP developments and goals for 2002 as well as recognize the contributors and volunteers involved with this program. Examination Committee Chair, Bill Daiber, LC will introduce the Class of 2001 and provide the examination progress report. The University of Colorado's David DiLaura, FIES,

IALD will present "The Future of Lighting Education," which suggests that the true value of being Lighting Certified (LC) may lie in a commitment to lifelong lighting education.

## June 5

The International Association of Lighting Designers/Lighting Industry Resource Council (**IALD/LIRC**) **Semi-Annual Meeting** will be held at the Moscone Center from 12:15-1:45 pm. The meeting will provide an update on activities of the organization. Non-members are welcome.

## Special Events

### June 3

Kick off Lightfair 2002 by attending the multimedia **New Product Showcase & Awards Presentation**, sponsored by *Architectural Lighting* and [lightsearch.com](http://lightsearch.com) at 8:00-9:30 am. This much-anticipated presentation offers an exciting glimpse of what will be on display in the exhibit halls and the products that will create a buzz at this year's show. Find out which manufacturer submits the Best New Product of the Year and which products will be recognized for technical innovation, energy management and savings and design excellence. Judges for 2002 were Michael Barrere, IESNA, LC; Linda Cummings, IALD, LC; Elwyn Gee, LC; Ray Holstead, IESNA, PE; and Patrick Quigley, IALD. In addition, the first annual Robert Bruce Thompson Student Light Fixture Design Competition Awards will be presented.



**The Nuckolls Fund for Lighting Education Luncheon/Seminar:** "Collaboration Between Lighting Educators and Lighting Designers" will be held at the Moscone Center from 11:30 am-1:00 pm. Jeffrey Milham, president of the Nuckolls Fund for Lighting Education, will announce the recipients of two annual \$20,000 grants, one of which will be used toward the expansion of an

While Lightfair may keep you busy 24/7, some worthwhile downtime is always good too—especially when you're in the relaxed atmosphere of San Fran. You might want to check out some of the projects your peers in the Bay area have designed recently. And hey, what better way to do it than doing a little shopping or taking in a ball game ...

## Jewel of the Aisle

### Puma

When Puma wanted to establish itself in San Francisco, it found the ideal showcase—a former jewelry store on historic Market Street. The store was in dire need of a modern update that would appeal to both young and old customers, according to lighting designer Angela McDonald, Horton Lees Brogden Lighting Design (HLB), San Francisco. “Puma wanted to make sure that the stores were approachable by wide variety of clientele,” she said. “Basically, Puma is striving for an extremely broad market appeal and didn’t want to get caught up in the entertainment aspect of retailing.”

The exterior of the store is equipped with a grid of pinpoint fiber-optic downlights within new metal-clad canopies. The downlights provide a wash for the entry, while the canopy also houses uplights, which graze the store’s concrete facade. “We wanted something that was eye-catching, but would not pull attention away from the higher light levels in the store,” McDonald said. The facade is awash in white light that highlights the building’s textured facade. Originally, Puma wanted to wash the storefront in its signature red but later chose a more conservative wash of white light. The store has a stockpile of colored lenses that can be affixed to the exterior fixtures for holidays or other special events.

To highlight Puma’s varied line of sporting apparel, the store’s interior lighting scheme includes adjustable low-voltage track fixtures, T5 uplights and compact fluorescent and metal halide downlights. This multi-layered approach provides uniform illumination for the shoppers as well as accent lighting for individual product displays. This approach also makes life easier for the store’s employees once the displays have to be relocated. By using a variety of sources, the fixtures only need minimal adjustments.

The interior architecture, designed by Kanner Architects, is further enhanced via raising overall light levels, as well as illuminating vertical surfaces. This permits the store’s interior retail display to be easily seen by passersby who are also potential customers. The Los Angeles office of HLB was brought in to adjust the lighting in Puma’s first store at the end of the project. However, when the San Francisco store and a new store in Manhattan’s SoHo were designed, HLB was part of the team from the beginning.

Accent lighting includes uplights mounted on the floor and a neon halo behind the Puma logo. Wall washers and uplights further emphasize the Puma store’s red walls, a common feature throughout the chain.

Daylight also plays a vital role in the Puma store’s lighting scheme as skylights provide natural light to the second floor during the day. This influx of natural light articulates the second floor’s red walls and further accents the merchandise as well as the architecture. At night, floodlights on the store’s roof illuminate the skylights with a splash of color. McDonald says that the skylight also provided the designers with the opportunity to use light to manipulate the scant second-floor architecture. “The second floor has a much lower ceiling height,” she said. “At night, it gives us the chance to liven up things rather than just have a dead, dark spot on the ceiling.”

The construction process proved to be full of unwelcome surprises as the renovations got underway, according to McDonald. “Things weren’t where they were supposed to be,” she said. “Joists in the back didn’t have the same spacing as joists in the front. It made for a lot of sudden changes in spacing for the mechanical and lighting systems.” While these surprises changed fixture spacing, the overall lighting concept remained the same, but McDonald added that it made getting the store finished on a condensed timeframe even more hectic.

Construction surprises and late changes aside, the new Puma store threw open its doors for throngs of new shoppers right on schedule in San Francisco’s Union Square area. —Mark A. Newman



Photos: © J.D. Peterson



**Lighting designer:** Horton Lees Brogden Lighting Design—Angela McDonald, Sarah Rushton **Photographer:** J.D. Peterson  
**Lighting manufacturers:** Super Vision International; Hydrel; PLC Lighting; RSA; Light Project; Elliptipar; Legion; BK Lighting; Lightolier; Columbia

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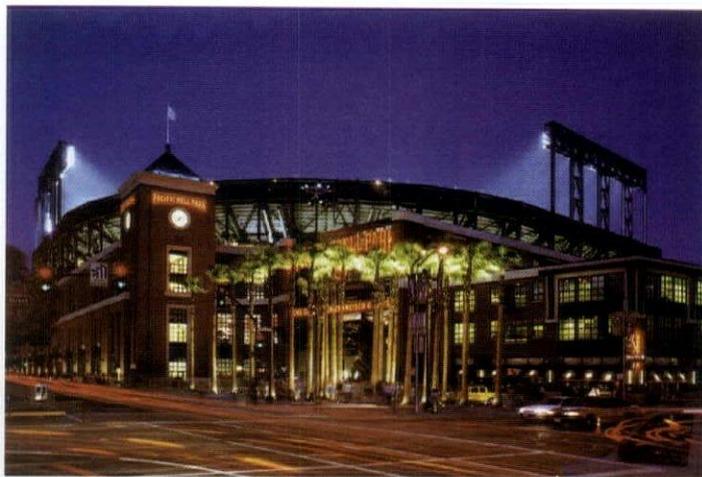
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## A Ballpark Figure

### *Pacific Bell Park*

Despite the fact that it holds 42,000 San Francisco Giants fans, the new Pacific Bell Park manages to have an intimate feel to it. Some of the fans will sit a mere 48 feet from the foul lines. Designed by HOK Sport, Kansas City, MO, the ballpark is a welcome addition to the San Francisco cityscape. The red brick and steel architecture echoes the sensibility of the surrounding China Basin neighborhood while a pair of monumental light towers soar above the shore of San Francisco Bay. Originally the ballpark was planned to be a predominantly steel structure, according to lighting designer Janet Nolan, JS Nolan + Associates Lighting Design, San Francisco. "The original plan was to have the park reminiscent of the old-fashioned stadiums like Wrigley Field," she said. "But the price of steel being what it was altered those plans. Now, it is primarily a concrete structure with a steel framework that supports the upper concourse seats. The red brick facade of the exterior makes it fit perfectly among its surroundings."

Pac Bell Park, as it's affectionately called, was constructed so that it is turned away from westerly winds, thus allowing more night games. There is also a public waterfront promenade called the Portwalk, which gives passersby a free glimpse of the Giants at play. Meanwhile, within the stadium, fans get a spectacular view of the Bay Bridge and the stunning San Francisco skyline. Nolan's firm did the lighting for the stadium's public interior spaces and the exterior, which included the facades, the Portwalk, ferry landings and Plazas. Her firm did not design the field lighting. The ballpark's welcoming atmosphere begins at the entry promenade, Willie Mays Plaza. "The big theme of the park is that a homerun ball can be hit out of the stadium and into the water," Nolan said. "Willie Mays Plaza reflects that theme through the designs of the landscape architects with whom we worked very closely." The landscape architectural team was comprised of two San Francisco-based firms: the Office of Cheryl Barton and Patricia O'Brien Landscape Architects.



The homerun ball in the bay theme is even represented in Willie Mays Plaza. The plaza has a series of radiating paving patterns among 24 palm trees (24 was Willie Mays' number) that also radiate from a point at the corner of Third and King Streets. At the corner there is a mound that represents a baseball in the water. The pavement pattern represents the ripples of water from the ball's impact.

The major light source in the plaza emanates from uplights on the palm trees that are fitted with a source that was made specifically for the project. The lamps are 150W ED17 ceramic metal halide. "We wanted the warm 3000K color and needed the 'horsepower' of the 150W lamp," Nolan said. At that time, ED17 lamps were only offered up to 100W. "So we asked a lamp manufacturer to produce them for us since they were doing research and development on it at the time," she said. "They manufactured it for us exclusively since it was such a high-profile project." She added that the lamp is still not cataloged but the manufacturer continues to make them for Pac Bell Park's use.

Within the stadium's walls, Nolan lighted the Field Club Lounge, Bistro Lounges, private dining rooms, suites, upper and main concourses, as well as where fans can get everyone's favorite baseball accessory, a hot dog. However,

since the ballpark is in San Francisco, the "foodie" capital of the U.S., Nolan said that baseball fans can get more than beer, hot dogs and peanuts. There are also concessions for Asian, Italian and Mexican cuisine, lattes, cappuccinos and fancy desserts.

Typically, lighting designers do not get to see their projects six months, much less two years after completion, but that is not the case for Nolan; her office is three blocks away from the stadium and she is a Giants club-level season ticketholder. She said, "So if I go to a game and see that a lamp is burned out, all I have to do is make a phone call!" —Mark A. Newman



**Lighting designer:** JS Nolan + Associates Lighting Design, LLC **Photographer:** Douglas A. Salin **Lighting manufacturers:** B-K Lighting; Bega; Belfer; Columbia; Hessamerica; Holophane; Hydrel; Illuminating Experiences; Kim; Leucos; Lightolier; Louis Poulsen; Prescolite; Shaper Lighting; Zumtobel Staff Lighting; Philips

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## Big Splash

### Old Navy

Prepare to be wowed when you visit the gargantuan OLD NAVY store on the corner of 4th and Market Streets in San Francisco. Totalling 100,000 sq. ft., this location is more like a department store in size than your usual fashion hotspot for teenage mall rats, but outfitted with colorful lights, dramatic displays and electrifying signage, this lively retail wonderland could hardly be mistaken for Macy's—which, according to lighting designer Darrell Hawthorne of Architecture & Light, was the point. "The size of the store was a major part of the design challenge," said Hawthorne. "How do you keep it all from looking the same or like Macy's?" In trying to infuse each floor with a liveliness and excitement, Hawthorne's solution also had to wrestle with concerns about energy usage and conservation. "OLD NAVY and GAP Inc. have a mantra about really, really bright spaces," said Hawthorne. "Reconciling that with Title 24 was very difficult."

The San Francisco store occupies the basement and first three floors of a building that was erected in the early 1920s and recently received a major seismic upgrade.

What once housed a dense structural grid of columns was fortified with steel and, on the upper floor of the store, opened up with a portion of the columns removed to form a double-height space. Diagonal steel beams cut through the space to support the remaining truncated columns. "One of the challenges on the top floor was to work with the structure," said Hawthorne. "Consequently, a lot of care was taken in uplighting that space."

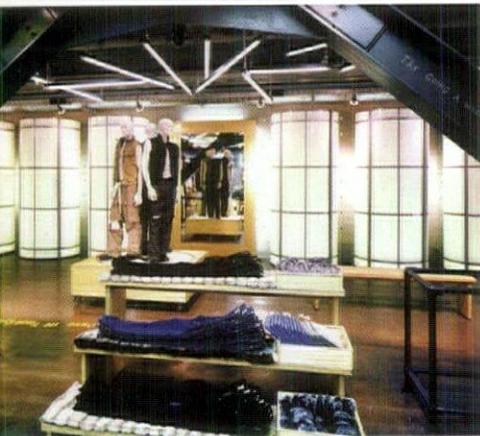
For brightness on the upper level as well as throughout the store, the lighting design relies on a combination of fluorescent troffers equipped with three 4-ft. T8 lamps and streetlight pendants to provide ambient lighting. According to Hawthorne, the T8 lamps were chosen to warm up the blue and gray finishes typical of OLD NAVY stores and the pendants, lamped with ceramic metal halide sources, are a crucial piece of the chain's iconography: They sign Main Street, around which all OLD NAVY stores are organized. PAR lampholders custom-fitted to tracks and quartzlighters accent the perimeter and floor displays on each level, which are divided into individual shops for visual diversity. Hawthorne also takes advantage of the

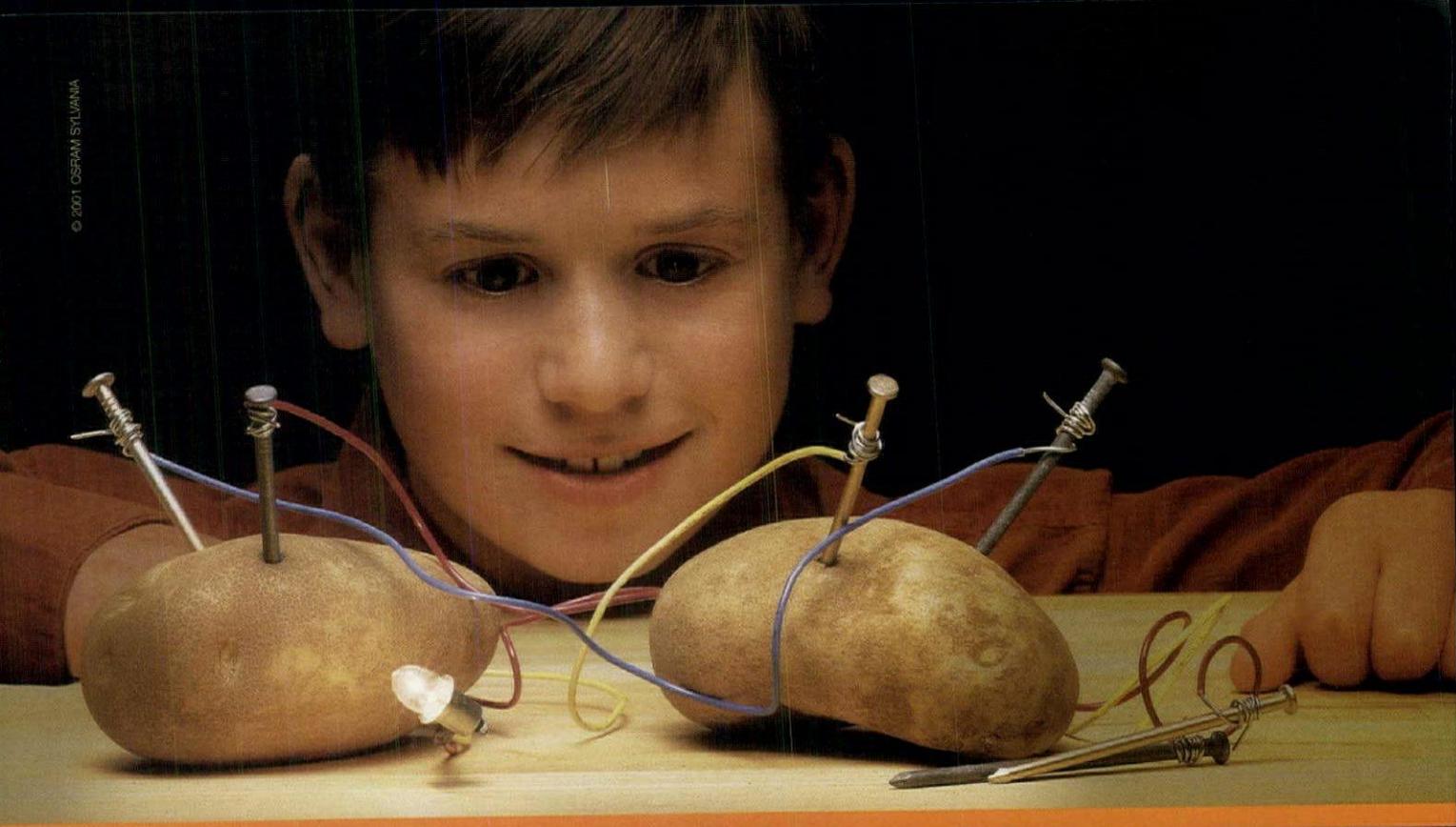
numerous mannequins to augment the sense of brightness in the store. "We focused as much lighting as we could on the mannequins because when most people walk around, their eyes are horizontal and the objects in the horizontal visual plane are what catches the eye," he said. "Directing light onto the mannequins gives the store the appearance of having more light than it really does."

The three floors are connected by an elevator, whose undersides boast backlit signage and blue jelly jar fixtures lamped with incandescent sources. "We tried to integrate color in different ways to animate the store," said Hawthorne. "One way was through the signage." In the basement, a highlight of the lighting design, the hip and edgy decor is complemented by fluorescent striplights that are suspended from the ceiling in a haphazard, "pick-up-sticks" arrangement and dimmed on and off to create the illusion of light moving through the space. Along a back wall, glowing pods frontlighted by PAR lamps serve as changing rooms and are internally illuminated with vertical fluorescents mounted behind a mirror that is contained within each booth.

Although light levels are quite high in the store—footcandles on floor displays approach 150—the lighting design uses a dimming system to extend lamp life, restrict lighting during hours of non-operation and reduce energy costs. "Through the controls system, OLD NAVY got a two-and-a-half-year payback," said Hawthorne. "Ironically, roughly six months after the store opened, the California energy crisis struck, so installing that system was a fairly prescient move." So much so that by the end of 2000, GAP Inc. would require that dimming controls be installed in new stores as a cost-saving measure. Added Hawthorne, "GAP, in studying the issue, stopped counting their annual savings when they passed \$50 million." —Alice Liao

**Lighting designer:** Architecture & Light—Darrell Hawthorne, Jonathan Plumpton, Isabella Shvetsky **Interior designer:** OLD NAVY Store Design **Lighting manufacturers:** Lightolier; Holophane; Stonco; Philips; Osram Sylvania; GE; Lutron  
*Photography courtesy of OLD NAVY*





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54



## Conference Program

### Monday, June 3

8:00-9:30 am

• New Product Showcase & Awards Presentation, sponsored by *Architectural Lighting & inter.Light*

1:00-2:30 pm

• "Up With Uplighting!"; speakers: Peter Ngai, IESNA; Gary Steffy, IESNA, FIALD

• "Shaping Your Vision"; speakers: Paul Gregory; Jonathan Speirs, RIBA, ARIAS, ELDA, FRSA

• "LEDs—Past, Present and Future"; speakers: Jeff McDonald; Dr. Nadarajah Narendran, IESNA

3:00-4:30 pm

• "Sports Lighting"; speakers: Craig Robinson; John Waite, IESNA

• "Lighting with a Passion"; speaker: Charles G. Stone II, IESNA, IALD, LC

• "Lamp and Ballast Update"; speakers: Roy Sierleja; Howard Wolfman, PE, IESNA, IEEE

### Tuesday, June 4

8:30-10:00 am

• "Theatrical Lighting Instruments in Architectural Applications"; speakers: Dawn Hollingsworth, IESNA, IALD; Tom Folsom, IESNA

• "Light as Art"; speakers: Russell Leslie, FIES, AIA, LC; Jennifer Brons, IESNA, LC

• "Impact of Mercury Legislation on the Lighting Industry"; speakers: Peter Bleasby, IESNA; Ric Erdheim, IESNA; Barry Jordan

10:30 am-12:00 pm

• "Restaurant Lighting"; speaker: Paul Gregory

• "History of Light and Lighting"; speaker: David DiLaura, IESNA, IALD Educator

• "North American Energy Issues"; speakers: William Attardi, IESNA, AEE, ASTD; Bill Warren, FIES, PE, IEEE

2:00-3:30 pm

• "Hot News and How-To on Lighting Quality"; speakers: Peter Boyce, IESNA, CIBSE; Hayden McKay, IESNA, FIALD; Naomi Miller, FIES, IALD

• "Final Touch"; speaker: Bradley A. Bouch, IESNA

• "It's a Material Thing...Optical Control"; speakers: Peter Murphy; Scott Santoro

4:00-5:30 pm

• "Custom Fixture Design, Who Designs What?"; speakers: Howard Baldinger, IESNA, LIRC; Diana Mesh, IESNA, LIRC

• "South America—The Emerging Marketplace"; speakers: Wilson Dau, LC; Gene Eckhart; Hilton Moreno; Alejandro Orozco

• "A Specifier's View of DALI (Digital Automated Lighting Interface)"; speaker: Richard Miller, IEEE, USITT, IAEI, PE, LC

## Pre-Show Conference

### Sunday, June 2

- "Understanding Photometrics"—Kevin Houser, Ph.D., LC, IESNA
- "Office Lighting Design Studio"—Diana Mesh, IESNA, LIRC
- "LED Technology"—Kathryn M. Conway, MS, ELS, IESNA; Dr. Makarand Chipalkatti; Joe Jablonski; Scott Jennato; Andy Lipman, IESNA
- "Energy Environment Codes and Issues-Strategies for Sustainable Designs—Part I"—James Benya, PE, FIES, IALD, LC
- "Lamp Color, Visibility, Safety and Security"—Ian Lewin, Ph.D., FIES, LC
- "Advanced Photometrics"—David DiLaura, FIES, IALD Educator
- "Retail Lighting Design Studio"—Chip Israel, IALD, IESNA, LC; Julie Reeves, LC
- "Energy and Environment Codes and Issues-Strategies for Sustainable Designs—Part II"—James Benya, PE, FIES, IALD, LC
- "Cutting-Edge Retrofitting and Relighting"—Brian Liebel, IESNA; Stan Walerczyk, LC, IESNA
- "Lighting Certification: An LC Review Workshop"—Bill Daiber, IESNA; Fred Oberkircher, IESNA; Thomas C. Scott, LC, IESNA

### Wednesday, June 5

#### 8:30-10:00 am

- "Lighting for Schools"; speakers: Barbara Erwine, IESNA, SBSE; Lisa Hescong, IESNA, SBSE
- "More Than Just a Pretty Face"; speaker: Robert Prouse, IALD, FIES, LC
- "The Distance Between 'Energy Effective' and the 'Bottom Line'"; speakers: Mark Jewell, IESNA; Carol Jones, IESNA

#### 10:30 am-12:00 pm

- "Managing Outdoor Lighting"; speaker: John Van Derlofske, IESNA, SAE, OSA, SPIE
- "Color in Light: Concept to Reality"; speakers: Fred Oberkircher, LC, IESNA, IALD Educator
- "Lighting as a Second Language"; speaker: Rogier van der Heide, ALD, NSW, IALD

#### 2:00-3:30 pm

- "Seeing in the Dark: Mesopia Lighting of Exteriors"; speaker: Brian Liebel, IESNA
- "Retail Maintenance"; speakers: Deborah Lisheid, PRSM; Sean O'Connor; Gary Popovics, PRSM; Cynthia Turner, PRSM, ISP
- "Lighting the Seasons"; speaker: Jan Moyer, IALD

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## SHOW & TELL: MUSEUM LIGHTING

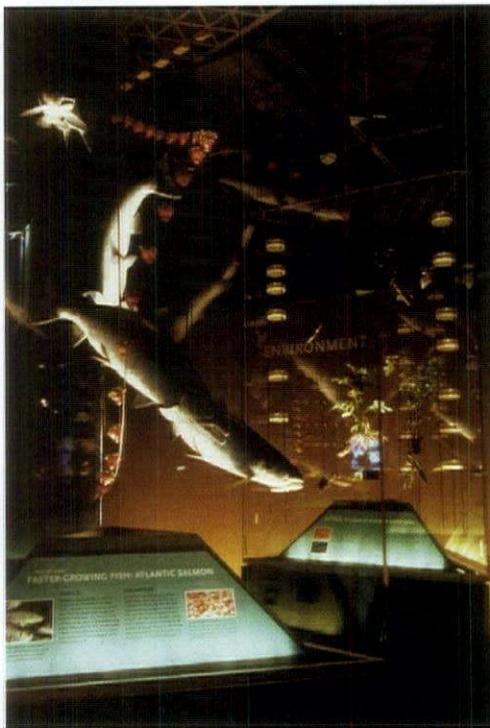
BY DAVID CLINARD

Lighting is an integral part of the story-telling process of museums. Today, more than ever, there are a greater variety of museum types, each one distinct in its own "story," mission, collection and method of representation. Traditionally, museums have addressed the presentation of collections as the most important criteria in exhibition design. The visual environment surrounding these works of art and specimens usually plays an important yet supporting role, with the collections as the "stars" of the show, so to speak. In addition to these more traditional institutions, there are other types of exhibition spaces where the visual environment may be as much a part of the viewer's experience as the objects on display. New methods of presentation by architects and exhibition designers are increasing the variety of gallery space typologies, which in turn, challenge the lighting designer to find solutions that go beyond the traditional body of museum lighting approaches and techniques.

### THE CHALLENGE

It is important early in the design process for the lighting designer to understand all aspects of the exhibition in order to establish a design approach consistent with the museum concept and architecture. A clear understanding of the exhibition concept will help set the course for establishing an appropriate design "attitude." For instance, if a museum plans to install a permanent exhibition with non-light-sensitive objects and limited audio-visual projections, then (with consideration given to other factors as well) this space would be a candidate for a natural lighting concept. For subject matter that is somber, the lighting designer might consider a more controlled environment in order to deliver a more dramatic effect to exhibit elements; and if an exhibition is presenting diamonds, applying a strategy typical of those used in retail shops for lighting gems might be useful.

Understanding the exhibition design concept is integral to designing and integrating lighting design in museum exhibitions. Museum exhibitions sometimes focus on specific objects from a collection, while other times, there are no objects and the story is presented through audio-visual and textual narratives. In either instance, lighting designers need to acknowledge both the content and the context in order to make informed design decisions that support the overall exhibition design concept. The primary challenge is to clarify the exhibition or gallery design concept.



AMNH "The Genomic Revolution" special exhibition created by the American Museum of Natural History; display cases internally illuminated with fiber-optic lighting system. Photo: Dennis Finnin © American Museum of Natural History

Architectural design concepts and constraints should also inform the lighting approach. If introducing natural light to an exhibition is a priority, then much of the design direction should be centered on how daylight is delivered to the gallery. Considerations such as window locations, control of light intensity, sun tracking and shadows are critical in the conceptualization and execution of the design concept.

In general, the museum lighting design process strives for a balance between the two, often opposing, forces that influence the design of any gallery space—exhibition design and architecture. For example, pure architectural lines are usually preferred in both

contemporary and traditional galleries. Ceilings cluttered with exhibition-related lighting fixtures are rarely a design goal. However, objects on display often require lighting enhancement from many accent lights located in the ceiling. The role of the lighting designer is to find innovative lighting solutions that cohesively synthesize all of the issues.

### ISSUES TO CONSIDER

Exhibition content and architectural context are not the only design issues facing the museum lighting designer. Conservation, facilities maintenance and flexibility are all concerns that affect lighting design decisions.

**Conservation.** An issue of critical importance that is unique to museum lighting is the extent of controlled light level requirements established by conservators. Almost every museum has specific objects in their collection that are susceptible to light degradation over time. Organic materials such as wood, textiles, leather and paper, are just some of the

more vulnerable items. Designing to recommended light levels, eliminating dangerous UV light and reducing exposure to lighting-related heat emissions are key considerations that need to be addressed in order to lengthen the life of the object. Conservation issues should be a priority for any lighting designer working on a museum project.

In addition, a museum lighting designer should be aware that curators and designers organize collections in a manner that most clearly tells a story, often placing objects with different conservation needs adjacent to one another. Ideally, the lighting designer and museum should work together to help establish an overall strategy of grouping together objects that require similar light levels.

*(Continued on page 58)*

(Continued from page 56)

## A MARINE EXPERIENCE

The renovation of the Paul and Irma Milstein Hall of Ocean Life at the American Museum of Natural History (opening spring 2003) is an example of a space demanding strong architectural and exhibition lighting design statements. For those who are unfamiliar with this space, the Hall of Ocean Life is a 19th-century classical style space that incorporates a number of historical dioramas and a full-sized model of a giant blue whale. Originally, the Hall was illuminated by an enormous skylight. A 1930s renovation completely covered over the exterior skylight with masonry. Since then, the Hall has essentially been a dark, black-box-type of environment that is in complete contrast to the original space, which was once flooded with natural light.

The challenge of the renovation was to restore the Hall to its original architectural grandeur, and at the same time, create a new and exciting exhibition environment. The museum's exhibition design team decided to create an aquatic context for the blue whale and

other oceanic specimens that at the same time respects the original architecture of the Hall. In order to satisfy both of these requirements, and because renovating the original exterior skylight was unfeasible, the laylight was redesigned to incorporate an artificial lighting system. The inclusion of a dimmable two-color (blue and white), multi-zoned indirect fluorescent lighting system will enable the laylight to simulate natural light as well as abstract underwater effects. Metal halide theatrical ellipsoidal fixtures with custom gobo effects projecting onto the rear side of the laminated glass ceiling panels will produce "water shimmer" movement in support of the overall design concept. An architectural dimming system will provide the control and sequencing of all fixtures into a preset program that will be fine-tuned in the field. For this application, supplementary theatrical lighting technology was required to transform the gallery experience into an undersea adventure.

**Relative Brightness.** Another important component of museum lighting is the concept of relative brightness (we are concerned about relative luminance levels here—not illuminance). In order to view works on display with visual comfort, the viewer expects controlled luminance levels between the objects and the surrounding visual environment (using luminance ratios). A white marble sculpture illuminated to only 5 fc may actually appear brighter (higher luminance) than an adjacent dark bronze sculpture illuminated to 15 fc simply by the change of finish. This concept is helpful when making decisions about architectural and exhibition finishes. The color and

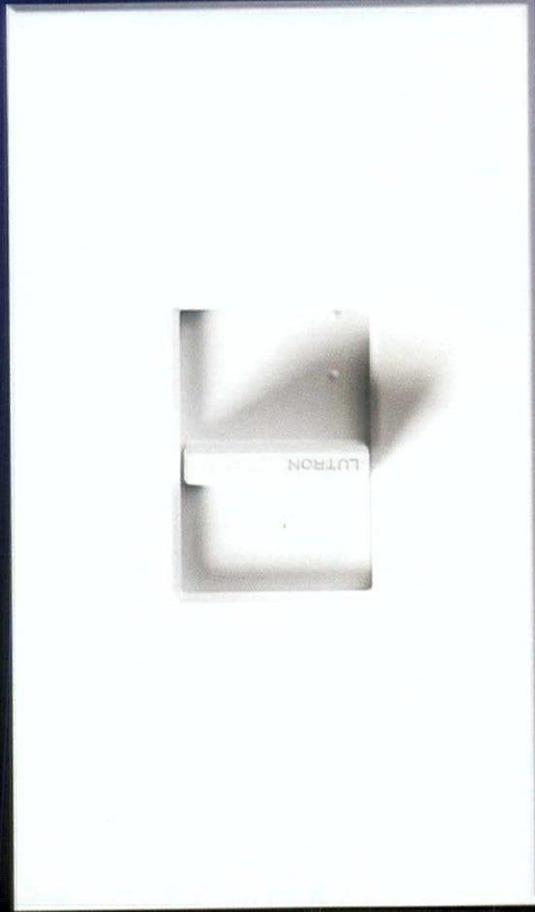
value of the floor and wall surfaces, for instance, should be selected with an understanding of how much contrast is desired between the objects on display and their background. This also plays into how the viewer adjusts to different light levels. Transitional spaces are recommended between galleries with significant light level differentiation in order to allow the viewer's eye to adapt.

**Flexibility.** Museums often demand a certain degree of flexibility, which may assist the lighting designer in determining appropriate lighting solutions. Temporary galleries, for example, typically support all types of exhibitions including both in-house installations and traveling exhibitions

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and therefore require maximum flexibility. Consequently, a suitable lighting system should allow for the greatest diversity of lighting solutions possible. Given this program, it would seem that providing uniform illumination throughout the space would be appropriate. This may be acceptable for some types of exhibitions and for exhibition setup activities. However, it is unlikely that this type of illumination will satisfy the wide range of exhibition types that a typical temporary gallery will encounter. For instance, video projections require controlled light and are washed out by general, uncontrolled illumination. Therefore, temporary galleries will often require additional lighting methods and equipment.

In response to the desire for flexibility, temporary galleries typically employ some type of flexible lighting system, such as track lighting, that permits fixtures to freely be moved about the gallery. The ability to locate a fixture anywhere in a temporary gallery space is a benefit that is not to be underestimated. If natural light is a design consideration, be sure to include equipment that provides flexible levels of control, such as adjustable black-out shades and other light reducing materials. Ambient natural light may work well for one exhibit, but may wash out all of the audio-visual projections and fiber-optic lighting of another. The ability to have local lighting in casework or interactive displays on the floor and perimeter is also very important. If possible, some type of regular distribution of power and control should be integrated into the floor and walls to provide for a range of possibilities.

Galleries housing permanent exhibitions often require less flexibility because most of the objects and exhibit elements are usually in fixed locations. But permanent or not, these elements are likely to be changed or moved by the museum at some time or another. Working closely with the museum, exhibit designer and architect can help the lighting designer to predict where areas of greatest flexibility will be required.

**Special Events.** An additional consideration for temporary and permanent gallery spaces is lighting for events. Many museums entertain corporate events within exhibition gallery spaces. If possible, integrating power and control locations throughout the space for event lighting helps to reduce setup time and the amount of disruptive cables that will need to be dragged throughout the space.

## CHOOSING A SOURCE

The selection of appropriate light sources for museums is always important. Traditionally, color quality has been and still is one of the most critical concerns for displaying art objects and specimens, but the word "quality" opens the door to philosophical questions about which types of color temperatures are appropriate. Fine art museums today, for instance, use natural light and halogen sources separately or mixed with success. For accent lighting, museums frequently use halogen line- and low-voltage sources because of the variety of wattages and beam spreads available on the market and because of low initial costs. For conceptual types of exhibitions, the variety of possible sources to consider is greater including colored light that can be used to emphasize a certain exhibition design concept (i.e. blue filtered fluorescent light in the Paul and Irma Milstein Hall of Ocean Life; see sidebar, opposite.) As with other types of lighting projects, lamp choice should be informed by a variety of qualities and characteristics including CRI, lamp life, efficacy and lamp replacement cost.

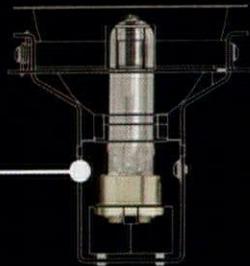
Source selection, of course, will inform the appropriate type of lighting equipment. Adjustable fixtures, such as accent lights, should be able to accept different types of lighting media, such as glare-reducing louvers and a variety of spread lenses and color filters. All lighting fixtures for exhibition spaces must be able to accept UV filters.

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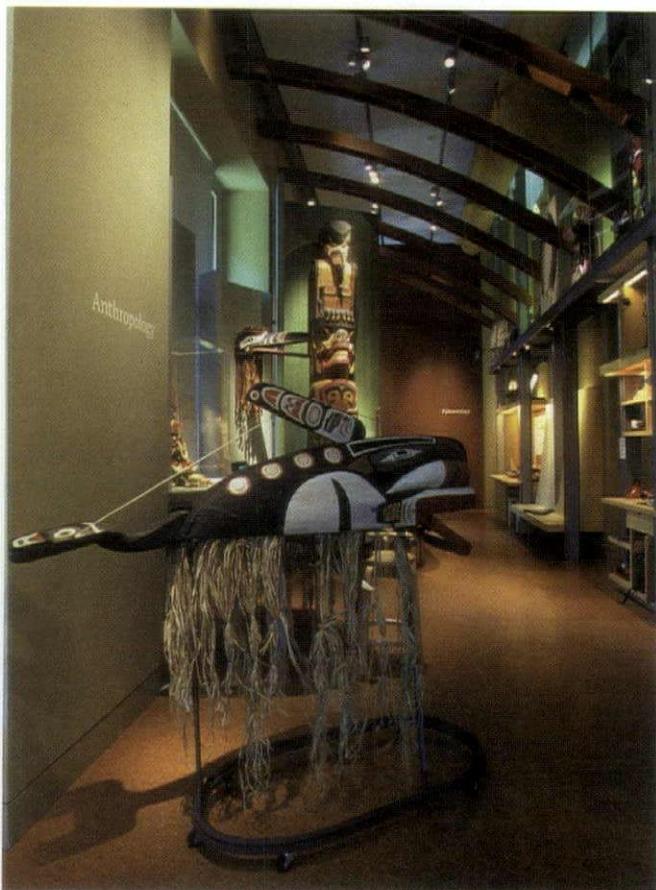
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AMNH "Discovery Room," a permanent hands-on installation for children at the American Museum of Natural History; high contrast using halogen accent lights and low ambient lighting. Photo: Jackie Beckett © American Museum of Natural History

Additional criteria that are equally significant include aesthetics and scale, as fixtures and equipment can either support or distract from the design attitude of the space.

In museums, it is sometimes desirable to provide local, internal illumination for display cases. This type of illumination delivers an internally luminous quality and can help to reduce reflections and glare associated with the glass or acrylic vitrines or case windows. Traditional light sources for case lighting are fluorescent and halogen. These light sources are usually located above the objects on display in an enclosed light attic that must be accessible for relamping. Adequate ventilation and heat exhaustion is required for all case lighting methods in order to prevent rising heat from entering the the display case cavity. Fiber-optic lighting systems are used in display case illumination as well. The advantage here is that the light source can be remotely located, allowing more freedom in the design of the physical display cases. Furthermore, the access panel for relamping can be located in a less conspicuous location and the individual fixtures can be adjusted without ever being touched by the lamping staff. Another advantage to fiber-optic systems is the design potential to create a miniature "stage set," using tiny spots and floods that can be aimed anywhere within the case. The systems are also ideal for displaying light-sensitive materials because the UV light and heat associated with an internal light source (typically halogen or metal halide) are removed from the case interior.

There are also disadvantages to fiber-optic systems such as light

*(Continued on page 62)*

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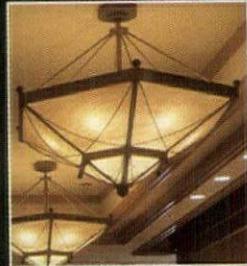
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(Continued from page 60)

intensity. They typically do not have enough light intensity to deal with the surrounding ambient light levels and require galleries to be fairly dark in order to be successfully integrated. They can also be more costly than fluorescent and halogen fixtures for case lighting.

Interactive exhibits, display panels and other exhibit elements for permanent and traveling exhibitions frequently incorporate internal illumination. A variety of lighting sources and fixtures is appropriate depending on the specific lighting application. Luminous or glowing elements often use fluorescent sources because of their broad distribution, long life and low heat emission. LEDs are increasingly being used for these types of applications due to their small size, range of color, controllability, low heat and extended lamp life. They can be controlled to mix colors and even programmed to sequence custom lighting patterns and movements. White LEDs can be used for certain applications such as rear-illuminated display

panels. However, at the time of this publication, the color-rendering quality of white LEDs is still not appropriate for illuminating many types of museum-quality objects on display.

Even after extensive planning, exhibitions almost always require object-specific adjusting and fine-tuning in the field. The focusing and aiming of light fixtures are important steps in museum lighting. In temporary exhibitions, the focusing can easily make or break the overall desired lighting effect. Adequate light coverage and proper aiming angles that avoid shadows and reflected glare are just a few issues that the lighting designer must address during almost every installation.

## MUSEUM PERSPECTIVE

It is important for designers to consider the perspective of the museum. There are a few issues that are overwhelmingly universal to all muse-

ums such as maintenance and operation costs. This is understandable because lighting systems are a critical part of a museum's daily operations and are often costly to maintain. Many existing gallery lighting systems consist of high concentrations of halogen point sources that use a lot of energy—sometimes well over 7W/sq. ft. Tall ceilings and lighting fixtures that are difficult to access during exhibition hours can be coordination nightmares and cost museum maintenance departments overtime pay and a lot of frustration.

In order to reduce lighting-related energy and maintenance problems, when appropriate, use natural light as a source—it's free and daylighting can drastically reduce energy costs over time. However, the ability to have daylighting requires higher initial costs due to the architectural impact and the additional expense of installing passive and active light control systems for light intensity and UV protection. For museums where daylighting is not an option, the lighting designer must look for opportunities to use more efficient light sources. This is often difficult in both new construction and retrofit projects due, in part, to the viewer's expectation for light characteristics typical of halogen sources as traditionally found in most museums. But there are many opportunities nonetheless. For instance, fluorescent sources can be used for ambient light and select metal halide sources can be used exclusively or mixed with halogen sources for accent lighting. When halogen sources are the only option, a dimming system can extend the lamp life many times over and also provide timeclock control to more efficiently monitor the operational hours of exhibition scenes.

The lighting designer has many obligations to the museum collection, exhibition and architecture; however spending the time to fully understand all of their different and unique requirements, as well as considering the desires of the viewer and needs of the maintenance staff, will make a successful museum exhibition. ■

*David Clinard, an associate member of the IALD and the IES, is lighting designer for the American Museum of Natural History in New York City.*

*(To read about the uses of fiber optics in museum installations, turn to page 64.)*

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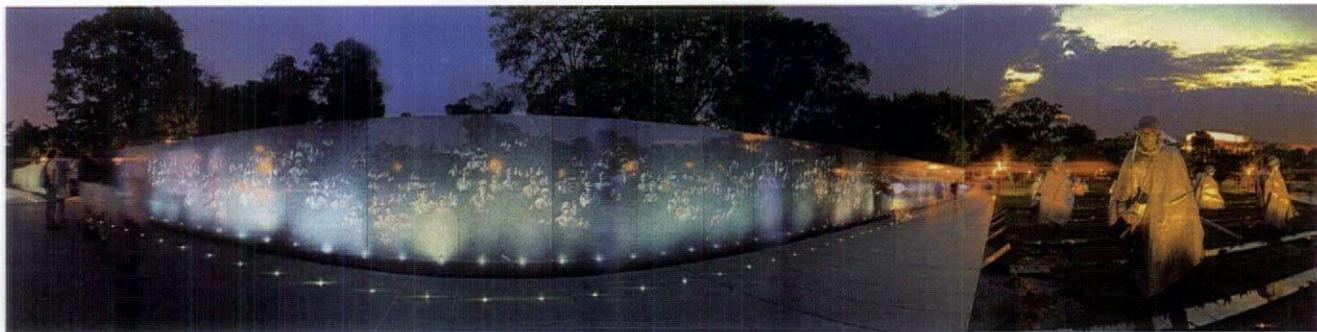
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## FIBER-OPTICS SOLUTIONS

Since its introduction into the commercial lighting market, fiber-optic lighting has become an integral component of the illumination of many of the world's best known museums. Due to its elimination of harmful ultraviolet (UV) and infrared (IR) radiation, versatility, compact design and light quality and control, curators and lighting designers often specify fiber-optic lighting to illuminate valuable artifacts. Case in point, the National Archives and Records Administration in Washington, D.C. (below) recently selected a custom fiber-optic lighting system to preserve and display America's Charters of Freedom (the Declaration of



Independence, the Bill of Rights and the four pages of the Constitution) in addition to illuminating the environs of the Rotunda exhibit gallery.

Major advances in the design, manufacture and efficiency of fiber-optic lighting components—projectors (halogen, metal halide), optical cables (quartz, glass, and acrylic) and fixtures (optical lenses, light bars and wands)—have enabled the technology to move beyond the realm of the museum gallery into more rigorous and diverse outdoor environments. The National Park Service and Army Corp of Engineers selected state-of-the-art outdoor fiber-optic lighting systems for the comprehensive illumination of the Korean War Veteran's Memorial, Washington, D.C (top). A total of 16 watertight projectors were installed to illuminate 19 7-ft.-tall statues and the 165-ft.-long black granite Mural Wall.

The Field Museum of Chicago (above) selected fiber-optic lighting systems for its extraordinary Grainger Hall of Gems. Utilizing precision optical lenses, the gallery's exhibit cases were retrofitted, eliminating hundreds of cumbersome, heat-generating incandescent fixtures. The result? Every gem, mineral, artifact and text panel was precisely illuminated with just 20 light sources.

The Mashantucket Pequot Museum and Research Center (below) features a unique gallery containing "A World of Ice" exhibit. The centerpiece of the gallery is a giant, rotating world globe that incorporates 10,000 animated optical fibers. The fibers visually portray the chronology, growth and recession of glaciers that once covered the earth's entire northern hemisphere. The educational exhibit has become a favorite destination for museum visitors of all ages.

The potential for fiber-optic lighting technology is at its initial stage of development. As curators, designers and architects continue to require new and better technologies for the lighting design challenges of the 21st century, fiber-optic lighting technology, through its ongoing advancement, will play a more prominent role in providing lighting design solutions.

*Band Inc. of Red Hook, NJ designed, manufactured and installed the fiber-optic lighting systems for these projects.*

*Photography by Jook Leung 360vr.com*



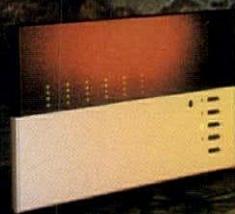
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# ARE WE THERE YET? THE STATUS OF WHITE LEDS IN THE MARKETPLACE

BY CRAIG DILOUIE, CONTRIBUTING EDITOR

If you visit Times Square in New York City, you will be amazed at an eight-story-tall NASDAQ information and advertising screen comprised of more than 18 million high-brightness LEDs. Researchers and manufacturers in the lighting and semiconductor industries are now working on a new challenge—developing white LEDs as a light source for general lighting to take on incandescent, fluorescent and HID lamps.

LEDs are solid-state devices that produce light by passing electric current across layers of a semiconductor material housed in a chip. The material determines the wavelength and subsequent color of the light. LEDs were first introduced in the 1970s and were adopted for numeric displays and indicator lights. Later, red (and green) LEDs became a popular energy-efficient, long-life alternative to incandescent lamps in exit signs, eventually taking about 50 percent of the exit sign retrofit market and becoming the light source of choice in about 80 percent of new exit signs being sold in the U.S. (Lighting Research Center, 1998). More recently, LEDs began to be used for traffic lights, and manufacturers discovered the dramatic color effects possible by combining and controlling LED packages to produce dynamic color-changing and colored lighting for contour lighting, signage, advertising and what is now often regarded as “architainment” applications. Today, LEDs are available that can produce colors including white, deep blue, blue, green, yellow, amber, orange, red, bright red and deep red. A number of manufacturers have capitalized on the benefits of colored LEDs by offering a wide range of products, including Color Kinetics, Super Vision, FC Lighting, TIR Systems and CandyLites.

The newest development and the cause of a great deal of excitement, however, is the high-brightness LED that produces visible white light. White light can be achieved either through mixing red, blue and green LEDs or through the use of blue indium gallium nitride (InGaN) LEDs (developed in the mid '90s) with a phosphor. The phosphor converts some of the light emission into yellow, resulting in a cool bluish-white light. Potential architectural applications include cove lighting, display lighting and undershelf/task lighting. Manufacturers are currently working on a number of new products, many of which are currently top secret.

If predictions made by the U.S. Department of Energy (DOE) and manufacturers and researchers in the lighting community are to be believed, however, the story of LEDs has only begun. The technology of this light source is advancing in the areas of efficacy, color temperature, color rendering and lumen maintenance due to the research efforts of companies such as Lumileds (Philips/Agilent Technologies), GELcore (GE/EMCORE), Osram Opti Semiconductor (Osram/Siemens), Nichia, Cree, Uniroyal



Photo courtesy of Lumileds.

Optoelectronics, Toyoda Gosei, Toshiba and Panasonic. And if their goals are realized, LEDs may become competitive against fluorescent, incandescent, halogen and HID lighting systems in commercial, outdoor, retail and even residential general lighting applications by 2010 or even sooner—perhaps three to five years according to one estimate.

“Presently, white LED technology appears more feasible for general lighting application than before,” said Dr. N. Narendran, director of research and a research associate professor at the Lighting Research Center (LRC). “Technological advances have enabled the development of high-power white LEDs with improved luminous efficacy, higher lumen package per device and better lumen maintenance. If the LED industry can maintain the development trends, solid-state lighting could have significant market penetration within five to 10 years.”

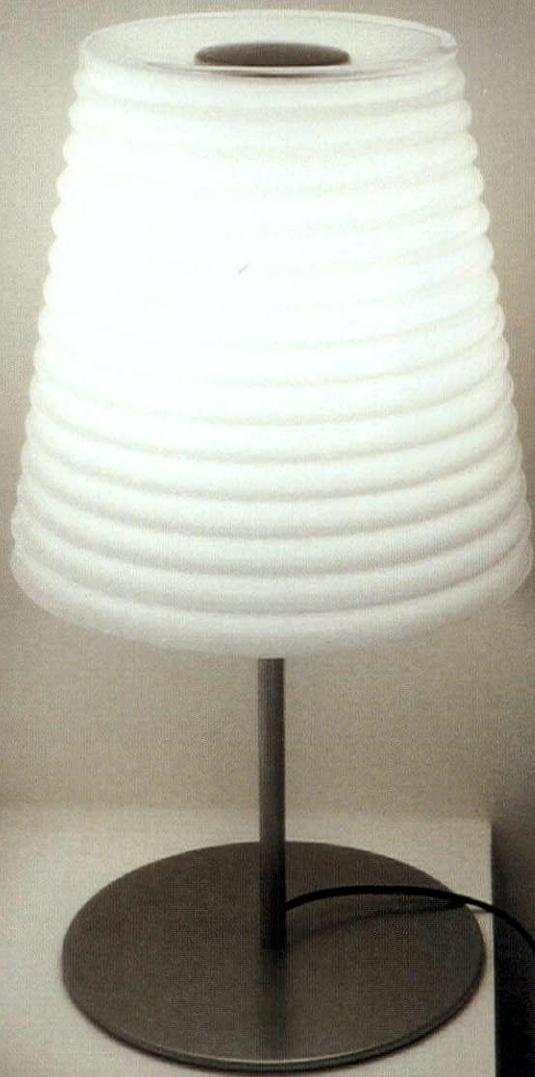
## ADVANTAGES OF LEDS

The promise of LEDs is titillating. They are extremely small light sources (typically 5mm units or T1<sup>3</sup>/<sub>4</sub> but can be larger “surface-mounted” types) that can be flexibly combined into desired shapes, colors, sizes and lumen packages; they can even be integrated into architectural materials and be used to edgelight glass and plastic panels. “LEDs provide the lighting designer with additional options and choices compared to conventional technologies,” said Keith Scott, business development manager for Lumileds, a joint venture between Philips Lighting and Hewlett-Packard’s Agilent Technologies. “Instead of distributing light from a single bright source within a fixture, LEDs can enable alternative lighting concepts where the light source can be divided into multiple points of light, distributed across a surface or placed in multiple planes. The flexibility of LEDs allows for new, playful and innovative lighting solutions, allowing for never-before-possible designs.”

(Continued on page 68)

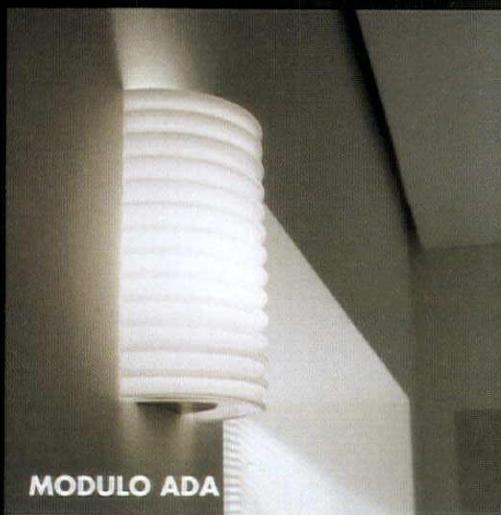
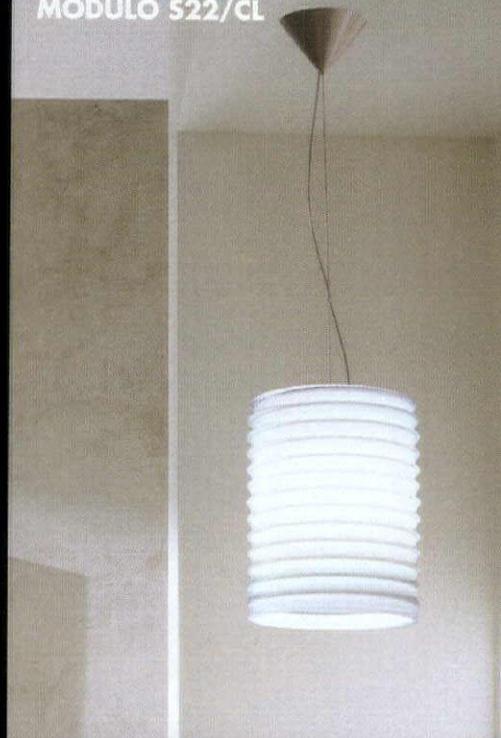
BRINGING ARTISTRY TO LIGHT

MODULO T31



LEUCOS LIGHTING

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## MODULO

design by R. Tosso, N. Massari and Associates

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(Continued from page 66)

LEDs also produce very low heat, operate on low-voltage DC power, are rugged and highly energy-efficient, can start instantly at temperatures as low as -40 degrees Celsius and are easily dimmed and controlled. Low-voltage startup and operation increase safety. And while each LED currently produces low light output, LEDs are directional light sources, resulting in higher fixture efficiency in transmitting light to where it's needed.

## TECHNICAL HURDLES

Unfortunately, despite its promise, current white LEDs do not produce sufficient light output and color quality to make them suitable for prime-time architectural applications, and there are questions about service life. Instead, potential new applications include tight spaces, outdoor lighting, wayfinding, steplighting, undershelf/task,

architecture-light source integration, decorative lighting and display lighting applications. Most 5mm-type white LEDs produce about a lumen each, have an efficacy of 10 LPW and offer a color temperature of 6500-8500 CCT and color rendering of 70-85 CRI. Lumileds' Luxeon 1W white LED, which is a larger-size LED, produces about 20 lumens with an efficacy of 20 LPW, color appearance of 5000K CCT and color rendering of 70-75 CRI. Nichia has developed a larger-sized 2W LED that produces 23 lumens with an efficacy of 11-12 LPW.

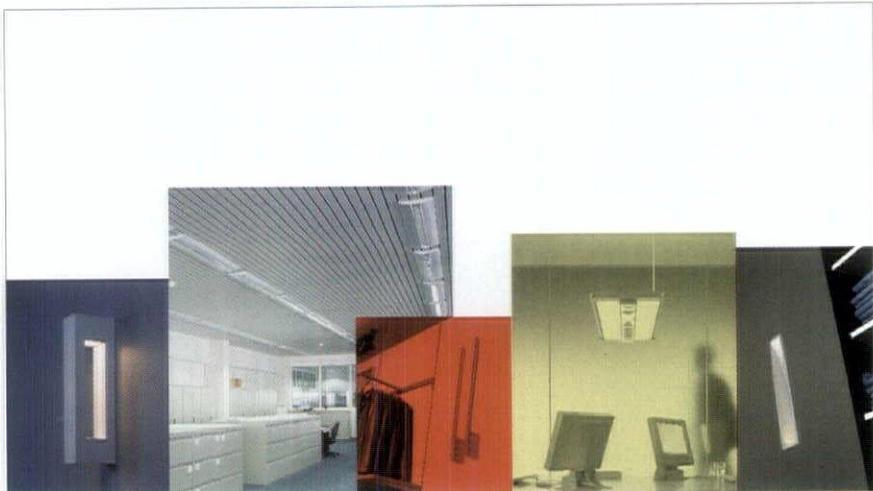
Light output can be increased by driving the LED at a higher current, but this degrades dramatically over time; a 1999 study of 5mm-type white LEDs conducted by the Lighting Research Center indicated that light output could be increased by as much as 65 percent at a current of 55mA, but light output subsequently

deteriorated at a fast rate. What's surprising is that the researchers discovered that lumen output decreased by 45 percent after the first 4,000 hours of operation and by 50 percent after 10,000 hours while operating at the manufacturer-recommended current of 20mA. As some LED manufacturers state that 50-percent loss of light output should be regarded as the service life for the LED, this would lead one to regard operating life for an LED to be 10,000—not 100,000—hours. Higher ambient temperatures than optimal are a big contributor to reducing light output and subsequent reduction of service life, which may be caused either by the temperature of the ambient air or heat built up due to the packaging and configuration of the LEDs. LEDs are sensitive to temperature because the two leads in a 5mm-type LED serve as both electrical and thermal conductors.

Some manufacturers, such as Lumileds and Nichia, are exploring larger LEDs with heat-sinking technology to drain heat away from the LED die and produce more light with less degradation. Said Dr. Narendran of the LRC, "Even traditional light sources, such as incandescent, halogen, fluorescent and metal halide, experience light output degradation over operating time. The newer high-power illuminator LEDs have very low light output degradation compared to most traditional light sources." Lumen maintenance for various types of LEDs is shown in Figure 1 (page 70).

In addition, color constancy is uncertain: The white LED may experience color shift both over time, when viewing the LED from different angles and when viewing its light impacting a wall. Color mixing has a few of its own problems in this area. Mixing red, blue and green LEDs to produce white light may require tuning of each product, and different LED materials degrade at differing rates, which may result in color shift.

(Continued on page 70)



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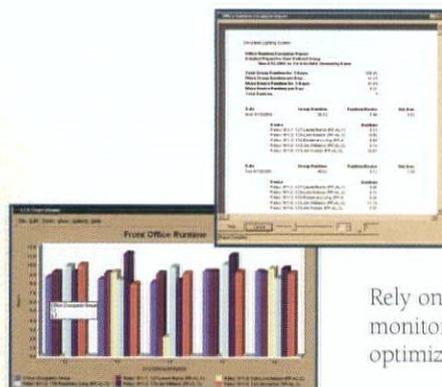
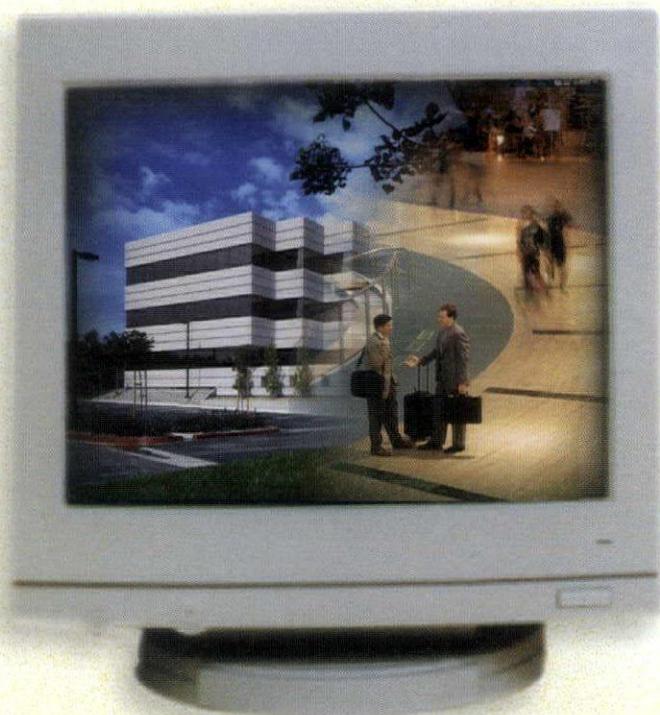
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(Continued from page 70)



The Courtyard at the Intercontinental Mall alternates white and blue LED fixtures to highlight the patterned brick pavers, provide uplight for wall washing and add drama between the entrances. Designer: Jena Green Design; Manufacturer: FC Lighting Manufacturers, Inc.

decade. Growth of both demand and supply of LED products will also offer choice and expand interest in standardization that is already being exhibited by NEMA, which recently formed a committee to work on standards and definitions for LED technology.

"LEDs have a great energy story, a great maintenance story," said Scott. "They offer a wide range of benefits. As light output and color improve to where LEDs are competitive with fluorescent light sources, we will begin to see LED fixtures in general lighting

applications including direct lighting, wall washing, downlighting, uplighting and task lighting in addition to the small-area applications for which it's currently suited. Once the light source is ready for the full range of general lighting applications, the creativity of the fixture manufacturing community will come into play. We'll see intelligent fixtures of many shapes and sizes being used for general lighting; some will include a mixture of colored LEDs to subtly change the color temperature of the lighting system according to time of day or offer other creative and beneficial aesthetic effects."

## HELPING HANDS

The U.S. DOE has been supporting the development of LED technology as part of its Solid-State Lighting Initiative, an industry-government collaborative effort to promote LED awareness before Congress, develop a technical roadmap, assess energy savings potential and ensure that technologies are being developed with participation of the lighting community. The Department of Energy is highly interested in LEDs because no other technology offers so much potential to save energy. LEDs have the potential of more than doubling the efficiency of general lighting systems, thereby saving enough energy to power the states of Arizona,

Colorado and Mississippi and reducing the nation's electric bill by \$98 billion over the next 20 years.

Meanwhile, the LRC is currently working with government agencies, public benefit organizations and LED manufacturers to support the development and application of LED lighting for general lighting applications. Called the Alliance for Solid-State Illumination Systems and Technologies, or ASSIST, this program will conduct research and offer demonstrations and education. Current manufacturers that have committed to ASSIST include Lumileds, GELcore, Osram Opto Semiconductor and B/E Aerospace. A major sponsor is the New York State Energy Research and Development Authority (NYSERDA). Manufacturers interested in learning more about ASSIST should contact Dr. N. Narendran, director of research for the Lighting Research Center, at (518) 687-7100.

## ON-LINE RESOURCES

- 1) Lighting Research Center (LRC) at <http://www.lrc.rpi.edu/solidstate/leds.htm>
- 2) U.S. Department of Energy Report at [http://www.eren.doe.gov/buildings/documents/pdfs/ssl\\_final\\_report3.pdf](http://www.eren.doe.gov/buildings/documents/pdfs/ssl_final_report3.pdf)

Part of creating a superior lighting system is understanding the subject.



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Using a PC, Palm or standard wall switch, individuals can dim their fluorescent lighting from 100% to 1%, avoiding screen glare, excess lighting or to prevent unnecessary eyestrain. The result, simply keeping workers productivity at it's best.

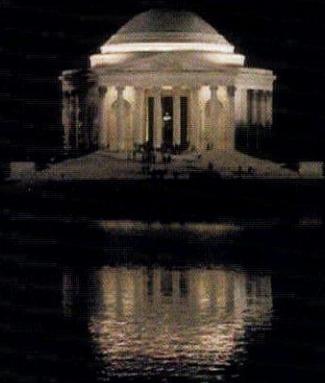
Whether your lighting needs are for more flexibility, efficient energy usage, or better maintenance management, Tridonic is the solution for you.

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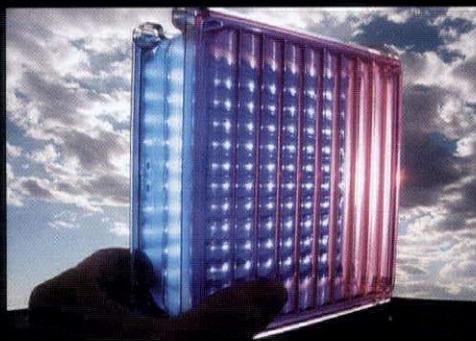
# Special FX® Lighting manufactures unique color products for landmarks, bridges, architecture, and themed entertainment W o r l d w i d e



**Jefferson Memorial, Wash. DC**  
Color correction Dichro-X lenses.  
Architectural Lighting 08/01  
Designer: Mintz Lighting  
Photo: Russ Walkowich

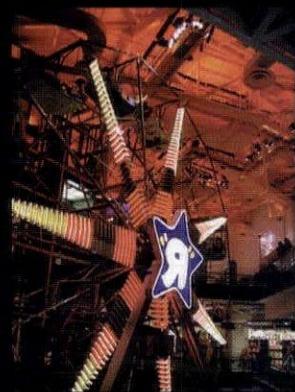
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**Special FX introduces** a unique color pallet of acrylic block. Multi-color custom designs change as they are viewed from different angles. Hundreds of colors and many styles available.



## **Toys R Us, New York City**

Lively playful colors produced in rigid polycarbonate sleeves were specified for this New York flagship store. Special FX manufactures polycarbonate tubes in all sizes and hundreds of colors. Designer/Photographer Paul Gregory, Focus Lighting



**St. Louis Planetarium**  
FX acrylic lenses in color-matched magenta create an unforgettable look  
Designer: Cine Services  
Photo: Rob Meckfessel

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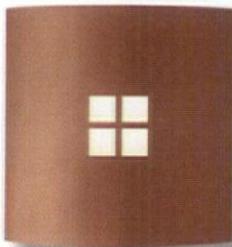
**Landmarks**~Jefferson Memorial, Seattle Space Needle, St. Louis Planetarium, Miami Causeway  
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## Architectural Area Lighting

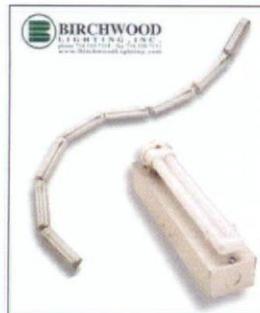
The mini-eSconce is designed for exterior/interior environments and is ADA-compliant. Created as a smaller version of the 14-in.-sq. eSconce (released 2000), it serves as its perfect complement for accenting exterior/interior structures. Available in up, down or up/down illumination. Options include stainless-steel and copper fascia panels. For more information, phone (714) 994-2700 or visit [www.aal.net](http://www.aal.net).



Circle No. 49

## Birchwood Lighting

Sydney is a field-curvable lighting system that utilizes the latest technology in high-lumen compact fluorescent lamps. Sydney can be curved during installation in any direction: vertical, horizontal or any compound angle in between. Sydney comes in single and multi-lamp units to go seamlessly from straight runs into curves. For more information, phone (714) 550-7118, fax (714) 550-7151, email [info@BirchwoodLighting.com](mailto:info@BirchwoodLighting.com) or visit [www.BirchwoodLighting.com](http://www.BirchwoodLighting.com).



Circle No. 52

## B-K Lighting

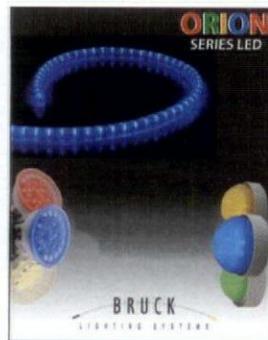
B-K Lighting is proud to introduce Precision2, a stunning new series of in-grade lighting products. Innovative design combines both rugged construction and architectural elegance. The diminutive fixture size is among the smallest in the industry and utilizes a wide variety of lamp sources, including low-voltage, halogen, fluorescent and HID lamps.



Circle No. 50

## Bruck Lighting

Bruck's new Orion Series LED (less the Orion Belt) can be used as a light point equivalent to 20-25W incandescent lamps, yet includes the many benefits unique to LEDs. The Orion Series LED allows you to design in a decorative lighting element without creating light pollution or consuming excess energy. Features include a maximum of 100,000 hours of life, only 1.0-1.5W of power consumption and no UV emissions.



Circle No. 53

## Bartco Lighting

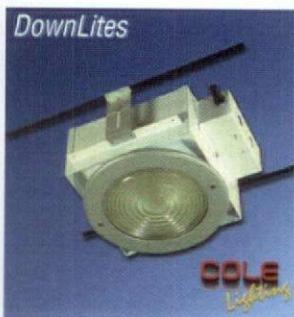
The BFL 293 is a linear miniature fluorescent T5 showcase fixture with an integral 120V electronic ballast that allows for an unlimited length run with all components for an end feed included. It provides a perfect hidden design for smooth and clean display-case or shelf-lighting applications due to its easy mounting via tube-feed stem-mount or by an aluminum reflector housing in anodized polished chrome, polished brass, satin aluminum, satin gold or custom finish.



Circle No. 51

## C.W. Cole

These square and round DownLites for dry ceiling or poured concrete installation are offered in two sizes.

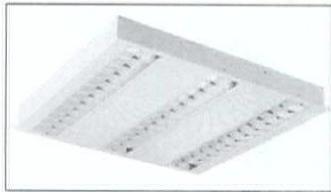


Metal halide, fluorescent and incandescent lamp options are available, as well as a variety of trims and lenses. The robust construction and weather-tight option make these fixtures ideal for many interior or exterior public areas.

Circle No. 54

## Columbia Lighting

Innovative in form and function, Columbia's revolutionary Brio maximizes the advantages of T5 lamp technology, combined with the beauty of perf and the precision optics of parabolic louvers. The result is a stunning blend of performance and style in an astonishingly low-profile housing.

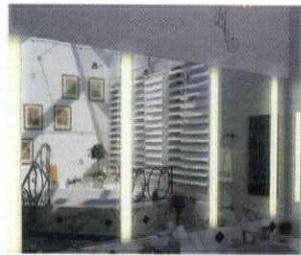


Circle No. 55

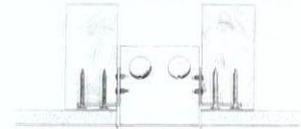
## Dreamscape Lighting

### Reflections Vanity Light

Light emanates from the acrylic or glass panels set flush with the mirror. The T5 fluorescent light source provides a soft but powerful illumination.



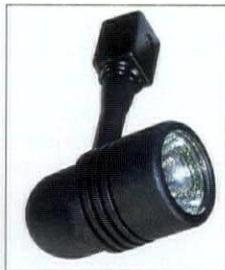
For more information, visit [www.dreamscape-lighting.com](http://www.dreamscape-lighting.com) or phone (310) 838-7043. These products will be on display at Lightfair Booth 446.



Circle No. 58

## Con-Tech Lighting

Our new Symphony MiniTrack lighting orchestrates the importance of versatility in a size that literally fits between your fingertips. From coffeehouses to display windows, these fixtures come in a variety of styles and designs and offer a powerful light source that defies their miniature size. 12V or 24V, 25 Amp.



Circle No. 56

## Electrix, Inc.

Electrix, Inc. manufactures a complete line of specification-grade architectural wall sconces and indirect light fixtures using energy-efficient fluorescent, metal halide, halogen and incandescent lamps. We also produce a range of linear fluorescent indirect cove lighting for commercial and institutional applications as well as custom fixtures designed for any lighting application.



Circle No. 59

## Cooper Lighting

The Metalux Basix is a versatile striplight that can be surface-, cable- or stem-mounted in stand-alone or continuous-row configurations. Eight unique Basix optic choices can be easily installed to the standard striplight channel, adding new lighting opportunities for any commercial application.



For additional information, visit [www.cooperlighting.com](http://www.cooperlighting.com) or contact Cooper Lighting at (770) 468-4800 or email [talktous@cooperlighting.com](mailto:talktous@cooperlighting.com).

Circle No. 57

## Electronic Theatre Controls

ETC's new Source Four HID PAR is a winning combination with the Source Four HID profile spotlight. Perfect for venues requiring a long-life, low-maintenance, 12,000-hour lamp in areas that can't be reached often or easily. Bright beam, energy efficient.



Circle No. 60

## Énergie

Énergie presents Enterio, a unique alternative to parabolic and recessed indirect lighting. Developed by Trilux-Lenze GmbH + Co KG, Enterio's innovative louver design and reflection-intensification technology deliver remarkably high working efficiencies. And Enterio can be managed with a recess depth of only  $\frac{3}{4}$  in., allowing easy installation in ceilings with concealed or exposed grids. The exquisite low-profile design serves beautifully as a surface-mounted luminaire as well. The 1-x-4-ft. and 2-x-2-ft. fixtures feature T5 lamping; 1-x-1-ft. fixture comes with TC-13 compact fluorescent lamping.



Circle No. 61

## FC Lighting

FC Lighting Manufacturers, Inc. is excited to introduce four precision die-cast aluminum fixtures to highlight facades and flagpoles. The FCW5415 (shown) utilizes a calibrated yoke trunnion for vertical aiming and an optional locking swivel base for horizontal direction. The 10-in. and 12-in. round models utilize T15 400W metal halide lamps and have beam spreads of 1x1, 2x2 and 3x3. Its convenient hinged door makes it easily relamped in the field. Accessorized with visors, louvers and color filters.



Circle No. 64

## Engineered Lighting Products

The new "Hole in the Ceiling" downlights are innovative fixtures that utilize compact fluorescent, incandescent or metal halide lamps. The GRG (fiberglass-reinforced gypsum) casting has integral electrical components that are accessible through the bottom of the fixture. Installed, it looks like a custom, formed drywall "light niche" that blends with any interior motif. UL/CUL-listed. Contact us at (626) 579-0943.



Circle No. 62

## Hadco

Hadco's BL5016 12V fixture offers versatile, reliable performance and flexible application choices for a variety of landscaping needs. The fixture is constructed of die-cast, marine-grade alloy for long life. A fully adjustable swivel arm provides precise lighting with a Hadco's MR16 50W lamp. Available in five high-quality powder coat finishes to retain its beauty for many years.



Circle No. 65

## Erco Lighting



Erco LED orientation luminaire - Floor washlight. These luminaires are suitable for many uses, including orientation lighting for areas near walls. The upper half shines in the orientation color, the ground is illuminated with a white LED in the lower half.

Separate, electronic control gear for dimming, flashing and gradual flashing is available, which allows networking with sensors or building control systems. For more information, contact Erco Lighting at 160 Raritan Center Parkway, Unit 10, Edison, NJ 08837; phone (732) 225-8856, fax (732) 225-8857 or email [info.us@erco.com](mailto:info.us@erco.com).

Circle No. 63

## Hydrel

From Hydrel—a leader in sealed outdoor lighting fixtures—comes a family of rugged contemporary floodlights with a consistent styling theme. Long lasting solutions for a wide range of lighting applications from 35W to 1000W. Features two dozen lighting distributions, internal glare control and multiple mounting possibilities. Contemporary styling complements any architectural statement.



Circle No. 66

## Ilex Architectural Lighting

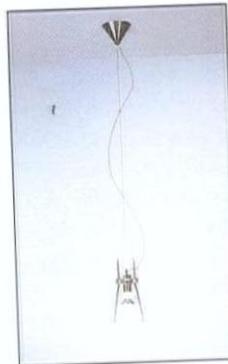
Ilex Architectural Lighting offers a range of sophisticated pendants, sconces and flush mounts for the hospitality and design industry. Creative design, precision machining, European castings with the finest mouth-blown glasses and custom finishes define Ilex quality. Ilex Architectural Lighting's facility provides custom contract lighting solutions. Pictured is the *Diva Grande*, one in the family of simple yet elegant pendants featuring a translucent swirled glass bowl. For more information, contact Ilex Architectural Lighting at (800) 977-4470 or email ILEX@ILEXlight.com.



Circle No. 67

## Leucos USA

Designed by Toso Massari and Associates, Kon Suspension features a cut-off cone in brilliant, transparent crystal, which appears as if hanging in the air. It is made of pressed glass, which enables the presence of a barely perceptible support upon a chrome-plated metal structure within. Its transparency offers a complete technical view of the structural parts, which blend into a perfect union.



Circle No. 70

## Kim Lighting

Inspired by the growth of the "International Style" in design, the Era adds a new dimension to applying the superior performance of Kim's optical systems with four horizontal lamp reflectors and two vertical lamp reflectors. Optically identical to other Kim Site/Roadway systems, including fully rotatable orientation and sealed optical chambers, the Era offers an alternative to rectilinear shapes without compromising performance. A wide range of integrated pole designs further expands application flexibility.



Circle No. 68

## Leviton

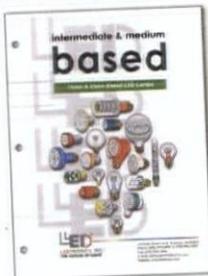
Leviton Lighting Control Division's new Dimensions D3200 Series Controllers offer sophisticated multi-point dimming and scene control features. By building in advanced functionality, Leviton's D3200 Controllers reduce the number of components needed to achieve a scene control network while providing a simplified, cost-effective setup. Devices feature on-screen wizards to guide users through every step of programming and operation.



Circle No. 71

## LEDtronics, Inc.

LEDtronics' *Intermediate and Medium 15mm and 25mm Based LED Lamps* catalog is a comprehensive source of direct incandescent replacement LED (Light-Emitting Diode) lamps. Bases available are 15mm single- and dual-contact bayonet, S6 miniature candelabra and 25mm Edison screw. The catalog covers LEDtronics exit sign retrofit LED lamps and kits, task lighting, darkroom/safelight lamps, R20/21 lamps, solar-energy enabled lamps and decorative lighting solutions. With a choice of sizes, standard electrical bases, sunlight-visible colors, industry-standard voltages, there's a LEDtronics' intermediate- and medium-based LED lamp to fit most applications.



Circle No. 69

## Light Project International

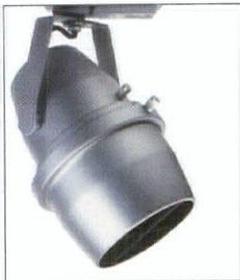
As a leading manufacturer of fine contemporary European-style low-voltage lighting systems, Light Project International is proud to introduce Sun-Light, our most versatile monospot spotlight to date. By combining the subtle beauty of clear acrylic with the bold look of polished chrome, Sun-Light is sure to shine in any lighting application. For more information, contact Light Project International, Inc. at 105 Executive Drive, Suite #210, Sterling VA 20166; phone (703) 471-6411, fax (703) 471-0312, email customerservice@lightproject.com or visit their website at www.lightproject.com.



Circle No. 72

## Lighting Services Inc

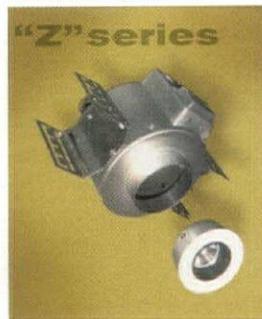
The Lighting Services Inc 238 Series Spotlight is a specification-grade unit designed for all PAR38 lamps up to 250W. The sculpted design of the 238 Series features an internal accessory cartridge that provides a visually quiet, glare-free light to enhance any interior space. The 238 Series is available in 100V, 120V and 230V, as well as a variety of finishes, including platinum, graphite, black, white and silver. For information, phone (800) 999-9574, (845) 942-2800; fax (845) 942-2177 or visit [www.LightingServicesInc.com](http://www.LightingServicesInc.com).



Circle No. 73

## Lucifer Lighting Co.

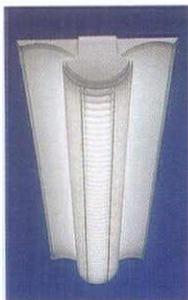
The "Z" Series low-voltage downlight from Lucifer Lighting features a recessed flush trim. Our adjustable trim allows *tunable* lighting with 45-degree lockable aiming while holding up to *three* lenses, louvers and filters. The "Z" Series removable trap-door transformer allows quick and easy access. Small, flush and tunable—what more could you want from a downlight?



Circle No. 76

## Lithonia Lighting

The Avante surface/suspended mount luminaire features contemporary, low-profile styling and efficient and effective light distribution. This newest addition to the Avante recessed direct/indirect line is suitable for general area lighting or task-specific illumination in both new construction and remodeling applications. T5/HO, T8 and compact fluorescent configurations are available in 2-, 4- or 8-ft., field-joinable units for continuous rows.



Circle No. 74

## Lutron Electronics Co.

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Circle No. 75

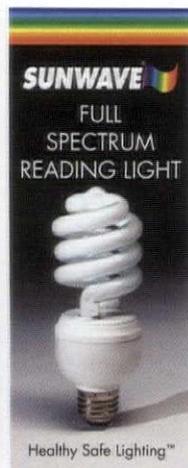
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Manning Lighting introduces new ADA-approved wall sconces featuring Imago from Knoll Textiles. Warm and inviting, these fixtures come in a variety of standard shade and finish options. And because they sit just 4 in. from the wall, they're a beautiful choice wherever ADA-approved lighting is required. Find out more. Visit [manningltg.com](http://manningltg.com) or call (920) 458-2184.



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Part of Tech Lighting's new scone collection, Fire Wall features colored or clear Murano glass surrounding a small frost interior glass. Shown here in amber, other glass color options include clear, cobalt and red. Base comes in your choice of chrome, gold and satin nickel finishes. To complete the look, add corresponding Fire pendants. For more information, please call (800) 522-5315 or visit [www.techlighting.com](http://www.techlighting.com).



Circle No. 86

## Unilight Industries



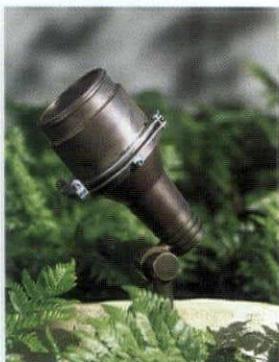
Unilight sets the highest standards when it comes to custom lighting design and manufacturing. To complement your custom lighting requirements, Unilight has introduced over 50

exciting "Standard" products like the pendant featured here. View more custom and standard fixtures at [www.unilight.com](http://www.unilight.com) or Call (800) 361-0472 for your local representative.

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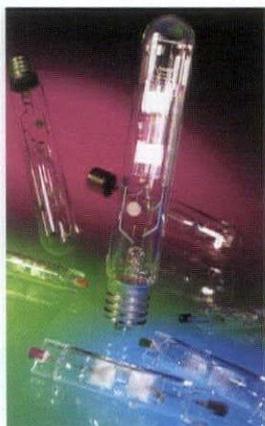
Teka Illumination introduces a series of PAR, Ceramic Metal Halide lamp enclosed luminaires crafted from copper, brass and stainless steel. Fully adjustable with hinged lamp access, which also accepts spread lenses, louvers and color filters, these exterior floodlights are very durable and versatile.



Circle No. 87

## Ushio America

Ushio Colorlite metal halide lamps produce highly saturated colors of blue, green, magenta and orange, so color filters are not required for fixture use. These lamps can be used with standard ballasts and existing 150W double-ended lamp fixtures or 400W and the new 1000W mogul base in blue and green.



Circle No. 90

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The Icon with perf is one of the ADA-compliant wall sconces offered by OCL. Vertical bars of aluminum accentuate Icon's cylindrical virgin white acrylic. The optional perf shield compliments the simplicity of the design. Icon is offered in incandescent and compact fluorescent lamping. Flexibility and style, Icon by OCL. For more information, phone (314) 863-1895.

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**Osram Sylvania**

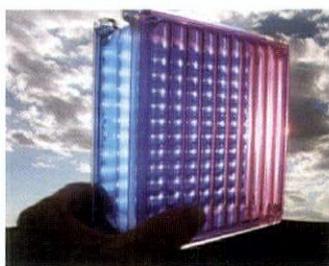
The Sylvania Tru-Color Metalarc Ceramic 250W Metal Halide Lamp combines the industry's first innovative "bulgy" arc-tube design with proven pulse-start technology for superior color performance over conventional ceramic metal halide lamps. With a CRI over 90, this lamp provides excellent color for high-wattage HID applications. Its high mean lumens, excellent color characteristics and compact size allow for use in a wide variety of applications such as retail stores, malls, lobbies, office areas, landscape lighting, accent lighting, display lighting and studio lighting.



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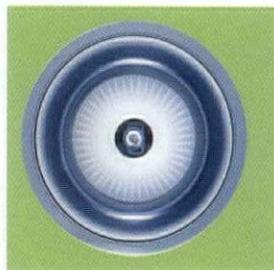
Custom and standard skylights from Naturalite Skylight Systems provide beautiful, natural light that can make the difference in your next project. You get single-source service and a commitment to quality that is backed by the strength of The Vistawall Group. Design, extruding and finishing all are done in-house. Let us light up your next job. For more information, phone (800) 527-4018.



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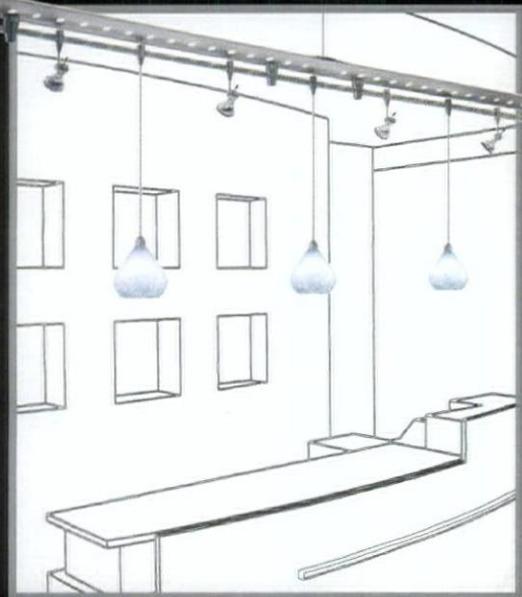
ACE Awards	23-24
Alanod - GmbH & Co. KG	1
American Environmental Products/Sunwave	.80
Architectural Area Lighting	.69, 74
B-K Lighting	.58-59, 74
Bartco Lighting	.21, 74
Birchwood Lighting	.83, 74
Bruck Lighting	.51, 74
C.W. Cole	.19, 74
Columbia Lighting	Cov. 4, 75
Concealite	.55
Con.Daz Lighting	.18
Con-Tech Lighting	.12, 75
Cooper Lighting	Cov. 2, 75
Dreamscape Lighting	.75
Electrix, Inc.	.15, 75
Electronic Theatre Controls	.49, 75
Elliptipar	Cov. 3
Énergie	.68, 76
Engineered Lighting Products	.76
Erco Lighting	.11, 76
FC Lighting	.13, 76
Hadco	.14, 76
Hydrel	.63, 76
Ilex Architectural Lighting	.54, 77
Industry + Design Light	.54
Insight Lighting	.60
IALD	.87
Kim Lighting	.31, 77
LEDtronics, Inc.	.20, 77
Leucos USA	.67, 77
Leviton Mfg.	.65, 77

Light Project International	.28, 77
Lightfair International	.82
Lighting Services Inc	.17, 78
Lithonia Lighting	.78
Lucifer Lighting	.27, 78
Luminis	.88
Luraline Products Co.	.55
Lutrex	.10
Lutron Electronics	.57, 78
Manning Lighting	.5, 78
Martin Professional	.22
Merchandise Mart	.25
Original Cast Lighting (OCL)	.9, 79
Osram Sylvania	.53, 79
Prescolite	.6-7, 79
Prisma North America	.4, 79
Q-Tran	.64
Special FX Lighting	.73, 79
Spero Lighting	.8, 79
Super Vision International	.85
Tech Lighting	.29, 80
Teka Illumination	.18, 80
Translite Sonoma	.84, 80
Tridonic	.72
Unilight Ltd.	.61, 80
Ushio America	.62, 80
Visa Lighting	.3, 81
Vistawall	.70, 81
Waldmann Lighting	.16, 81
The Watt Stopper	.71, 81
Zumtobel Staff Lighting	.45, 81

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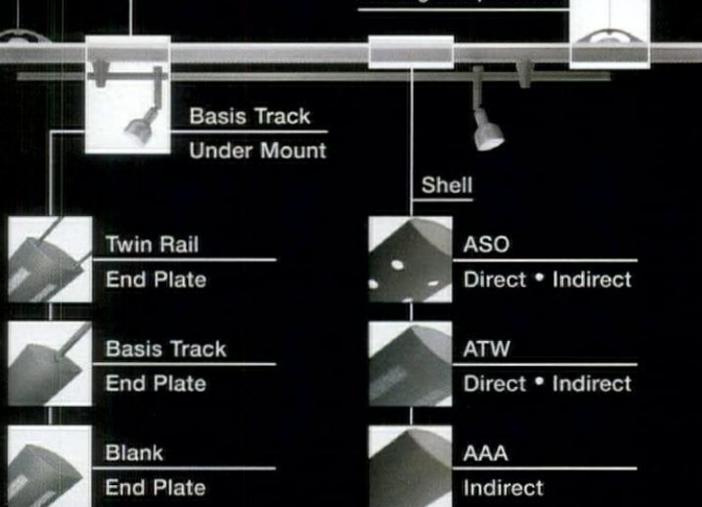
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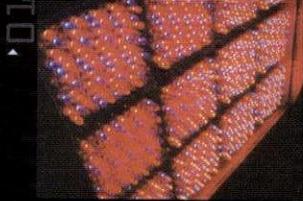
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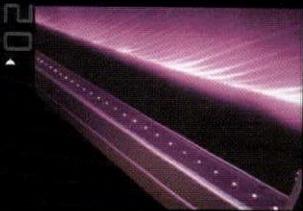




## LED



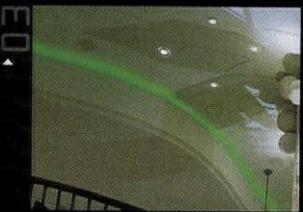
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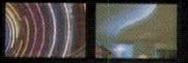
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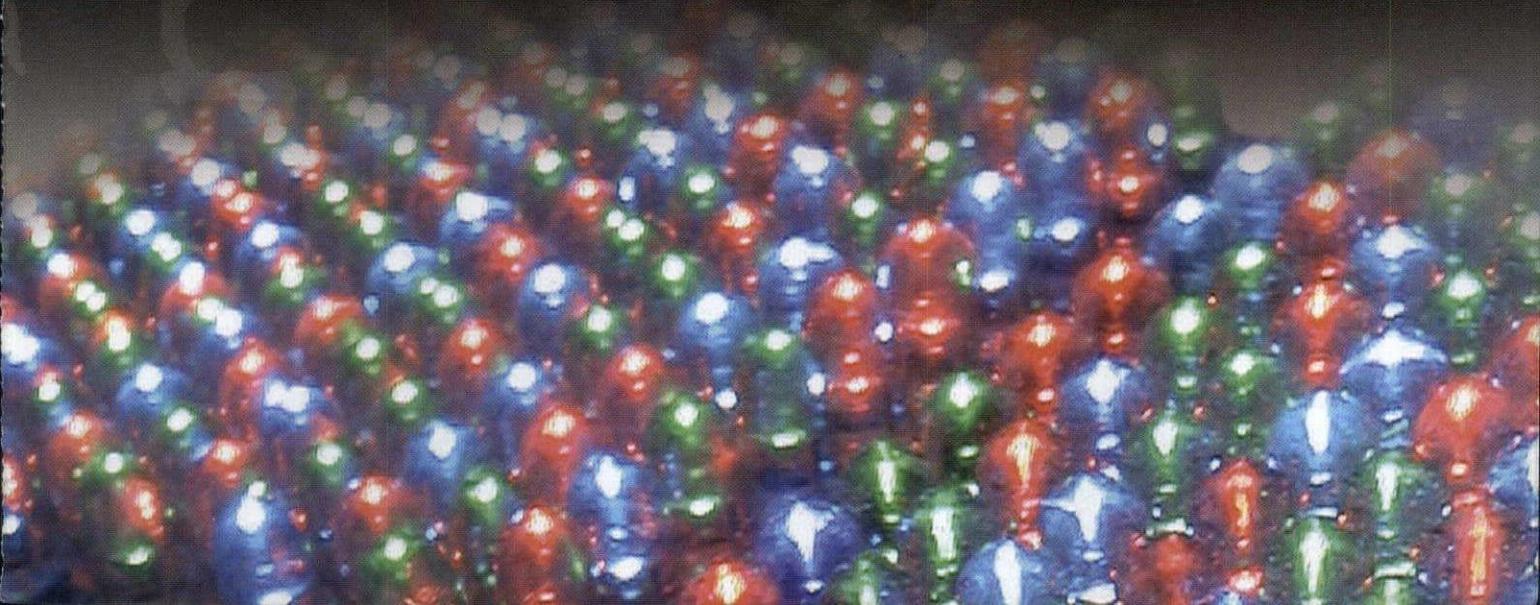


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# The Value of a Professional

BY STEFAN GRAF, IALD, IES, LC

**T**here are some important questions that should be considered when planning a new project, specifically: Is “good” illumination critical? What is good lighting design and how is it achieved?

Light is a technically difficult yet astonishing medium that requires mastery of varied and continually evolving disciplines. A lighting design practice integrates the arts, sciences and business of illumination design and implementation far beyond concerns of visibility and horizontal footcandles.

Lighting designers work as part of a design team and, like architects, charge fees for services rendered. Professional lighting designers bring solid technical acumen and sensitive design technique to architectural and landscape projects. But the value-added services they provide can make or break the success of a project and, therefore, outweigh, the impact of their fee.

An owner or project designer may be unaware of the advantages an independent lighting consultant can bring to today’s design and construction processes. For example: What is the difference between the services provided by a lighting professional versus those provided

**Education.** Knowledge of physics, optics, electricity, ergonomics, business, codes, environmental issues, construction, vision and the art of design are all essential to creating great lighting solutions. Lighting professionals must be well-grounded and continually educate themselves to provide the best possible service. They do so in many ways including networking, reading trade magazines and journals, attending and presenting seminars. This sort of give and take, along with healthy competition, forwards the profession as a whole.

## COST & PAYBACK

Architectural lighting design is succeeding as a profession because of the many solid answers to this question: Why should an architect or owner pay for lighting design services when it can be done in house or by a salesperson at no additional “cost”? The fee that a lighting designer charges is difficult to sell only when the extent and value of the services are not recognized. But those owners and architects who have benefited from independent, skillful lighting design realize that there are both short- and long-term paybacks that far outweigh a fee.

## Professional lighting designers bring solid technical acumen and sensitive design technique to projects.

by an electrical engineer or interior designer? The electrical engineer specifies lighting because it is part of the electrical system and the interior designer selects decorative lighting equipment. Right? So what has changed to create a profession that specializes in lighting?

**Technology.** Lighting equipment and controls technologies are developing at light speed: Hundreds of new products are introduced to the marketplace annually. To provide proper design solutions that make use of the latest, most cost-effective technologies, lighting professionals must attend national tradeshow and continually update product information and samples from hundreds of manufacturers. Keeping abreast of the newest weapons in the lighting arsenal has become time-intensive and increasingly essential. Independent lighting consultants do not sell or install equipment, nor do they depend on the recommendations of lighting salespersons. So the client receives a lighting design based on research and expertise—free from conflicts of interest.

**Technique.** Illumination is the ephemeral partner of architecture. Light is invisible until it strikes an object or surface. And it is controlling this difficult, transitory medium that gives the lighting “artist” the ability to create hierarchies, dynamics and mood. Lighting design has become a creative extension of architectural design, improving visibility and complementing form, program and color. Experience and, of course, talent create patterns of illumination that seamlessly support overall project goals. Light is the “silent” partner of design.

Lighting designers can be a unique, value-added resource. In many instances, a lighting designer will actually reduce the project construction and/or operations costs. Here are some specific areas where this is repeatedly demonstrated:

**Equipment Cost Control.** Lighting designers can provide a design to meet an established budget, but are most helpful in establishing the budget. They will select equipment from numerous manufacturers to help keep bids competitive and recommend lighting equipment or techniques to reduce installation costs. Their involvement encourages competition. However, some light fixtures are “one of a kind,” in which case a price may be obtained from the manufacturer early on. Unit pricing gathered during design development can be compared to unit pricing from the bidding contractors in order to spot gross anomalies. The designer may recommend distributors in order to procure additional competitive bids. Finally, the designer will work with the owner’s rep and contractors to achieve budget objectives without sacrificing design intent.

**Operations Cost Control.** Reducing the owner’s operations costs may be a crucial part of the design decisions, and these measures often benefit the project aesthetically and practically. Lifecycle cost analysis compares the return on initial investment of different techniques or technologies. Often, costs can be reduced simply by not overlighting a space. Overlighting is

*(Continued on page 88)*

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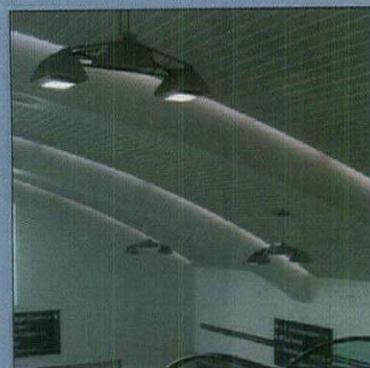
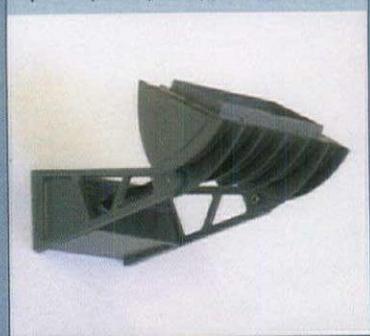
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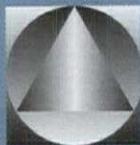
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88

(Continued from page 86)

common if the specifier uses only rote horizontal footcandle prescriptions or fails to understand the project's specific visual and task issues. All too often the specifier relies on recommendations from persons selling equipment.

There are dozens, if not hundreds, of ways a professional designer can reduce costs and enhance the project. Improving the reflectance of surfaces (e.g., choosing lighter colors for walls and carpets or replacing dingy ceiling tiles) can help reduce lighting equipment and operations costs. Selective spotlighting is often key to retail sales. Integrating daylight with electric lighting saves energy and provides a satisfying connection to the outside world.

**People Costs.** Quality of light affects people on many levels. New scientific studies are demonstrating how lighting affects retail sales, the productivity of office workers, wayfinding and safety and security. Lighting designers are keenly aware of these issues and the techniques demanded to achieve results. The cost of poor lighting that just barely meets code is not worth the risk in areas where the "people factor" is important.

**Aesthetic Costs.** Technical skill can be learned but talent cannot. Architects know that the value-adder for brilliant and creative design is difficult to assess and depends on the appreciation of decision-makers. However, the difference between a competent lighting design and one that brings architecture to its fullest realization, or beyond, is more often felt than intellectually apparent.

When these cost factors are put into play, there are demonstrable and recognizable benefits from professional lighting design. So, how do you identify a professional lighting designer? As with any professional hired to provide a service, there are certain credentials that help ensure quality.

### QUALIFYING A LIGHTING DESIGNER

Anyone with a business card can call himself a lighting designer. Electrical systems designers, electrical contractors, electrical distributors, sales reps and lighting retailers all use the title. There are ways, however, to identify the full-time, independent, professional lighting consultant. If the design of a project is important, the persons in control of lighting design and specification should be participating in one or more lighting programs and associations such as:

**IALD Professional and Associate Members.** The International Association of Lighting Designers (IALD) was established in 1969 to recognize independent lighting design professionals and promote lighting excellence. Professional membership is limited to experienced designers and is contingent on peer review of an applicant's portfolio. IALD members must abide by rules of ethics and do not sell or install lighting equipment.

IALD members have worked on many of the world's most recognized structures. Based in Chicago and comprised of more than 700 members throughout North and South America, Europe, Asia and Australia, the IALD's role is to set the highest standards in the lighting design profession and to advance lighting design excellence in the built environment. Visit the IALD website at [www.iald.org](http://www.iald.org) for more information.

**LC, Lighting Certification.** The National Council on Qualifications for the Lighting Professions (NCQLP) recognizes individuals that understand lighting principles and can offer technical skills. An exam is administered and certification given to those that pass. The exam is open to anyone in all lighting professions with a minimum of three years experience. A person with the LC credential has demonstrated a knowledge base and a commitment to lighting, having passed this technical exam.

**CLC, Certified Lighting Consultant.** This program of the American Lighting Association trains individuals in basic knowledge for residential lighting applications.

**Lighting Design Awards Programs.** The industry recognizes exemplary lighting design each year through various awards programs. Participation and receipt of awards are an indication of the skills and talent of a designer. Lighting design firms typically participate and excel in awards programs.

**Lighting Education.** Professionals regularly attend and give educational seminars locally, nationally and internationally. Many also teach or lecture at local universities. To keep their designs fresh and stay current with product technologies, lighting designers are obliged to expand their knowledge base in the multitude of lighting-related disciplines and techniques.

Architects, facility managers, designers, electrical engineers, builders and owners are among the many who are embracing professional lighting designers to augment their projects. They are finding that the value of an independent lighting design professional is an integral element of outstanding client service. ■

*Stefan Graf, IALD, IES, LC is principal of IlluminArt in Ypsilanti, MI.*