

JANUARY/
FEBRUARY
1998

architectural lighting

WORLD OF DISNEY

DISNEY STORE

ENERGY CODE UPDATE
FIBER-OPTIC COMPONENTS
NCQLP RESULTS

A MILLER-FREEMAN PUBLICATION
U.S. \$6.00
www.archlighting.com
www.qualitylight.com

© 2007 OSRAM SYLVANIA INC.



Redder reds. Bluer blues. Chartreusier chartreuses?



Our new Designer Series METALARC™ PRO-TECH™ offers superb color

rendering that, while sometimes difficult to explain, is easy to see. Warm, well-balanced,

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

with color characteristics that help make merchandise look its best. And since you'll no

doubt want to take advantage of performance like this wherever possible, it's available for

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

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

SYLVANIA
BRILLIANT LIGHT™

Circle No. 1 on product service card

The
LINEAROSSA
Collection

LUCEPLAN presents a line of highly engineered lighting fixtures designed specifically for the contract lighting market. These finely detailed fixtures are all UL Listed and available for rapid shipment from our NYC facility.



METROPOLI
Four sizes, three finishes, incandescent or fluorescent lamping, indoor/outdoor.



BAP
Two sizes, a variety of mounting options, fluorescent lamping, non-glare head.



ORCHESTRA
Four modular sizes available for recessed wall or ceiling use: compact fluorescent lamping, indirect or diffused illumination, graphics/signage applications.



STRIP
Four sizes, three finishes, linear fluorescent lamping with electronic ballasts, elegantly curved opal diffuser, less than 4" depth.

ORCHESTRA



Call or write to receive our illustrated brochure and catalog:
1-800-268-7790

Recessed Housings of Aluminized Sheet Metal have a minimal depth corresponding to standard wall studs. Perfect for pre- or post- wall construction in plaster, sheetrock, wood or masonry.

12"x12"



7"x12"

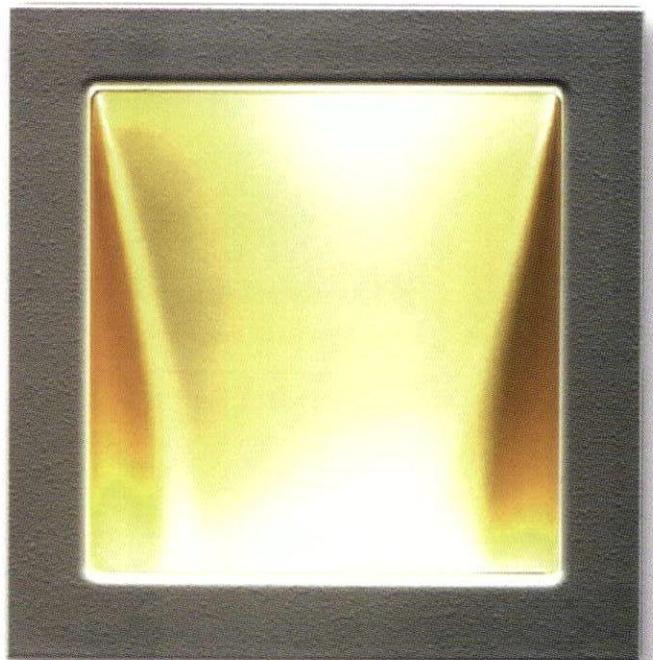


12"x7"

7"x7"



+ 3-3/8" +

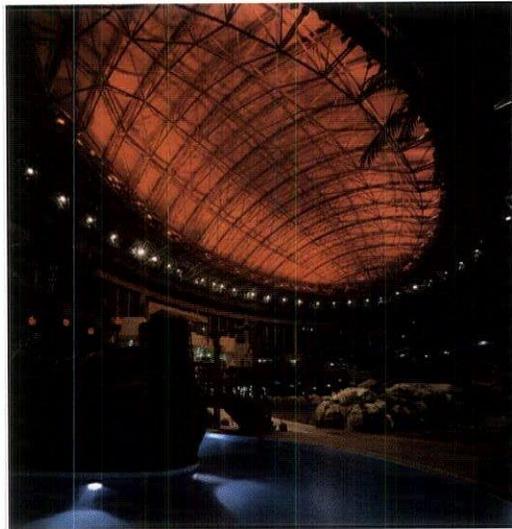


A finely tuned ensemble of modular, recessed lighting instruments providing creative solutions for harmonious interior lighting compositions.

ORCHESTRA is part of the LUCEPLAN **Linearossa Collection**: commercial-grade fixtures intended for use by the lighting professional, designed for a wide range of applications and developed with the same attention to quality and detail as the Lineagiulla Collection, our more decorative lighting products.

LUCEPLAN USA Inc.
315 Hudson Street
New York, NY 10013
Tel 212 989 6265
Fax 212 462 4349
luceplan@mail.idt.net

Linearossa
LUCEPLAN USA



TSURUMI RYOKUCHI POOL

36

DESIGN FEATURES

- 30 **That's Entertainment**
Lighting at this Disney store gives new meaning to character animation
- 34 **Law & Order**
Lighting at this Madison, WI law firm helps to unify and organize the space
- 36 **Pool of Lights**
Colored lights and fiber optics create an intriguing atmosphere at a Japanese pool
- 40 **Core Components**
The warm finishes of the lobby in a Baltimore facility are enhanced by lighting

INDUSTRY FOCUS

- 42 The New Energy Code
- 44 NCQLP: The Results Are In

TECHNIQUE & TECHNOLOGY

- 46 **Technique** Applying Light & Color
- 48 **Technology** Fiber-Optic Fixtures—Developments

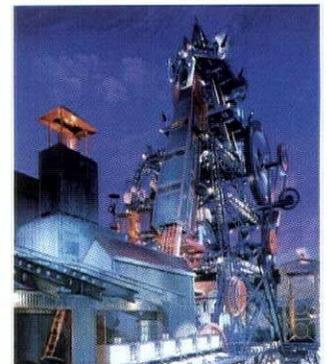
DEPARTMENTS

- 8 **Editorial** A New Year, A New Magazine
- 12 **Updates** American Companies Make Acquisitions
- 20 Applications
- 22 People
- 23 Calendar of Events
- 24 **Insights** Lesley Wheel, Allan Leibow
- 28 **Highlights**
- 52 **Business** Lighting for Humans
- 54 **Product Focus** Student Competition
- 56 **Product Focus** Lumiere Paris
- 60 **Products**
- 63 Ad Index
- 64 **Perspectives** Two-Component Lighting



UNIVERSITY OF MARYLAND

40



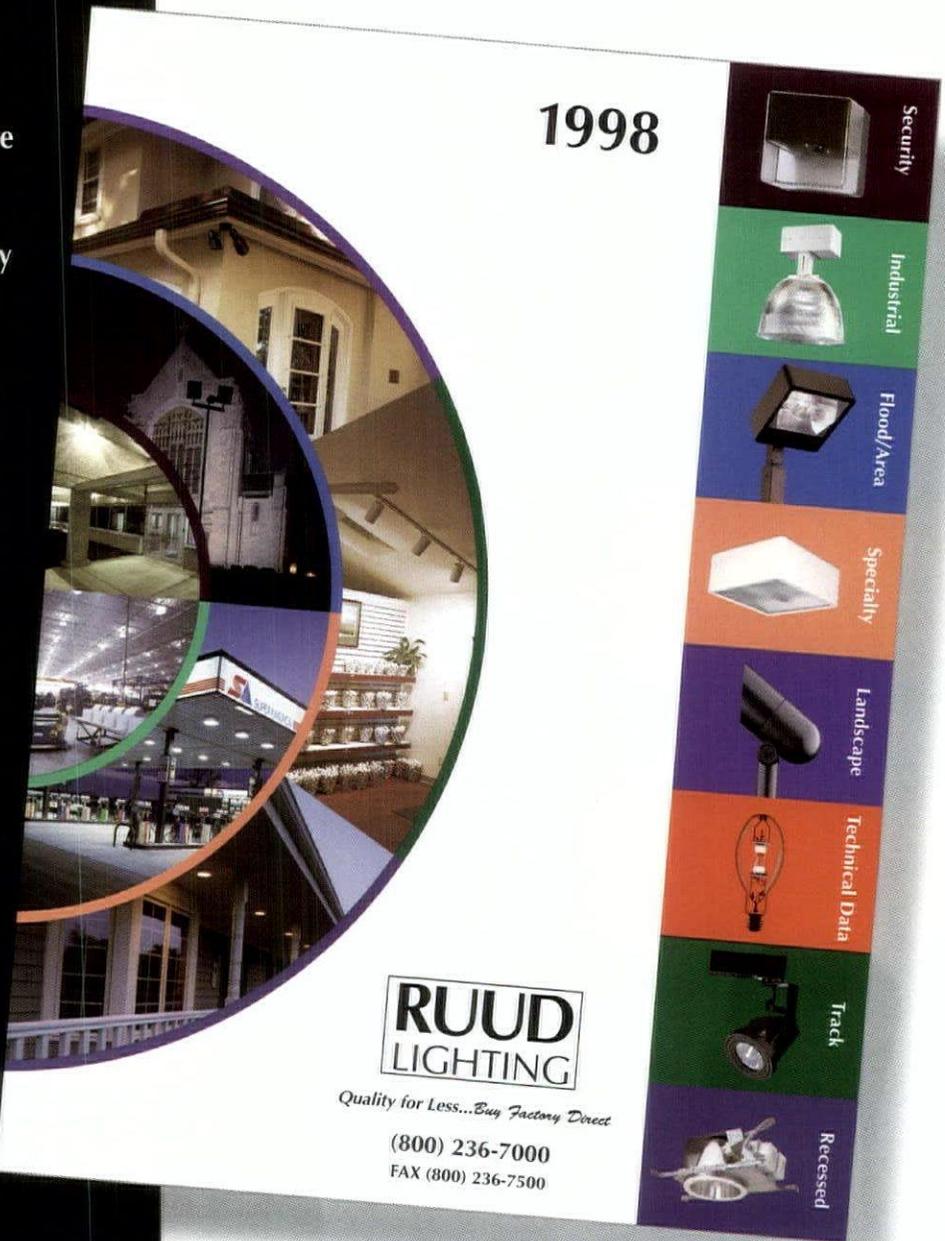
TECHNIQUE

46

RUUD LIGHTING

Quality for Less...Buy Factory Direct

- Factory-direct service
- Highly trained customer service
- Cross-referencing to sub specs
- Quality products—great variety
- Lamp with every HID fixture
- Easy quotes and ordering
- Lighting layout assistance
- Try before you buy samples
- Expert technical support
- Competitive pricing
- DeltaGuard® finish
- Product warranties
- Quick shipments



Call today for a free catalog:

(800) 236-7000

fax: (800) 236-7500

In Canada phone (800) 473-1234

...all at your fingertips!
The Ruud Lighting 1998 Catalog

Circle No. 3 on product service card



ORBITER

The 216 module revolves around two separate axes and pans vertically on a third axis for optimal and precise target illumination.

75 watt MR lamp usage and a complete range of LSI accessories complete a package that fits in the palm of your hand.

Talk about high tech miniaturization!



For an Orbiter information kit, write on your letterhead to:
Lighting Services Inc
2 Kay Fries Drive
Stony Point, NY 10980
(800) 999-9574



<http://www.LightingServicesInc.com>

Circle No. 4

architectural lighting

Editor-in-Chief

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

Associate Publisher/
Editorial Director

CRAIG D'LOUIE
(212) 615-2304
e-mail: cdilouie@mfi.com

Designer

JEANNE LAWLOR
(212) 615-2273

CONTRIBUTING EDITORS

LOIS BURGNER, WANDA JANKOWSKI, JEANNE GORMAN

Group Publisher	PHILLIP A. RUSSO	(212) 615-2368
Production	VINCE HABICK	(415) 905-2454 fax (415) 905-2236
List Rental		(847) 619-9800 fax (847) 619-0149
Circulation	WENDY SAAR	(212) 615-2687 fax (212) 279-4460
	CUSTOMER SERVICE	(800) 255-2824 fax (847) 647-5972
Reprints	VICKI BREWSTER	(516) 365-2646 fax (516) 681-7315 62 Northwoods Rd., Manhasset, NY 11030
Marketing Department	CINDY MOY	(212) 615-2392 fax (212) 279-3955
Classified Sales		(212) 615-2608 fax (212) 279-3955

ADVERTISING SALES

NATIONAL SALES DIRECTOR/INTERNATIONAL SALES	DANIEL T. BURKE	(212) 615-2608 fax (212) 279-3955
NORTHEAST	RICHARD J. ANCAS	(732) 450-9792 fax (732) 450-9793
SOUTHEAST	HELENE FINEBERG	(914) 762-5056 fax (914) 762-4755
MIDWEST/CENTRAL	MARIE KOWALCHUK	(773) 205-3256 fax (773) 545-5970
WEST	JON HENG PATRICIA OLAIZ HENG	(626) 799-3610 fax (626) 799-5853

MILLER FREEMAN, INC.

CEO—Miller Freeman Global; Chairman—Miller Freeman, Inc.: Marshall W. Freeman;
President: Donald A. Pazour; Senior Vice President/CFO: Warren "Andy" Ambrose; Senior Vice
President: H. Ted Bahr; Senior Vice President: Darrell Denny; Senior Vice President: David
Nussbaum; Senior Vice President: Galen A. Poss; Senior Vice President: Wini D. Ragus; Senior
Vice President: Regina Starr Ridley; Vice President/Production: Andrew A. Mickus;
Vice President/Circulation: Jerry Okabe



MILLER FREEMAN DESIGN GROUP

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

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

10,000 HOUR MR16

with no color loss...



now
stays brilliant!

brilliant!

The Ultraline™ lamp from Ushio is rated at twice the life of any MR16 lamp on the market today. But wait, it gets better...

Ultraline™ lamps maintain their bright color throughout their long life — our special titanium coated reflector makes this possible. And since the integrity of the reflector is maintained there's no degradation over time... so consistent white light brilliantly illuminates your merchandise with no color shift or change in hues.

Every Ultraline™ lamp has a UV-cut inner burner to eliminate potentially harmful ultraviolet wavelengths. Your valuable apparel or art is no longer an easy target for discoloration and fading from ultraviolet exposure.

Installing Ultraline™ lamps buys you time and money, too. At 10,000 hours life, frequency of lamp changes are reduced by better than half, so savings on maintenance related costs are soon realized.

Call us today. Make sure you're up-to-date on the most extensive line of MR16 and MR11 lamps in the industry — available only from...

USHIO

800.218.7446

Circle No. 5 on product service card

Visa Lighting offers more than just pretty faces.

What you see on the surface is only a small part of what you get when you select Visa products. At first glance you notice the same high quality decorative product that you have come to depend on to provide that perfect look.

What isn't readily apparent, and the real beauty of it all, is the illuminating performance these



products produce. Tucked inside those great looking fixtures are systems and features, such as our patented Forward Throw Modules, that satisfy real world lighting needs.

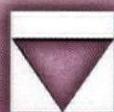
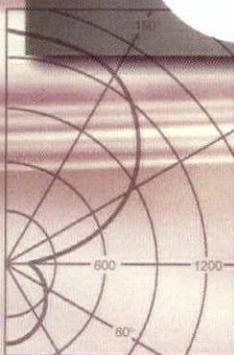
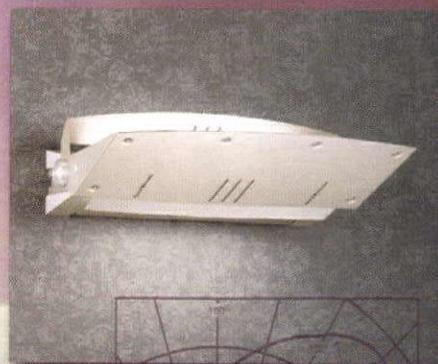
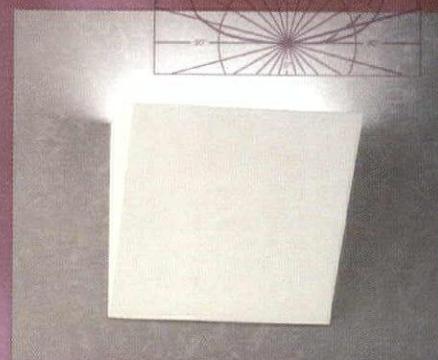
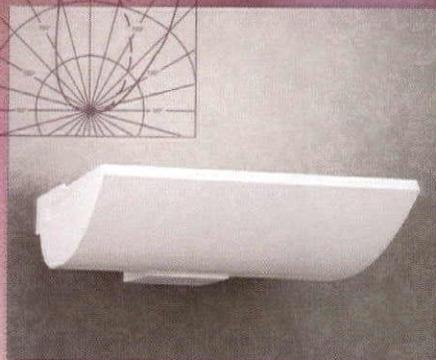
What results are products that work as hard at lighting a space as they do at beautifying it.



When you look over a Visa product, consider its face, its artful body and

attractive stance, but don't stop short. Take a moment and consider, these products also solve lighting problems, allowing you to create a cleaner lighting system design overall. That's why

Visa Functions Beautifully.

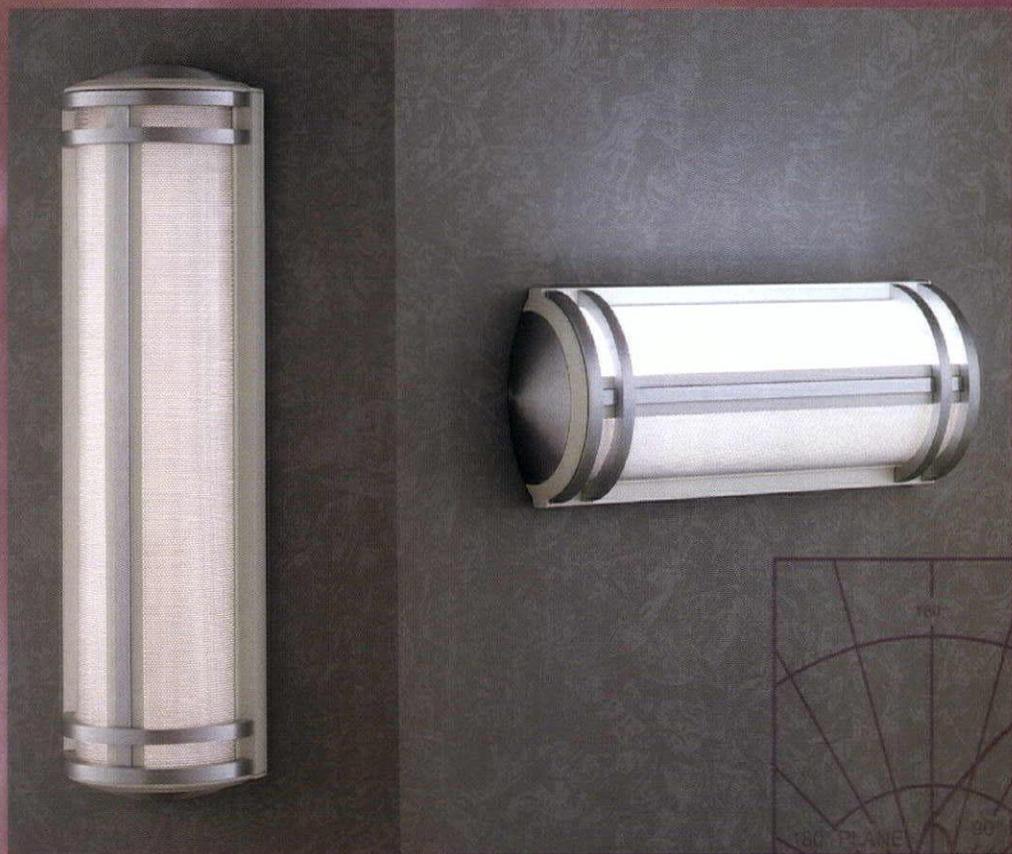


VISA LIGHTING
An Oldenburg Group Company

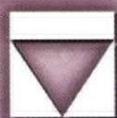
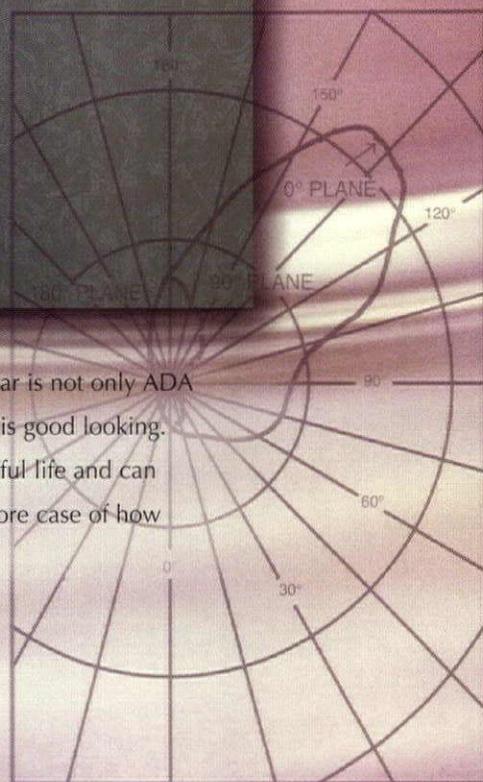
Visa Lighting Corporation • 8600 W. Bradley Rd. • Milwaukee, WI 53224

800/788-VISA • www.visalighting.com

Avatar, the embodiment of an idea that exceptional design provides robust solutions to real world lighting needs.



Through the use of a unique lens and reflector system design, Avatar is not only ADA compliant, it offers unprecedented lighting control for a product this good looking. It's made from extruded and die cast components for a long beautiful life and can light space like no other decorative product of its kind. Just one more case of how **Visa Functions Beautifully.**



VISA LIGHTING
An Oldenburg Group Company

Visa Lighting Corporation • 8600 W. Bradley Rd. • Milwaukee, WI 53224

800/788-VISA • www.visalighting.com

Circle No. 6 on product service card

A NEW YEAR, A NEW MAGAZINE

It was more than two and a half years ago when I arrived at *Architectural Lighting*. Like many people in our industry, I had “fallen” into lighting five years earlier and was excited at taking the editorial reins of what I thought was the finest lighting publication available. One of the first people I met was Christina Trauthwein, our managing editor. Together, we worked to make *Architectural Lighting* the most useful, informative and entertaining magazine on your reading list. We’ve worked hard as a team to redesign the magazine, expand its editorial offering and listen to your needs. We’ve sponsored more industry events, launched a few of our own, have begun building a comprehensive information forum on the Web at www.qualitylight.com, and launched two new issues (see our new *Lighting Source Directory* this fall).

It’s been a terrific ride, with a lot of change and growth, and now I’m pleased to announce another exciting new change.

Starting this issue, I have moved into the business side of the magazine and Christina has moved up to take over the editorial seat as editor-in-chief. Surrounding Christina is a new “dream team” of some of the finest writers in our industry. This is an exciting and positive new development; I can think of nobody more qualified to take *Architectural Lighting* to new heights of quality.

As always, thank you for reading!

—Craig DiLouie

As Editor-in-Chief, I look forward to developing a strong staff with a new, soon-to-be-announced editorial advisory board and experienced writers such as Wanda Jankowski, Lois Burgner and Jean Gorman, all of whom have remarkable talent and industry savvy. In my new position, I plan to build upon Craig’s editorial excellence with new vitality and fresh perspective. My goal in each of our six issues is to continue delivering informative and productive editorial that will inspire you and strengthen the profession.

To that end, this issue marks the debut of two columns. Our new Business column, written by Keith Yancey, AIA, PE, will provide you with strategies on successfully managing your business and tips to better serve your practice (see page 52). Highlights, a light and easy read, featuring both entire projects and “bits & pieces,” will hopefully offer you innovative, unique and often fun solutions for designing projects slightly out of the ordinary, or spicing up the mundane (see page 28).

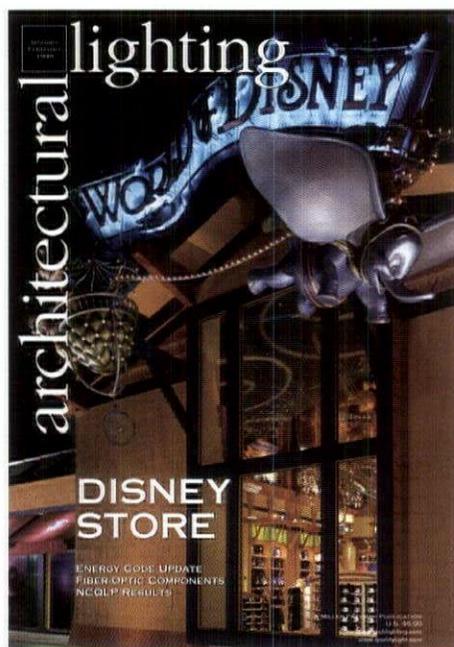
In addition to these new sections, this issue will bring you the regulars: design features—including our cover story, the World of Disney Store, and a public pool in Japan; two Industry Focus stories—the results of the NCQLP exam (congratulations to all who passed!) and an energy code update; the second part of our series on light and color; and Product Focus sections on exciting new products Craig and I found at the Lumiere Paris trade show and the creative designs of students at the University of Southwestern Louisiana.

I look forward to a continuing relationship with all of you and to hearing your thoughts on the magazine and the industry. Your contributions—in the form of case histories, ideas on design and business practices and product information—have been invaluable in shaping what *Architectural Lighting* has become.

Please keep me informed about the issues and topics important to you and give me your opinions on what you’ve read, or hope to read, so that *Architectural Lighting* can serve your profession to the fullest. I encourage you to write a letter to the editor, or feel free to call me directly at (212) 615-2631.

Thank you, as always, for your loyalty and support.

—Christina Trauthwein, Editor-in-Chief



COVER PHOTO

©KORAB HEDRICH

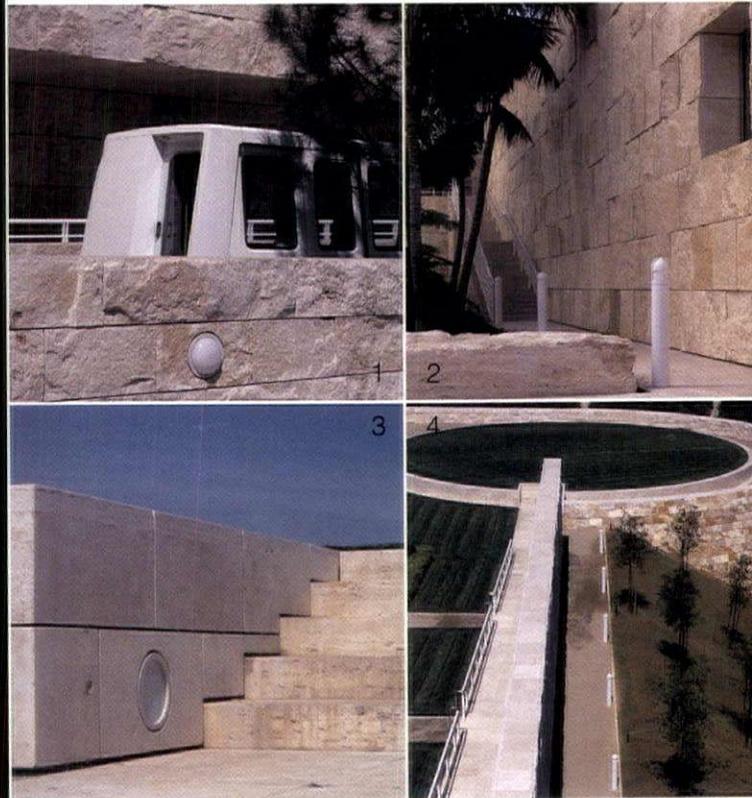
BLESSING

BEGA

BEGA luminaires integrated into the Getty Center Design

1. Flush, recessed wall series at Tramway
#2541P/MOD-FM with 2-9W fluorescent
- 2 & 4. Custom designed bollard in public spaces
and helicopter ramp
#8346 with 18W fluorescent
3. Flush, recessed wall series at Steps
#2553P/MOD-FM with 2-18W fluorescent

Fisher Marantz Renfro Stone, Inc.
Architectural Lighting Design



BEGA 1005 Mark Avenue Carpinteria, CA 93013
[P] 805-684-0533 • [F] 805-684-6682

Circle No. 7 on product service card



{THIS IS THE REST OF THE LIGHTING INDUSTRY}

ARCHITECTURAL AREA LIGHTING
LA MIRADA, CA

COLUMBIA LIGHTING
SPOKANE, WA

KIM LIGHTING
CITY OF INDUSTRY, CA

In every field of endeavor, someone has to lead the pack. And for the seven companies that comprise Lighting Corporation of America, leading is a way of life. For commercial and residential indoor and outdoor lighting, LCA offers decision-makers innovative design, outstanding performance, easy installation and on-time delivery for virtually every product on your project blueprint. All it takes is one call to one rep. And thanks to



{THIS IS LIGHTING CORPORATION OF AMERICA}

PRESCOLITE • MOLDCAST
SAN LEANDRO, CA

PROGRESS LIGHTING
SPARTANBURG, SC

SPAULDING LIGHTING
CINCINNATI, OH

our new state-of-the-art software, LCA companies will offer quotation, order entry and delivery information on the spot from any spot on the planet. So next time you specify lighting, look for the seven companies of LCA. When it comes to quality lighting, you can't find a better source. For more information, call your local rep.



**LIGHTING
CORPORATION
OF AMERICA**

WE LIGHT THE WAY

Circle No. 8 on product service card

To the Editor:

I am writing in reference to the October/November issue, Perspectives, "Ethics in Lighting" by Gary Steffy.

First off, let me outline my background...40 years plus interior designer, mostly in commercial design, retired member of ASID, IBD and IES. I think I still have the knowledge to read and decide if there is truth in print.

Over the years, I went through the same thing Gary Steffy is writing about. It happened with floor covering, wall covering, furniture, draperies, all the things that would go into an installation. Yes, lighting was something else.

Contractors, manufacturers, anyone who thought they could "break the specification" would try anything from simple conversations to bribes to being "on the take." Many would go to the owners and "pass on information" about any of the above.

I think you have the picture, and for anyone that has been in the business of design any length of time, this story is not new.

What did I do? Well, you play a game with them, set them up and let them hang themselves. If they want to "pay you to make a change" and want to give you a check, take it and give it to your client. If it's a product gift, give it to your client. Oh, be sure to have your client send them a note thanking them for "whatever." I've done this with some of the biggest suppliers in the world. No changes were made.

Now, how does it set with the client? Can't you feel how they will act to this guy that wants to "break the specs"? I explain that I will not go for something I don't want just to satisfy the budget or "save some money." Today, as Gary points out, it ain't going to happen.

It takes guts to stand by your convictions. Either you're a good ethical guy or you prostitute yourself. You decide what you want to be in this business. I did and was successful to a fault.

Gary Steffy, I'm with you...

Don McDonald
Palm Springs, CA

To the Editor:

I enjoyed your article entitled, "Understanding Light & Color," October/November 1997. I think you did a very good job at explaining the basics.

There is, however, one point made in the article which I disagree with and one which needs further explanation.

You state "Visible light, however, is not visible." I invite you to stare into a halogen lamp and tell me otherwise. I would agree that the wave nature of light allows it to be directional and partially collimated (flashlight), and sometimes in phase (lasers), but as long as there is energy in the 400-700nm range, it will appear visible to the human eye as long as there is energy directed at the human eye to sense.

The CRI for light sources at 5000K and above is compared to daylight and not blackbodies.

Kevin P. McGuire

AMERICAN LIGHTING COMPANIES MAKE GERMAN ACQUISITIONS

The **JJI Lighting Group, Inc.** has acquired Hoffmeister-Leuchten GmbH, a European manufacturer of unconventional, contemporary-design indoor and outdoor lighting fixtures for commercial, industrial and institutional applications.

Founded in 1910, Hoffmeister-Leuchten manufactures products widely used by European and Asian markets; its products had not been available in the U.S. prior to the JJI acquisition. Hoffmeister is ISO 9001 certified.

H. Manfred Schellpfeffer, who currently heads Specialty Lighting, a JJI operating subsidiary, will relocate to Ludenscheid, Germany to head Hoffmeister-Leuchten.

In other news, Siemens AG in Munich, Germany, has sold the lighting fixture and ballast manufacturing operations that were part of its Drives and Standard Products Group. The fixture business was sold to **Lighting Corporation of America (LCA)**, a subsidiary of U.S. Industries, and the group's two electronic ballast plants went to Siemen's Osram GmbH subsidiary. The acquisitions will allow both companies to expand operations internationally and to focus on the development of new product.

Siemens Lighting is a major player in the European market, particularly in outdoor and technical lighting products, systems and services.

NYSERDA OFFERS FUNDING FOR HIGH-EFFICIENCY PRODUCTS

The New York State energy Research and Development Authority (NYSERDA) is offering funding for projects selected on a competitive basis to support the development, commercialization and demonstration of high-efficiency lighting products. Project goals include achieving energy and environmental benefits through greater operating efficiencies or environmentally acceptable manufacturing processes and creating manufacturing jobs in New York State.

Specific technologies eligible for support under this program, provided they lead to improved energy efficiency or environmental performance, include but are not limited to:

- Innovative materials and processes for lighting products
- Light sources
- Lighting fixtures
- Lighting controls, including ballasts and electronics

\$750,000 is available for projects under this solicitation. Initial awards of up to \$200,000 per project will be made. Proposing teams must include a New York State manufacturing firm or show that significant State resources will be used in the project.

Proposals are due March 27, 1998 at 5 pm. For more information, contact Marsha Walton at (518) 862-1090 x3271, fax (518) 862-1091 or e-mail mlw@nyserda.org.

EELA NAMES BOARD OF DIRECTORS

The Energy Efficient Lighting Association (EELA) has announced the appointment of its first board of directors. Members represent manufacturers, energy service companies and contractors.

Members of the board of directors are: David Brown, A.L.P. Lighting and Ceiling Products; Geoffrey Archibald, Systems Solutions of GA, Inc.; Timothy Carnes, Lighting Management Consultants, Inc.; Steven Purdy, Advance Transformer Co.; Thomas Ruggeri, Fair Market Energy, Inc.; William Siffard, Renova; and Gary Smith, 3M Lighting.

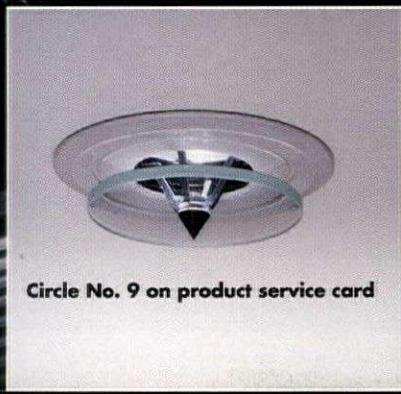
**Lighten
UP
Did You
Know...?**

The lighting industry is responsible for 13% of all products sold in the U.S.



ZUMTOBEL STAFF THE LIGHT[®]

New flexibility in light and design,
from specification downlights to miniature
decorative trims. Brilliant details with
international flair. Performance-driven
downlighting. Only from Zumtobel Staff.



For more information,
call 800-932-0633.

Circle No. 9 on product service card

STAFF

TARGETTI USA LLC FORMED

Tivoli Industries, Inc. and Targetti Sankey SpA of Italy have announced that the two manufacturers will create a new jointly-owned U.S. lighting fixture company called Targetti USA LLC. The enterprise will manufacture, market and distribute a wide range of "energy-efficient, low-voltage, original-design

lighting fixtures nationwide at moderate price points."

Initially, Targetti USA LLC will be headquartered at Tivoli Industries' Santa Ana, CA facility. Terrence Walsh, current chairman and CEO of Tivoli Industries, will function as chairman and CEO of Targetti USA.

LUTRON RELAUNCHES AUDIO/VISUAL DIVISION

Lutron Electronics Co., Inc. has announced the relaunch of its Commercial Audio/Visual Division to offer lighting control products for use in corporate boardrooms, conference rooms and videoconferencing center applications. John Front, director of sales for commercial audio/visual accounts, heads this relaunch.

Lutron's product offerings for this market segment include the Grafik Eye series of multi-scene present lighting controls; Nova and Nova T specifications series lighting controls; and the Personna system for remote control of fluorescent lighting.

ARCHITECTURAL LANDSCAPE LIGHTING

When Electrical & Lighting Consultant Ralph A. Raya was asked to accent the landscape at Palm Springs City Hall he chose the SL-33, to get light, performance and value.

For more information, contact your independent representative or Architectural Landscape Lighting, Inc., 2930 South Fairview Street, Santa Ana, CA 92704
Phone: 800-854-8277
Fax: 714-668-1107

QUALITY LIGHTING FORMS METROLUX

The Quality Lighting subsidiary of the JJI Lighting Group, Inc. has announced the formation of a new division of the company.

The new division, MetroLux Lighting, will manufacture and market high-performance, optically precise fixtures for roadway, roadway signage and billboard illumination.

CORRECTIONS

In our October/November 1997 issue, in "Standardizing Fiber Optics," we unveiled a dramatic new initiative in the fiber-optic lighting industry to streamline specifications. We listed a number of leading manufacturers who attended the meeting, but failed to identify Lightly Expressed. *Architectural Lighting* regrets the error.

In our July/August issue, we showcased a new light pipe technology from 3M Lighting, but failed to note that the components for the interior installation shown were supplied by TIR Systems Systems Ltd. (light guide) and Ledalite (linear fluorescent). While our story focused on 3M, it should be noted that TIR Systems has been actively marketing its innovative Light Pipe™ technology for more than 10 years. *Architectural Lighting* regrets the error.

**ARCHITECTURAL
LANDSCAPE
LIGHTING**

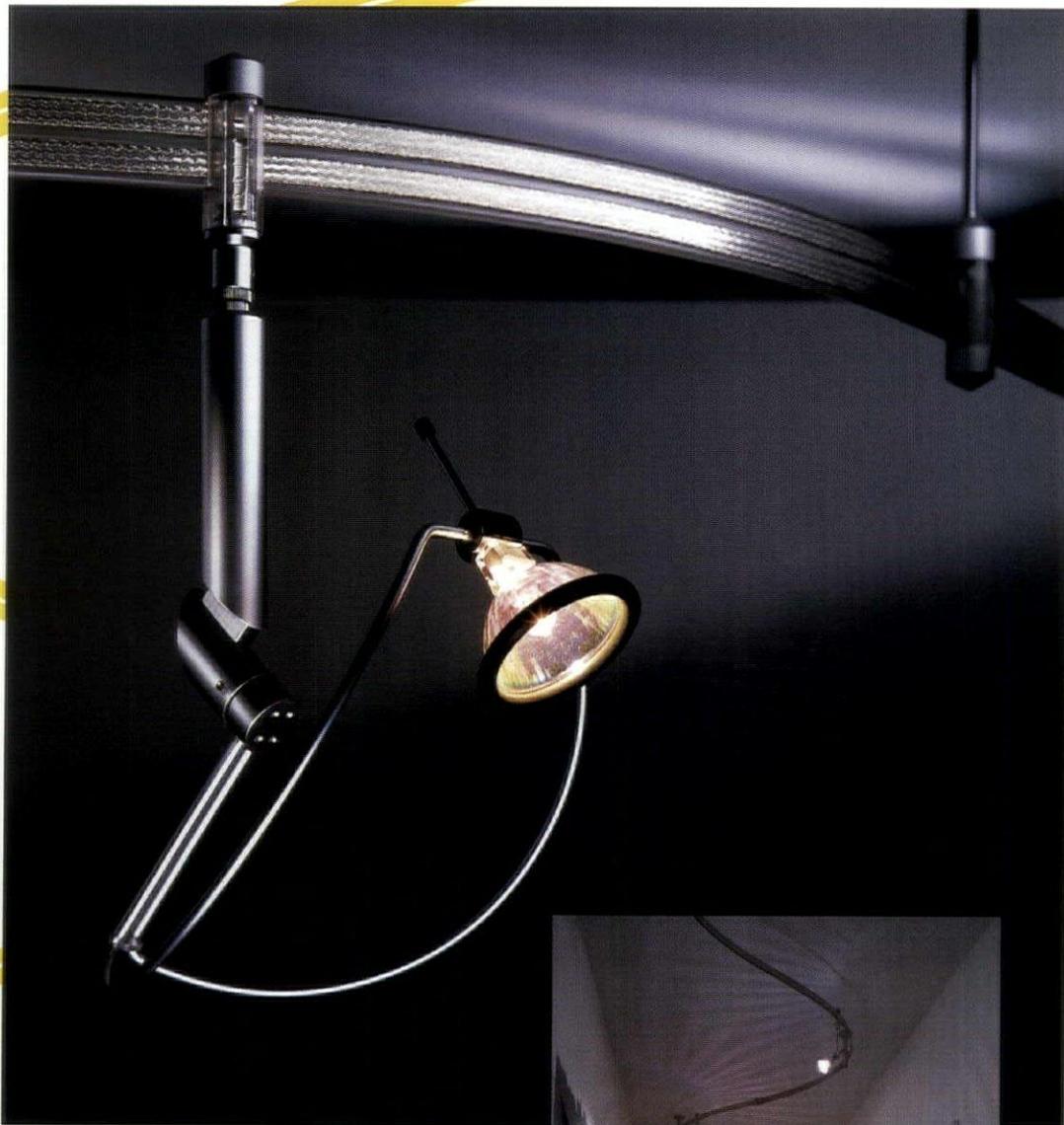
When Electrical & Lighting Consultant Ralph A. Raya was asked to accent the landscape at Palm Springs City Hall he chose the SL-33, to get light, performance and value.

For more information, contact your independent representative or Architectural Landscape Lighting, Inc., 2930 South Fairview Street, Santa Ana, CA 92704
Phone: 800-854-8277
Fax: 714-668-1107

JJI
A Subsidiary of JJI Lighting Group, Inc.

BRUCK

L I G H T I N G U S A



BRUCK, the leader in the field of low-voltage track and cable technology, introduces **FLEX-LINE**.

The track flexes to allow for curved or linear installation, and with two independent electrical circuits it is listed for a total of 600 watts.

FLEX-LINE is one of six different systems manufactured by **BRUCK LIGHTING**.



714 259-1000 Fax 714 259-1505 Tustin, California

Circle No. 11 on product service card

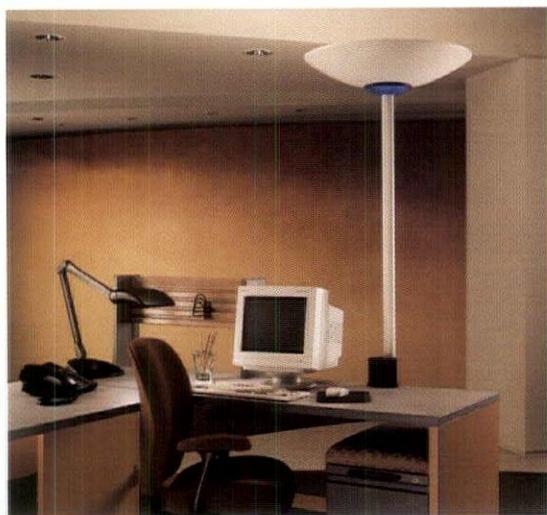
ADLT AND ROHM AND HAAS FORM UNISON

Unison Fiber Optic Lighting Systems, a joint venture between Advanced Lighting Technologies, Inc. (ADLT) and Rohm and Haas Co., will be formed to develop and provide optic lighting systems for the commercial lighting market. Unison products will feature Rohm and Haas' OptiFlex light pipe and ADLT's metal halide illuminator systems and Advanced Cable Lite optical cable and systems. Unison Fiber Optic Lighting Systems will be headquartered in Solon, OH.

DISCREET LOGIC TO ACQUIRE LIGHTSCAPE

Discreet Logic Inc. announced that it has signed a definitive agreement to acquire privately-held San Jose, CA-based Lightscape Technologies Inc., a developer of advanced visualization and lighting Microsoft, Windows-based software tools for professionals in the design and entertainment industries.

Lightscape's technology complements Discreet Logic's production system comprised of real-time 3D broadcast graphics and virtual studio systems.



When corporate clients need to eliminate glare, reflections and shadows from VDT screens and work-surfaces, lighting professionals often recommend indirect lighting: a one-component solution.

Installed in monotonous rows, most indirect lighting proves inflexible and unappealing. It fails to cut glare where most needed - on VDT screens and work-surfaces.

Now Luxo offers the intelligent alternative: two-component lighting. Interchangeable families of energy-efficient, high-performance, indirect luminaires - supplemented by portable, adjustable asymmetric and symmetric task lighting.

Available in a range of wattages, in original contemporary designs, all Luxo two-component lighting is UL and CUL listed.

WHY TWO-COMPONENT LIGHTING IS YOUR SINGLE BEST SOLUTION

TWO-COMPONENT LIGHTING:
THE INTELLIGENT ALTERNATIVE

LUXO

For detailed product literature and specifications telephone:

Toll-free (800) 222-LUXO (5896) or (914) 937-4433 • FAX: (914) 937-7016

Luxo Corporation

36 Midland Avenue • PO Box 951 • Port Chester, NY 10573

TOTAL LIGHTING RECEIVES AWARD

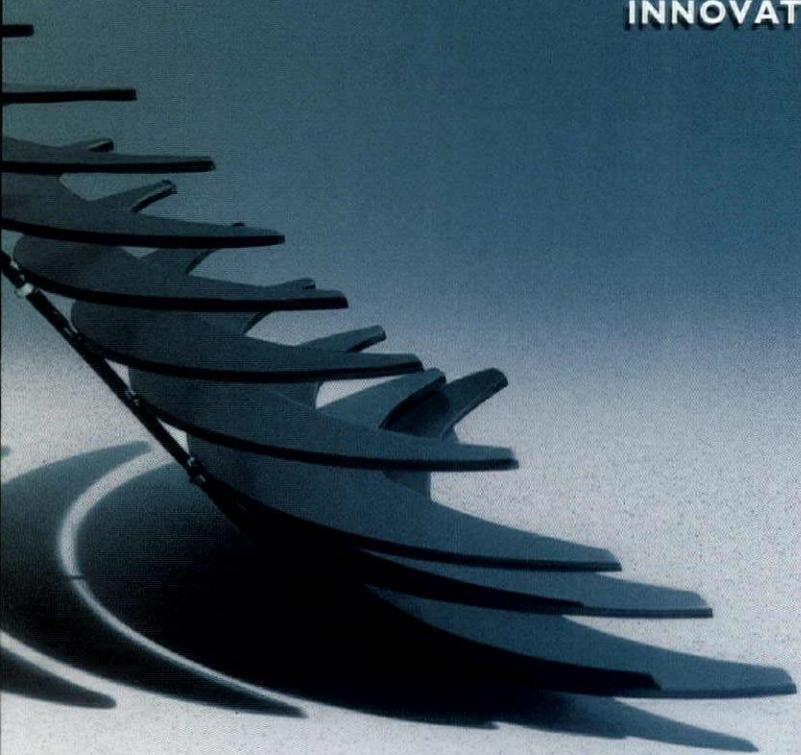
Total Lighting Concepts, Inc. (TLC), with offices in Syracuse, Albany, Rochester, Buffalo and Elmira, NY, is the recipient of the 1997 President's Award from Columbia Lighting.

This award is given annually by Columbia Lighting to the independent sales organization that has exhibited outstanding overall performance in representing the company's products to professional lighting specifiers, distributors and contractors.

CON EDISON SOLUTIONS AND RSLI JOIN EFFORTS

Con Edison Solutions, the newly formed deregulated retail arm of Consolidated Edison Co., has announced an agreement with Remote Source Lighting International, Inc. (RSLI) to jointly develop, market and distribute RSLI's fiber-optic lighting and signage products and technology. The initial geographic territory covered by the agreement is the tri-state, metropolitan New York City market, with expected sales volume to Con Edison Solutions business and government customers to exceed \$100 million in five years.

THE MOST INNOVATIVE
LIGHTING IS FOUND
BEHIND THE MOST
INNOVATIVE DESIGNS.



environment a true partner in our vision. Our acclaimed **ALTO**™ lamps revolutionized fluorescent technology with low mercury content. The **Earth Light**® Collection is uniquely designed to generate bright light while conserving electricity. For more information, call 1-800-631-1259 or e-mail us at plc.lit@salesupport.com or visit us at our Web site at www.philipslighting.com/nam

Dress Courtesy of AmericasMart•Atlanta ©1997 Philips Electronics North America Corporation



PHILIPS

Let's make things better.

Circle No. 14 on product service card

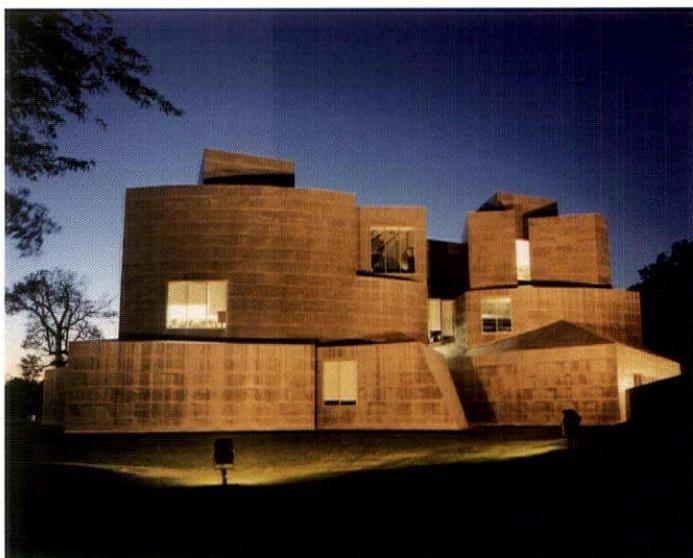
ARMY RESERVE FACILITY EMPLOYS OCCUPANCY SENSORS

The design team put energy savings first when it selected lighting equipment for the recently completed United States Army Reserve Center in Toledo, Ohio. "We wanted to become a leader in energy conservation issues on this project," said Barney Kemter, facility manager. "We wanted state-of-the-art maximum efficiency potential."

The facility is sporadically populated, with only a small full-time staff during the week and a larger group on the weekends when one of the four reserve units appears for training. Occupancy sensors seemed an effective way of managing the lighting use considering the irregular flow of traffic through the facility. A total of 109 occupancy sensors control 512 fixtures throughout the 71,094-sq.-ft. campus, which consists of two main buildings, a training building and a maintenance building. A passive infrared sensor is used in corridors; an ultrasonic occupancy sensor in restrooms; an automatic wall switch in offices and classrooms; and a dual technology sensor in conference rooms.

Since the facility is new, calculated savings can only be measured based on alternative product selections available (but not utilized) at the time of design. Nevertheless, a conservative estimate of \$16,000 annually in potential energy savings is estimated. In addition to the benefits in savings, the Army reserve facility received an \$11,055 incentive rebate from Toledo Edison Co., the local utility, along with a discount for energy usage since they were installing energy-efficient controls.

Controls manufacturer: *The Watt Stopper*



GOVERNMENT ENERGY OFFICE CUTS USAGE BY 64 PERCENT

A variety of lighting equipment in the 23,000-sq.-ft. New York City-based office of the U.S. Immigration and Naturalization Service (INS) has resulted in a savings of more than \$10,000 annually. "The cost savings are tremendous," said Walter Kain, project manager, General Services Administration (GSA). "We're considering installing advanced lighting systems at other GSA locations." GSA is the federal government's real estate agent and is responsible for providing nearly one million federal employees nationwide with work space.

The solution is composed of energy-efficient electronic ballasts and fluorescent lamps mounted in highly reflective deep ceiling fixtures, intended to reduce glare on computer screens. Occupancy sensors turn off

lights after a work area has been vacant for more than 10 minutes. Window office ceiling monitors sense changes in natural day light and adjust lights to accommodate high levels of sun. Lighting in the training room is preprogrammed to appropriate levels for the various tasks performed. The lighting equipment results in 64 percent less energy used for lighting.

In addition, office workers have been outfitted with the U.S. Environmental Protection Agency (EPA) "Energy Star"-certified computers, which reduce energy use by 23 percent over standard computers.

GSA worked closely with Con Edison to achieve the retrofit, and both organizations received awards for the use of energy-efficient products that may enhance productivity or comfort.

Lighting manufacturer: *Lightolier*

EMERGENCIES ARE UGLY. YOUR LIGHTING DOESN'T HAVE TO BE.

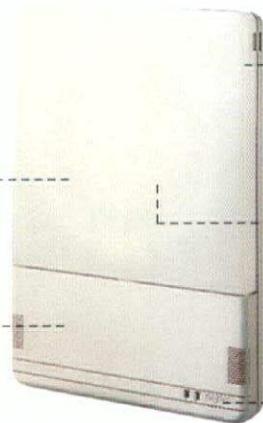
3 slim products
to choose from,
all with fluorescent lights

Vandal-resistant
thermoplastic body

Sealed 6 volt
6.5 amp hour battery

8 year battery life

Automatic
recharge circuit



A new family of emergency lighting.

Introducing a complete family of slim, stylish emergency lighting. From the BE's 2.5 inch thickness to the ST's 5.9 inch. Delivering from 8 to 24 watts of lighting. All three are great for retail areas, offices, banks, healthcare, restaurants, and schools. The ST is rated for damp and wet locations.

Contact Hubbell Lighting, 2000 Electric Way, Christiansburg, Virginia 24073. Phone 800-270-3737. Fax 540-382-1526. Visit our web site at www.hubbell-ltg.com/



Lighting, Inc.

MUSEUM LIGHTS 95-YEAR-OLD FACADE

The Toledo Museum of art has had a minor face lift. More than 95 years old, the museum's marble and sandstone facade has been illuminated for guests and passersby. Located in a heavily traveled area of the city, the museum needed a presence at night. Management also wanted to promote a greater sense of security, hoping to encourage visitors to come to the museum after dark.

The building was designed by Frank Gehry, known for using geometric shapes. One of the challenges, therefore, was how to light the angled profile without casting shadows. Designers were also concerned about the durability and energy-efficiency of the fixtures.

Fixtures with 400W deluxe HPS lamps were employed for their fluted reflector, which provides maximum illumination per input watt with optimum uniformity. "Because of the building's unusual shape, we felt we needed floods rather than wide spots," said Paul Bernard, facilities manager, The Toledo Museum of Art. In addition the fixtures offered sturdy construction, with all electrical components housed in the fixture's removable door.

Cutoff fixtures with 100W deluxe metal halide lamps were installed beneath the museum portico at the top of 30 Ionic columns, which accentuates the architecture while illuminating the various entrances.

While Toledo Edison did not offer rebates, it did help promote the project with mailings and sponsorship of kick-off events.

Fixture manufacturer: Holophane



ProfileADA

Introducing our newest architecturally integrated cove system. ADA compliant, of extruded aluminum construction, the system projects a highly effective asymmetric distribution onto the ceiling and casts a uniform wash along the wall. T8 and T5 models available.

 **LAM Lighting Systems**

2930 South Fairview Street, Santa Ana, CA 92704

E-mail lamlighting@lamlighting.com

Tel **800 732-5213** Fax 800 833-3713



A Subsidiary of JJI Lighting Group, Inc.

John (Jack) Renton Young, a pioneer in the Las Vegas lighting industry, passed away in the fall of 1997, at the age of 60. An IESNA member for 10 years and recipient of the Paul Waterbury Award of Excellence for the Stardust and the Excalibur, Young was recognized as an expert in exterior facade lighting and a prominent member of the Vegas scene. His long list of clients included Caesars, the Sahara and the Las Vegas Hilton to name a few. Young headed the firm John Renton Young Lighting & Sign since its founding in 1965.

Ed Crawford has been appointed to the position VP and general manager, Philips Lighting Commercial Operations Canada.

Tivoli Industries, Inc. has named three executive positions. **Charles Kimmel** to president, CO and CFO;

Richard Call to materials manager; and **Marie Paris** to marketing manager.

Domenic (Nick) Giordano, AIA has been named a partner of the firm Brennan Beer Gorman/Architects and Brennan Beer Gorman Monk/Interiors. Also, **Vic Bonardi** and **Kevin McCobb** have been promoted to senior associates.

JJI Lighting Group, Inc. has announced the appointments of **Robert Catone** to VP, general manager for Guth Lighting; **Edward J. Kramer** to marketing director for the new MetroLux Lighting division of Quality Lighting; and **James F. Haworth** to VP, general manager for **Alkco Lighting**.

Rosemarie Allaire, formerly of Rosemarie Allaire Lighting

Design in Branford, CT, has recently been appointed division manager for the newly formed Residential Lighting Division of Francis Krahe & Associates Inc.

Lloyd Reeder, VP of sales for LSI Industries' Greenlee Lighting operation, has been appointed as chair of the IESNA Landscape Lighting committee.

MaryBeth Harner has been named marketing manager for Spring City Electrical Manufacturing Co.

John McHale has been elected to the board of directors of AMX Corporation. **Eileen Weber** joins as director of marketing.

Robert Baker has been appointed president of Targetti USA LLC, a company jointly owned by Tivoli and Targetti.

Duane Reed has been appointed to Northeast regional manager for Littlefuse's Powr-Gard products.

James Gonedes has been appointed VP, strategic marketing, Philips Lighting Company.

Mark Vassallo has been appointed VP of sales at Electronic Theatre Controls, Inc. (ETC).

Jorge Rhor has been promoted to the position of VP of engineering for Duro-Test.

Jim H. McClung, president and CEO of Lithonia Lighting, has been elected chairman of the Board of Governors of the National Electrical Manufacturers Association (NEMA).

Stan Katz has been named director of research & development/engineering for W.A.C. Lighting.

KEEP A LOW PROFILE.

Fixed optics mean tamper-proof lighting

Thermoplastic housing for good looks in tough environments



2 hour burn time and automatic battery charger

PE2 120/277 VAC operation

Damp location rated

The PE2-Q comes with a 3' cord and plug

The PE2 Emergency Light from Hubbell.

Effectively light the way to safety during power outages with the easy-to-install, dependable PE2 Decorative Emergency Light from the Hubbell Pathfinder® Series. Both PE2 Series fixtures are sealed in a rugged, corrosion-resistant, thermoplastic housing. The PE2-Q comes with a 3' cord and plug.

Contact Hubbell Lighting, 2000 Electric Way, Christiansburg, Virginia 24073. Phone 800-270-3737. Fax 540-382-1526. Visit our web site at www.hubbell-ltg.com/



Lighting, Inc.

Circle No. 17 on product service card

Reprints

REPRINTS are a powerful marketing tool to showcase your project and/or product expertise to customers and employees...are credible, prestigious, low-cost...and offer greater recognition of your capabilities.

Call Vicki Brewster to discuss how a customer-designed reprint package can meet your specific marketing needs

Contact: **Vicki Brewster**
Address: 62 Northwoods Road
Manhasset, NY 11030
Phone: (516) 365-2646
Fax: (516) 681-7315

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

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

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

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

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

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

April 15-17 The University of Wisconsin-Madison, Department of Engineering Professional Development course, "The 1996 National Electrical Code," Madison, WI; (800) 462-0876.

April 16-20 Euroluce, Milan Fairgrounds, Milan, Italy; +39 2 725941.

April 20-25 Hannover Fair, Hannover Fairgrounds, Germany; (609) 987-1202.

April 23 ASID seminar: "Power Selling—High Performance Communications for Successful Design Partnerships," Atlanta; (202) 546-3480.

May 7-8 Alt.office East Conference, New York Sheraton,

New York City; (212) 615-2612.

May 21 ASID seminar: "How to Increase Your Sales and Become a Valued Member of the Interior Design Team," Cleveland; (202) 546-3480.

May 27-29 Lightfair International, Las Vegas Convention Center, Las Vegas; (404) 220-2000.

June 2-5 A/E/C '98, McCormick Place, Chicago; (800) 451-1196.

June 8-10 NeoCon, Merchandise Mart, Chicago; (800) 677-6278.

June 21-24 Building Owners and Managers Association International, Philadelphia Convention Center, Philadelphia; (202) 326-6331.

July 19-22 INTERBUILD 98, Melbourne Exhibition Centre, Australia; (301) 656-2942.

August 12-14 Alt.office Conference & Exhibition, San Jose; (212) 615-2612.

October 28-30 InterPlan, Javits Convention Center, New York City; (212) 615-2737.

EDUCATIONAL FACILITIES

Osram Sylvania Lightpoint Institute; Danvers, MA; (978) 750-2464.

• Lighting Essentials: March 23-25; May 18-20; August 24-26; September 14-16; November 16-18.

• Lighting Design and Applications: June 29-July 1; October 5-7.

• The Energy Focus: April 6-8; December 7-9.

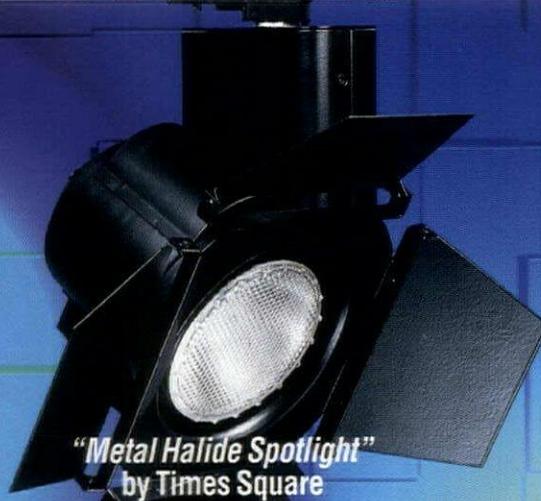
• Residential Lighting: May 7-8; October 15-16

• Retail Lighting: September 24-25

Many fixtures. One track.



"Wallwasher"
by elliptipar



"Metal Halide Spotlight"
by Times Square



"Low Voltage Accent Light"
by Edison Price Lighting

OPEN ARCHITECTURE™ Lighting Track by NORDIC ALUMINIUM.

Why choose proprietary when you can specify Open Architecture lighting track & power take-offs to accommodate fixtures from anywhere in the world? Consider all of the advantages for you & your clients, then contact us for a Lighting Track Catalog & Specifications Guide.

Circle No. 18 on product service card

NORDIC ALUMINIUM

Sales & Reseller Inquiries Invited by Authorized North American Distributor

KALTEK, INC.

2310 Peachford Rd. • Atlanta, GA 30338

Tel: 770-457-8795; Fax: 770-454-9415

Tel. 800-457-8795



For this issue of *Architectural Lighting*, we tried something a bit different. This *Insights* column features not one but two prominent lighting designers for the firm of WGS Lighting Design, Inc. Lesley Wheel, FIALD, known and respected industry-wide, trained originally in theater lighting and production and is one of the pioneers in the field of architectural lighting. In 1961, Ms. Wheel co-founded the firm Wheel-Garon, now WGS, and was the first, and for many years the only, woman to practice full-time architectural lighting design. In addition, she was a founding member, fellow and past president of the IALD, the recipient of the Designers Lighting Forum Honor Award in 1979 and received the 1990 Reader's Choice Award from *Architectural Lighting*. Ms. Wheel is a former director of the Lighting Research Institute and is a board member and assisted in founding the Nuckolls Fund for Lighting Education. Currently, she is designing new lighting for a major redesign of Union Station in Los Angeles.

Allan Leibow, VP and principal lighting designer at WGS, joined the firm in 1983. Over the past 15 years, he has been responsible for a variety of projects worldwide including a premier theater for Paramount Pictures in Hollywood, Everland and Asan Hot Springs theme parks in Korea and MGM Conference Center in Las Vegas, and has developed many special effects for Caesars in Las Vegas, Bally's Casino in Atlantic City and the Tsunami Nightclub in Hawaii. Allan teaches at UCLA and has received IALD awards for two of his projects.

—Christina Trauthwein

AL: Lesley, you started your career in the theater. Why the switch from a theatrical to an architectural designer?

Wheel: I wanted to make a living—I wasn't doing that in the theater! I was working for a theater designer who was also working for Hilton Hotels. I told him I wasn't very happy and he said, "Well, what do you want to do about it?" And I said, "I'd like to do that architectural stuff." That was the start of my architectural lighting career.

AL: How did your theater background help you in architectural lighting design?

Wheel: When I started out, there were no lighting designers. "Why do we need a lighting designer?" That was the question that I had to answer for about the first 10 years. I was able to bring to my architectural projects my in-depth knowledge of theater lighting techniques. The architects I worked with needed my theater input and respected my knowledge of technology, so in return they taught me about architecture and how architects see their buildings.

One of my early jobs was working for the New York City Ballet. The great theater lighting designer, Jean Rosenthal, showed me what lighting could do on the stage. The ballet never had money for scenery, so the theater lighting had to compensate for the lack of sets.

When you light for dance, you don't have to light the face, but rather the body. Jeannie taught me the importance of contrast and how the color of light affects emotions. I learned how the direction of light changes the impact and how the beam angle transforms the effect. Most of all, I learned the magic of light and the way it manipulates space—or rather how it manipulates your

experience of space. This was an invaluable tool for lighting architecture.

AL: Allan, what were your earliest influences?

Leibow: Working at Wheel Gersztoff in the beginning was a junior designer's



dream. For several key projects in the office, any outstanding features of the architecture or interiors were reviewed and discussed openly. We all got a chance to contribute our ideas and partake in mock-ups.

As for my interest in the field, my dad spoke of light often, as he was an artist and was fascinated with images and the visual world. Being schooled in industrial design, and a few years in interior design, led me to focus on the way a space feels through light. This really excited me as it still does today.

AL: What has been the greatest impact on your career?

Wheel: I was fortunate early in my career, working for Hilton, to have top architects as clients/teachers. I learned about architecture from the best. In lighting architecture, you must be true to the architect's vision. You have to see the building the way the architect sees it.

Fortunately, in the beginning, my clients at Hilton Hotels really believed in me, gave me the opportunity to do what I wanted to do and had the eye to appreciate what I had done. I used my knowledge of dramatic effect to bring out the drama inherent in the design. They told me, "Remember that hotels are three-dimensional theater," and I took it from there.

AL: What motivates you?

Leibow: Nature inspires me. If you walk through a forest and view shafts of sunlight coming through the trees, or study an icicle and how it sparkles (and refracts light), it's fascinating. There's so much to be learned from nature that can be applied to design. The drama and intensity of light and shadows on a sunny day. The way snow glistens up close and its iridescent quality.

Wheel: Today's technology is enormously complicated. The emphasis is on 3D imaging technology and who has the latest programs and the latest presentation techniques. Clients need to realize that these are tools that allow us to show them in advance what the lighting will look like. These techniques are no substitute for knowledge and the experience of actually working with and manipulating light.

AL: Lesley, you were a founding member of the International Association of Lighting Designers. Tell me about its beginnings.

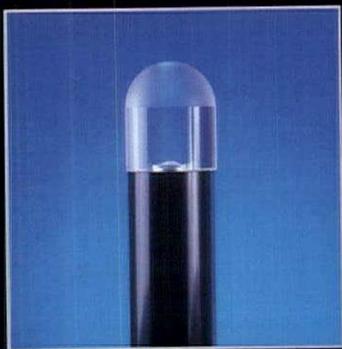
Wheel: You have to understand, there was no such thing as a lighting designer when I started out. So 15 of us got together and said, "Hey we all do something that nobody else understands, let's help each other." The joke is we were

(Continued on page 26)

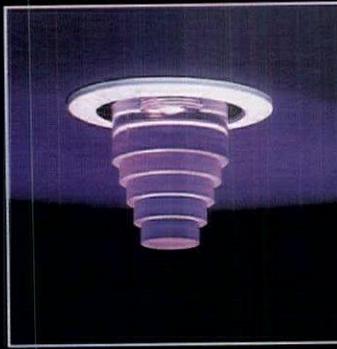
DESIGN SOLUTIONS



EB900



BOLERO



D102

F I B E R O P T I C L I G H T I N G

SUPERVISION INTERNATIONAL, INC.
ORLANDO, FLORIDA, USA
Circle No. 19 on product service card



**SUPERVISION
INTERNATIONAL, INC.**

8210 Presidents Drive
Orlando, Florida 32809
USA

Tel 407.857.9900
Fax 407.857.0050
Net www.svision.com

- ARCHITECTURAL**
- LANDSCAPING**
- SIDEGLOW™**
- ENDGLOW™**
- SIGNS, DISPLAYS**



(Continued from page 24)

actually looking to get insurance and were told we had to prove we were a profession first. So to prove it, we had to form a professional society, hence, the IALD. The formation of an association gave me exposure to my peers. I found that I could hold my own with anyone else in the business. This gave me a lot of confidence.

AL: *The IALD was critical to "legitimizing" lighting design as a profession.*

Wheel: Very much so. Another thing that I think was terribly important was the Arab embargo of 1973. Lighting design in architecture, which had been a luxury, was pushed into the forefront. The price of oil shot up wildly and effective lighting, because it is operated by electricity, became critical in containing costs. Lighting design became vitally important to the pocketbook. That's when it took off and opened the door for young people coming out of school. Lighting designers went from being a luxury to a necessity.

Leibow: And necessity has driven technology. When many of us started out there were no MR16s, compact fluorescents or T8 fluorescents. That was just 15 years ago. Our biggest challenge then was to decide between a PAR, an R or an A lamp. Now the variety of lamps is staggering, allowing the designer to custom tailor a project for efficiency, lamp life, color and dramatic effects.

AL: *What tip do you have for those entering the field?*

Leibow: Study lighting effects at night. Then learn how those effects were created. Build a visual reference guide—these images can be pulled from the memory and used when designing a project.

Wheel: Students entering the field now are very well trained in advanced computer technology on which our profession depends so heavily today. They need to expand their vision to see light as a design tool, to note the composition of lighting elements in the space. They need

to note how each element works together to form a light composition.

AL: *How about a WGS "motto"—is there a governing philosophy?*

Wheel: We do our share of task-oriented spaces where function dominates and technology, maintenance and other practical considerations are crucial. But many of our projects are exercises in dramatic effect where function is less demanding. Like lighting of dance, you look to create beautiful compositions which add excitement to the overall project. Preservation projects, of which we do a great many, minimize the

individuals who have little experience but can sell themselves better than their abilities. And there are others who have experience and some talent but cannot convey that. My challenge has been learning to learn to communicate in a way that shows confidence.

AL: *How about great advice you've received?*

Wheel: In the beginning, I had the technological input the architect needed, but was relatively ignorant about architecture at that time. The first few years as a lighting designer were sheer hell. I thought coming on as the lighting specialist meant that I was responsible for all the answers—I mean an expert is someone who knows the answers to everything, or so I thought. And I knew that I didn't. Then this prominent Russian architect, my mentor, said, "I can make a mistake in half an hour that takes someone else two weeks to make." And that opened my eyes. I thought, "My God, if he can make mistakes, then maybe it's all right that I don't know everything." It was a tough way to learn.

AL: *Allan, you've been lucky to have worked with Lesley as your mentor. What do you still hope to learn from her?*

Leibow: I've been fortunate to have worked with several outstanding designers, but I have to say when working with Lesley, we excite each other as to what can be done with the project. Lesley's enthusiasm and her openness to create new designs has become one of my biggest teachers. Lesley has always said, "Paint with large strokes." In lighting, this is vital, as the composition of the space can be amplified by the lighting. Often, less is more—and much more dramatic. The love that Lesley has for the field has propelled me to do the things I've done.

AL: *And Lesley, what beliefs, or professional values do you hope you have instilled in him and others you've worked with?*

Wheel: I opened his eyes as to what you can do with light, and after that there was no stopping him. Way back in my career, I did subtle lighting. I showed my mentor a ceiling I had done with two different textures of acrylic lighted from behind. He looked at me sadly and said, "Whatever you do, do it big." So, I'll pass this on: When in doubt, always overscale. ■

EXPAND YOUR VISION
AS A DESIGN TOOL,
AND NOTE THE
COMPOSITION OF
LIGHTING ELEMENTS
IN THE SPACE.
— LESLEY WHEEL

lighting instruments to a very small scale and which "disappear" and don't impinge on the design. We put a great deal of concern into easy maintenance, such as relamping. It is important to diagnose the problem accurately.

Leibow: "Please the client" is surely one of our mottos. Having a clear understanding of how the owner, architect and interior designer see the space is paramount. With this in mind, we study the space and look for those special qualities to support, enhance or create. We make recommendations about texture, form and reflective and transmissive properties of surfaces. This can add a great deal to the physical aesthetic and to the psychological feeling of the space.

AL: *Any challenge you face daily?*

Leibow: To speak in a way that clients trust. In every profession there are

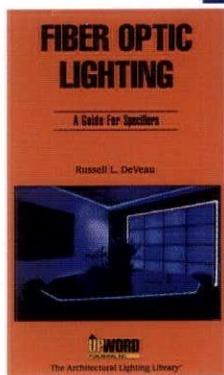
New Books from Architectural Lighting Magazine

Fiber-Optic Lighting: A Guide for Specifiers

Russell L. DeVea

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

ISBN: 1-57730-525-6, \$50.00, app. 175 pages, illustrated



Revolution in Lamps: A Chronicle of 50 Years of Progress

Raymond Kane & Heinz Sell, editors

This new book offers a historical overview of the development of the light source from World War II to the present. Written by some of the engineers who worked for leading lamp companies during this time, it provides a fascinating and informative look inside the lamp industry and offers insight into the future of lighting.

ISBN: 1-57730-125-0, \$75.00, 295 pages, illustrated

REVOLUTION IN LAMPS

A Chronicle of 50 Years of Progress

Raymond Kane & Heinz Sell, Editors



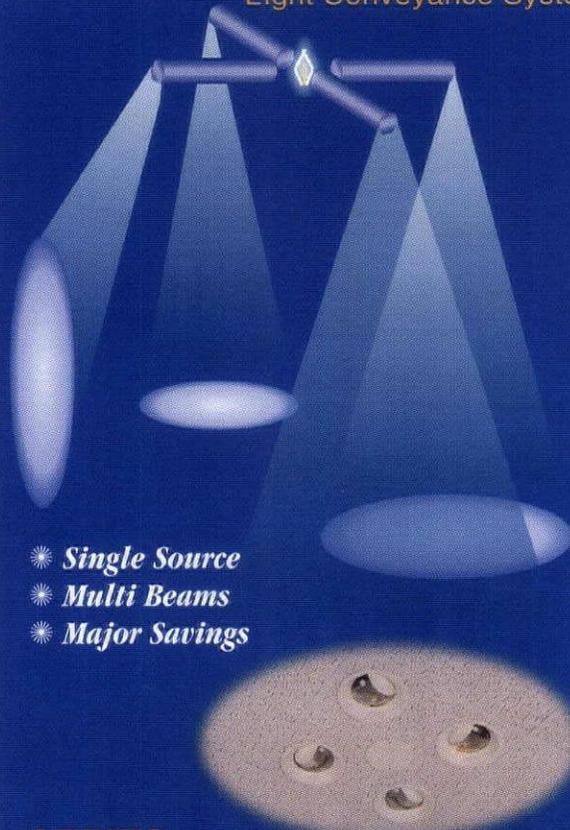
OPWORD

The Architectural Lighting Library

Winner: Lightfair International '97
New Product Showcase Gold Award of Distinction

Multi Beam²⁰⁰⁰TM

Light Conveyance System



- ✱ *Single Source*
- ✱ *Multi Beams*
- ✱ *Major Savings*

SERIES MBG-2x2

**Unified 2' x 2' module for
recessed or suspended formats**

- Transports light from a single 100W HID lamp into multiple light beams, 85 CRI
- **High Energy Efficiency** - twice the beam intensity, under half the electrical power per beam*
- More than **4:1 energy utilization improvement**
- Fewer lamps to change, no redirecting of beams
- **Dramatic Savings** from less installation, less power, and less maintenance
- A-thermal beams produce **No Heat** - lamp life is increased by 300%*
- Selection of beams - 14° spot to 25° flood, hard and soft edge formats
- Utilizes "fiber-optic free" conveyance technology

*Compared to 60W PAR 38 Halogen lamp



MultiBeam 2000TM is an environmentally friendly "Green" product. Resulting energy reductions help decrease emissions associated with the electrical generation process.

LIGHTRON
OF CORNWALL, INC.

Phone (914) 562-5500
Fax (914) 562-3082
65 River Road, New Windsor, NY 12553

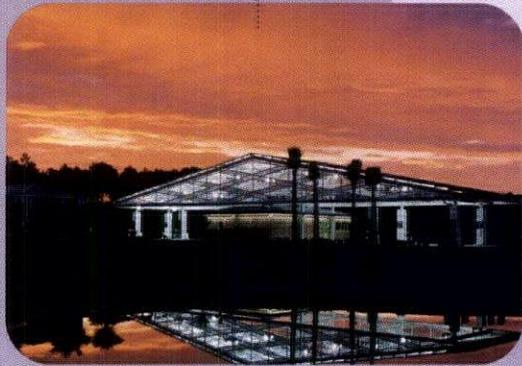
MultiBeam 2000TM is a trademark of Lightron of Cornwall, Inc., is copyrighted, foreign and domestic patented, patents pending, UL listed and IBEW made.

Order today by calling (800) 444-4881!

Customer service lines are open 8 a.m. - 5 p.m. CST.

Circle No. 20 on product service card

highlights



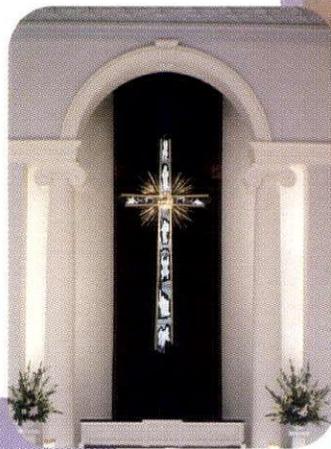
fuel for thought...

Located on Walt Disney World Resort property, this Exxon Station offers a truly unique approach to gas station lighting. At a typical station, lights point down; here, designer Hugh Hardy of New York's Hardy, Holzman and Pfeiffer points lights skyward through huge canopies to create a warm glow without compromising a safe feeling for customers. At night, the station's glow casts a reflection on nearby ponds, creating the illusion of a floating oasis.

pipe dream

The renovation of the Heierding Building in Oklahoma City, OK, which is on the National Register of Historic Places, captures the "spirit of light." Elliott + Associates Architects restored the building exterior to its 1914 condition while showcasing some "modern," yet characteristic, touches on the interior. The architectural concept, called "Light Shrines," focuses on the daylight coming into the space to create the atmosphere. There are six "shrines" in the building that illustrate how both daylight and electric light can behave as it interacts with architecture. According to Rand Elliott, "light is the art and spirit of the space." Shown here is the backlit roof drain pipe that illuminates the acute angle corner of the interior brick—an ideal way to make an otherwise unattractive existing structural element actually enhance the design of this unique flatiron building.

Photo: Hedrich Blessing



cross light

The renovation of the interior lighting and decor of the sanctuary of Holy Trinity Church in Washington, D.C.,

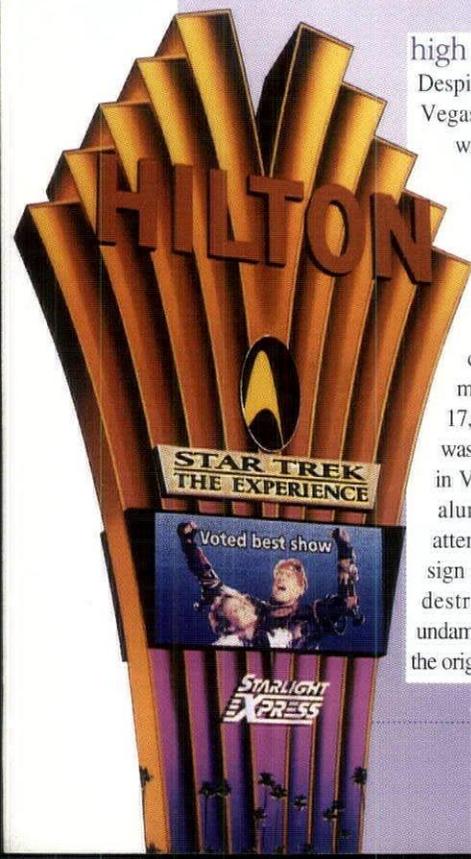
recognized as the first English-

speaking Catholic church in the U.S., included the relighting of its focal point—a 13-ft.-high copper and brass cross with carved acrylic panels. Concerned that the cross would lack the new brightness of the rest of the space, it was decided that the original lighting method—backlighting with incandescent lamps—was outdated and ineffective. Lighting designer Scott Watson, IALD selected fiber optics as the solution. The cross is now illuminated internally with fiber optics to accentuate its three-dimensional qualities. Lightly Expressed Ltd. installed the system, recessing six fiber-optic fixtures into the cross' steel frame to fully light the 1-in.-thick acrylic panels, which depict Biblical images. Four fixtures, two on each side, were set along the vertical axis of the cross. On the horizontal, only the lower edges were fitted with fixtures since the cross hangs above eye level, hiding visible points of light. A 150W 4000K metal halide illuminator lights the cross, providing a white, and somewhat ethereal, light.

Photo: A. Robert Dementi

high sign

Despite the massiveness of the new Las Vegas Hilton sign, it's rather light. The world's largest and tallest free-standing sign, which boasts 29-ft.-high, 6-ft.-wide, 5-ft.-thick letters, features more than six miles of neon and fluorescent lights. With a surface area of more than 70,000 sq. ft. and 64 changing color shades, the sign carries a price tag of almost \$9 million. The 279-ft.-tall sign with its 17,600 linear feet of fluorescent lighting was designed by Young Electric Sign Co. in Vegas and constructed using brass and aluminum. When workers previously attempted construction of a 362-ft.-tall sign at the site in 1994, it was partially destroyed during a windstorm—the undamaged foundation and steel structure of the original remain inside of the new sign.



THE WORLD OF DISNEY'S EXTERIOR (OPPOSITE), INSPIRED BY THE ARTS AND CRAFTS-STYLE WORK OF CALIFORNIA ARCHITECTS GREEN AND GREEN AND BERNARD MAYBECK, IS A SUNSET-ORANGE COLOR TRIMMED BY TEALS, ORANGES AND REDS THAT CAST A WARM AND INVITING GLOW TO PASSERSBY. THE STRUCTURE USES ENLARGED WOODEN TIMBERS, MULTI-LEVELLED WOOD SHINGLED RAFTERS, SCULPTED BEAMS, TRELIS-CROWNED STONE COLUMNS AND OTHER TECHNIQUES REMINISCENT OF TURN-OF-THE-CENTURY STYLES, COMPLEMENTING THE REST OF THE VILLAGE.

BY CHRISTINA TRAUTHWEIN, EDITOR-IN-CHIEF

Disney. That word, like no other, has the ability to conjure up images of fun, excitement and magic. And the Resort's newest retail space is no exception. World of Disney, located in the Disney Village Marketplace in Lake Buena Vista, FL, boasts a 60-ft.-high rotunda, 18 large-scale murals and oversized animated character displays. It is a shopping experience that both entertains and amuses customers in true Disney fashion with vibrant colors and whimsical designs.

Situated southeast of the hustle and bustle of the Magic Kingdom theme park, the 50,000-sq.-ft. Arts and Crafts-style store, set in the small-town ambiance of the Marketplace, has the world's largest selection of Disney merchandise and showcases it in a kinetic, larger-than-life shopping environment. The goal, according to Tony Mancini, Walt Disney Attractions' director of retail store development, design and visual merchandising, was to create a new genre—"merchaintainment." The store features 12 themed areas, each featuring individualized merchandising spaces,

"WE WANTED TO CREATE A CERTAIN LANDMARK-LIKE PRESENCE FOR THE BUILDING AND INFUSE IT WITH ITS OWN IDENTITY WHILE REMAINING FAITHFUL TO THE DESIGN CONCEPT ESTABLISHED 20 YEARS AGO WHEN THE VILLAGE WAS BUILT," SAID WING CHAO, SENIOR VP OF MASTER PLANNING, ARCHITECTURE AND DESIGN FOR WALT DISNEY IMAGINEERING.

"IT'S EXTREMELY VIBRANT AT NIGHT BECAUSE OF ITS TRANSPARENCY," SAID BURGIN DOSSETT, DEVELOPMENT MANAGER FOR WALT DISNEY IMAGINEERING. "IT'S LIKE A SHINING JEWEL BOX." THE STORE'S THREE ENTRIES ARE EACH

CROWNED WITH GIANT ANIMATED CHARACTERS.

THE LIGHTING DESIGN FOR THE EXTERIOR FACADE, MERCHANDISE, THEME DISPLAYS AND GRAPHICS OF THE WORLD OF DISNEY STORE HAD TO BE DRAMATIC, EASILY MAINTAINED AND FLEXIBLE, IN ADDITION TO MEETING FLORIDA'S STRICT ENERGY CODE. (LEFT BELOW) EXTERIOR LIGHTING IS CONCEALED USING PAR20 AND PAR30 METAL HALIDE WELL-LIGHTS AND DISCRETE SURFACE-MOUNTED FIXTURES. SOME PAR30 SHOW-WINDOW SOURCES ARE ALSO HIDDEN

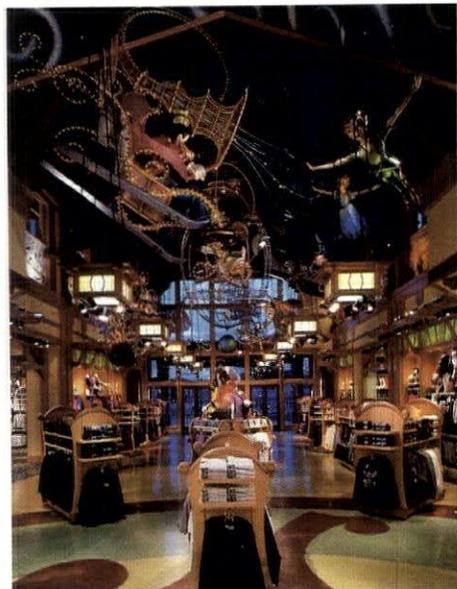


FROM VIEW. "WE PAID ATTENTION TO ILLUMINATING THE PERIMETER VERTICAL SURFACES SO THAT THE BUILDING WOULD NOT APPEAR DARK," SAID LIGHTING DESIGNER STEFAN GRAF.

RECESSED ADJUSTABLE PAR30 DOWNLIGHTS, COMPACT FLUORESCENT DOWNLIGHTS AND COVE LIGHTING WITH T8 LAMPS ARE USED IN DEPARTMENTS WITH DRYWALL CEILINGS (ABOVE). AVERAGE ILLUMINANCES OF GENERAL LIGHTING WERE DESIGNED TO 30FC WITH A 5:1 RATIO FOR DISPLAY LIGHTING.

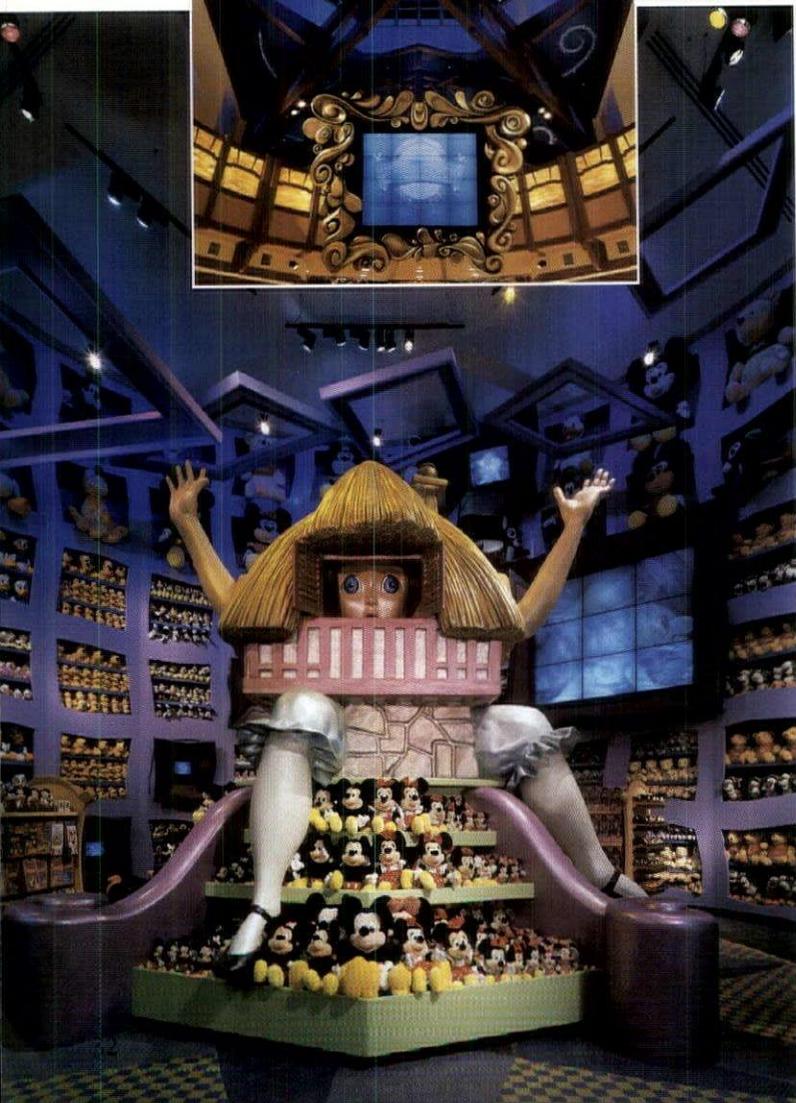


BOTH THE CHILDREN'S DEPARTMENT AND THE DRAMATIC 45-FT.-HIGH GREAT HALL (RIGHT), WHERE CHARACTERS "TRAVEL" IN THEIR INTERNALLY-LIGHTED AIRSHIPS SUSPENDED HIGH ABOVE THE FLOOR ADDING SPARKLE TO THE SPACE, UTILIZE TRACK AND DOWNLIGHTS IN WALL DISPLAYS. GLASS COLOR FILTERS ARE USED THROUGHOUT THE PROJECT TO DRAMATIZE THEME ELEMENTS. THEMED, CUSTOM CHANDELIERS PROVIDE GENERAL LIGHTING WITH EMERGENCY BALLASTS AND 39W 3000K COMPACT FLUORESCENT SOURCES. TRUSSES CONCEAL FLUORESCENT BACKLIGHTS UPLIGHTING THE PHOSPHORESCENT CEILING GRAPHICS (INSET). METAL HALIDE PAR38S WITH COBALT BLUE FILTERS ACCENT THE 60-FT.-HIGH ROTUNDA AND T8 FLUORESCENTS ARE UNIQUELY DESIGNED TO EVENLY ILLUMINATE THE AMBER TRANSLUCENT PANELS AT THE BALCONIES. THE WONDERLAND ROOM, WHICH FEATURES ALICE'S DIZZYING DESCENT INTO THE RABBIT HOLE, SHOWCASES CHILDREN'S APPAREL, SOUVENIRS AND TOYS (BOTTOM). THIS IS JUST ONE OF THE THEMED ROOMS IN THE ENTIRE PROJECT, WHICH



USES NINE HIGH-CRI, ENERGY-EFFICIENT LAMP TYPES. HID, COMPACT FLUORESCENT, AND HIR INCANDESCENT SOURCES (DIMMING SET AT 112V TO INCREASE LAMP LIFE), COMBINED WITH DAYLIGHT AND PROGRAMMED PHOTOCCELL CONTROLS KEEP THE LOAD TO UNDER 4.5W PER SQ. FT.

"WITH MINIMAL LAMP TYPES, MAINTENANCE IS FACILITATED," SAID GRAF. "THIS SOMETIMES MEANT SACRIFICES—THERE ARE NO MR16S IN THE DESIGN, EVEN THE JEWELRY DEPARTMENT—BUT THE IDEA WAS TO KEEP THINGS SIMPLE."



while at the same time maintaining a certain level of consistency in overall scale, style and tone. Said Mancini, "The design seamlessly guides shoppers from one space to the next, allowing them to use all of their senses while encouraging them to search beyond that they immediately see."

TEAM WORK

All elements work together in the lofty space: The merchandise is complemented by the thematic elements, not overwhelmed by them, to preserve the relaxing pace of the atmosphere. Lighting plays a crucial role in ensuring this outcome. "We walked a fine line between lighting for the merchandise and for the theming of the space," said Burgin Dossett, development manager for Walt Disney Imagineering. "A lot of time was spent evaluating all of the light sources to balance all of the components."

"The character of the equipment was driven by both the architect and Disney," said lighting designer Stefan Graf. "Some is recessed for visual comfort, and that which is exposed, has character without being overstylized."

"The illumination had to be playful and fun yet visually dynamic for product purposes. As a result, Graf chose to use warm, 2700K compact fluorescents at about 30fc for ambient lighting; the accent or product lighting was engineered to provide about 120fc average. The addition of theatrical lighting effects creates movement and color, but in a very subtle, unobtrusive manner. ■



THE OWNERS GAVE DIRECTION TO PROVIDE A LIGHTING DESIGN THAT REDUCED MAINTENANCE COSTS AND PROVIDED STATE-OF-THE-ART ENERGY EFFICIENCY THAT COULD BE USED AS A MODEL FOR FUTURE PROJECTS. OTHER GOALS INCLUDED DESIGNING FENESTRATION SYSTEMS THAT ALLOW AN OUTDOOR VIEW FOR GUESTS (WHILE CONTROLLING DIRECT SUNLIGHT GLARE), USING DAYLIGHT TO REDUCE LIGHTING LOADS, AND PROVIDING A GLAZING SPECIFICATION TO MINIMIZE THERMAL GAIN. LIGHTING HAD TO MEET FLORIDA'S STRICT ENERGY CODE, YET PROVIDE DRAMATIC ILLUMINATION FOR MERCHANDISE AND THEME EXHIBITS. (TOP LEFT) STUDIES WERE

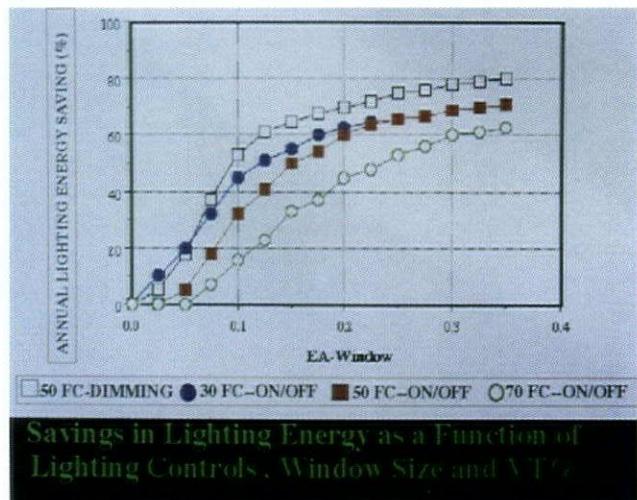


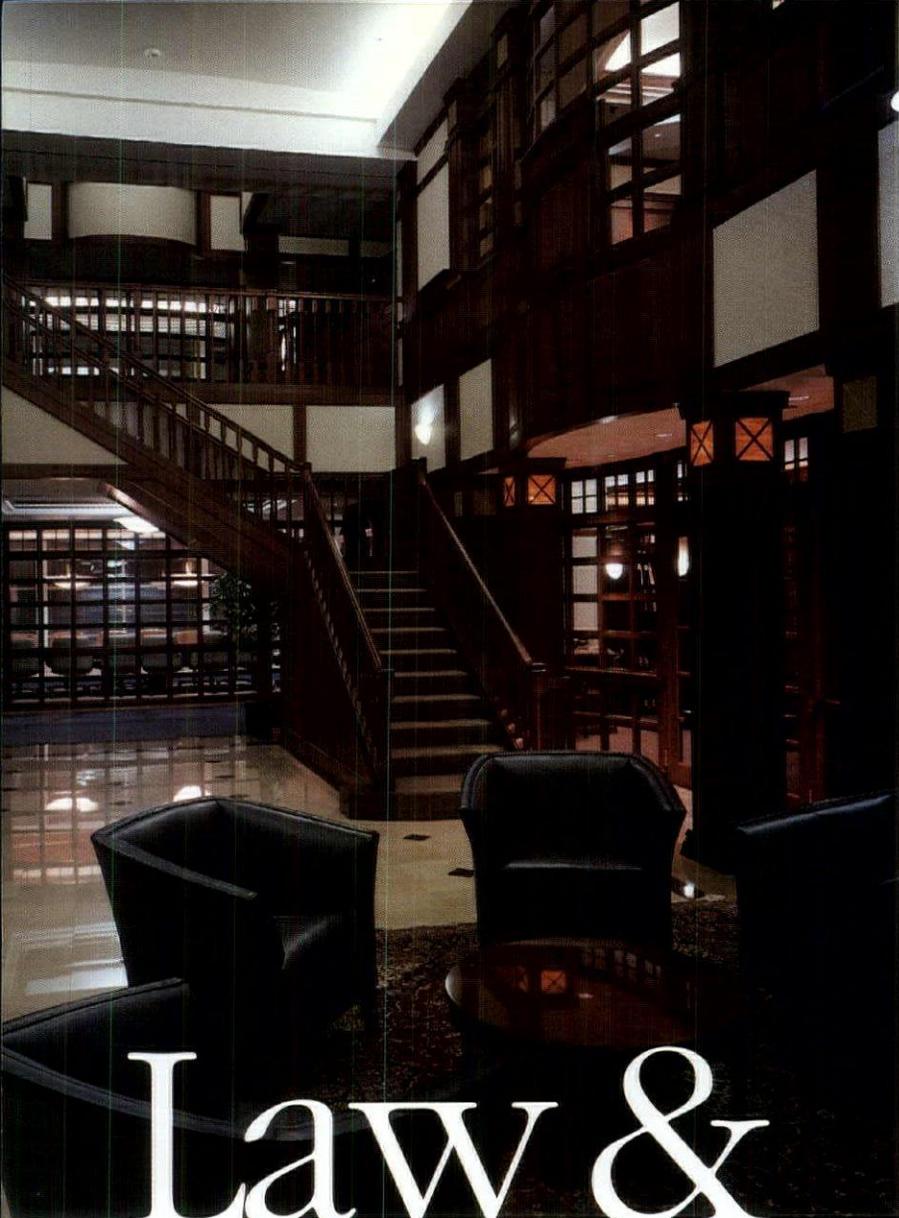
CONDUCTED WITH COMPUTER MODELING AND ON-SITE MONITORING. RECOMMENDATIONS WERE IMPLEMENTED USING LOW-E GLASS AND SHADING DEVICES FOR THE CLERESTORY AND LARGE SHOW WINDOWS, WITH LAMINATED LOW-E GLASS FOR ROTUNDA WINDOWS. AN ANNUAL COOLING LOAD SAVINGS OF \$22,000 IS ACCOMPLISHED. EXTENDED ROOF SOFFITS AND FABRIC SHADES BLOCK DIRECT SUNLIGHT TO KEEP GLARE INDEXES WITHIN COMFORT RANGES. AMBIENT DAYLIGHT THROUGH SOUTHERN AND WESTERN WINDOWS PROVIDES AN AVERAGE HORIZONTAL ILLUMINANCE OF 60FC WITHIN 16 FT. OF THE PERIMETER (LEFT). PHOTOCELLS AND SPECIFIED THRESHOLD LEVELS CONTROL HID AND COMPACT FLUORESCENTS. DIMMING OF

INCANDESCENTS AND MOTION SENSORS PROVIDE AN ANNUAL LIGHTING ENERGY REDUCTION OF 58 PERCENT (BELOW). THE LIGHTING SYSTEM IS PROGRAMMED FOR 24-HOUR OPERATION. OPTIMUM ILLUMINATION IS SET FOR RETAIL PERIODS WHILE REDUCED ILLUMINANCES USING ONLY HID AND FLUORESCENT ARE USED DURING RESTOCKING.

DETAILS

- **PROJECT** World of Disney
- **LOCATION** Lake Buena Vista, FL
- **CLIENT** Walt Disney Imagineering
- **ARCHITECT**
Elkus/Manfredi Architects Ltd.; David Manfredi, principal-in-charge; Randall Stone, project manager
- **LIGHTING DESIGNER**
Illuminat—Stefan Graf; Mojtaba Navvab (daylighting design); Tara Smith (project manager); Lori Roper, Tara Smith (on-site designers)
- **GENERAL CONTRACTOR**
Hoar Construction
- **STRUCTURAL ENGINEER**
McNamara/Salvia, Inc.
- **THEMING**
ITEC Productions
- **GRAPHICS**
Hixson Design
- **PHOTOGRAPHER** Korab Hedrich Blessing
- **LIGHTING MANUFACTURERS** Times Square Lighting; Kirlin; Lithonia; Diversitronics; Lightolier; ETC; Lutron; Hydrel; Lumiere; Arroyo; GE Lighting; Osram Sylvania; Philips Lighting





Law & Order

BY WANDA JANKOWSKI, CONTRIBUTING EDITOR

The owners of the Michael Best & Friedrich LLP law firm wanted their new Madison, WI branch office to match or surpass the high-ceilinged and grand atmosphere of their Milwaukee headquarters. The challenge facing Plunkett Raysich Architects was to transform 42,000 sq. ft. on three floors of a building previously occupied solely by Firststar Bank Corp. into an organized and unified whole.

Creating a unified, elegant image would involve conquering the unusual floor-plate in the 1970s-built structure, which has fragmented and maze-like corridors wrapping around the elevator core, mechanical rooms and storage areas.

"The traditional law office mystique always includes a large central staircase, which is there to

COVE LIGHTS AND
DECORATIVES BRING AN
ELEGANT UNITY TO A MAZE
OF OFFICES AT THIS
MADISON, WI LAW FIRM

organize the space and reinforce the image," noted Steven L. Klein, lighting consultant for the project. "During the renovation, the ceiling between the seventh and eighth floors was chopped out and brought down in pieces after hours. Removing the floor opened up the lobby/reception area to two stories, making for impressive, though limited depth." The opening, reinforced with steel, went part of the way to establishing the elegant environment desired by the owners. The use of quality millwork, patterned marble flooring, coffered ceilings and particularly quality lighting design would complete the character and unity of the space.

FIRST IMPRESSION

"The lobby/reception area is perforated at every turn by openings to the adjacent main conference room, library and connecting corridors," said Klein. "The vaulted ceiling was pushed to the maximum and pinned to the ninth level floor-plate. The lighting had to unify the space with almost no room to do it."

Though several lighting systems blend in concert to complement the lobby, the cove lighting solves the problem of how to effectively illuminate the ceiling area while also providing a unifying theme throughout the entire office. Each lobby cove consists of a 40-ft. run fitted with two staggered strips of 4100K, CRI 88 T8 lamps and asymmetric reflectors. The light-colored ceiling and the reflectiveness of the primarily beige marble-tiled floor brightens the space and offsets the darkness of the woodwork.

Incandescent downlights positioned in opposing soffits over the reception desk and library produce more than a 1,000K color temperature change that adds warmth and dimension to the fluorescent cove illumination. Two decorative 13W wall sconces visually reinforce the separation between the seventh and eighth floors. Their custom perforated-aluminum covers eliminate harsh views into the tops of the fixtures from those working on floor above.

"One Milwaukee office stylistic element—

etched stone in the top of a framed capital that defined the top of a custom-built column—was played upon in the Madison renovation,” Klein explained. “Working with lighting designer Lynn Howard, the architect detailed a hollow top to house a porcelain socket holding a self-ballasted compact fluorescent lamp. The art glass on the four sides of the capital glows, lighted from within.”

COVE-LIT CORRIDORS

The corridors were important in developing usable space for the office and relating varied spaces in a coherent way to each other.

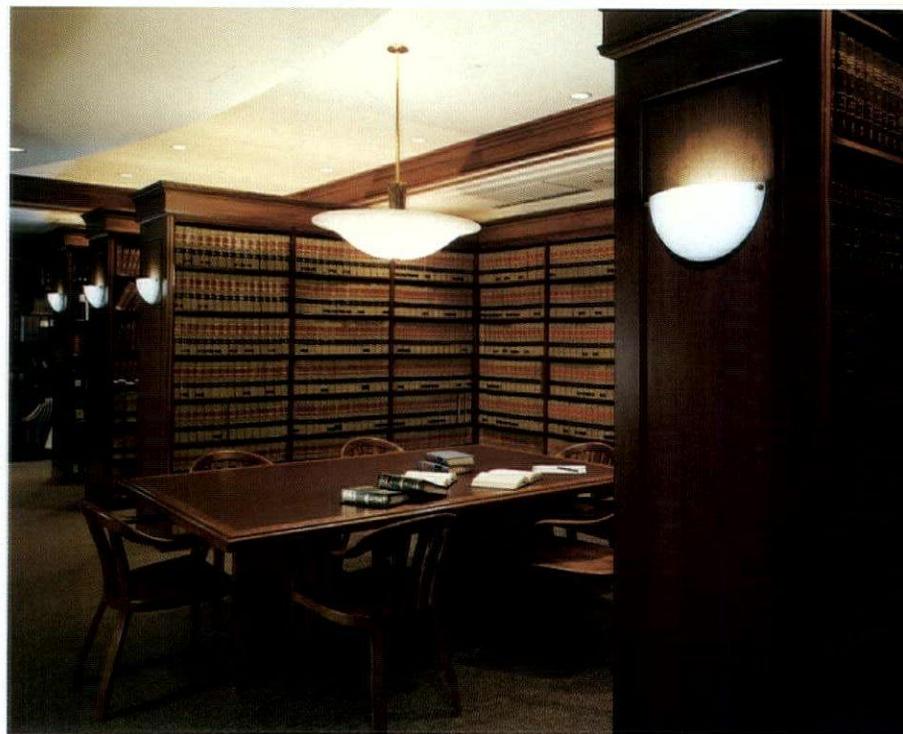
“The narrow inside corridors that connect the lobby with all the other spaces don’t feel claustrophobic,” said Klein. “The indirect lighting from the coves visually expands the space.”

The law firm’s artwork collection is displayed in niches duplicated from case work custom-designed by architect Michael Sobczak. The artwork is highlighted with MR16 narrow spots equipped with beam elongator accessories and housed in 3½-in. aperture, clear Alzak recessed adjustable accent lights.

“The frequently used library is the soul of a law firm,” according to Klein. With the exception of the ADA-compliant compact fluorescent alabaster wall sconces, the ambient lighting is incandescent to enhance the rich tones of the wood, the books and the carpeting.

The bookcases from the old office space have been refaced with stained cherry wood. A junction box has been added in the end of each case to support the wall sconce and new crown moldings have been added that conceal 24V linear incandescent light rails.

The 4½-in. clear Alzak open-reflector downlights provide the higher light levels needed to locate books in the narrow spaces between stacks. The decorative incan-



descent alabaster pendant suspended over the table adds beauty and supplemental task light for reading.

PRIVATE SPACES

Each room in the principal partner’s offices, which enjoy a clear view of the State Capitol, is lit with two direct/indirect pendants. Each pendant contains three compact fluorescent lamps and is suspended from a raised coffer in the room’s center. “The shadowless quality of light is just right for reading without supplementary illumination,” said Klein.

In the private offices and administration areas, ambient light is provided by 8-in. x 48-in. 10-cell, two-lamp fluorescent fixtures arranged at the perimeters of the spaces. They create an indirect/direct light play as diffuse illumination is bounced off the nearby walls and into the rooms.

In fact, the users of the space have noticed the better quality light since moving into their new offices. “At the secretarial stations, for example, the indirect system is more favorable for viewing computer screens than the previous fluorescent lighting,” explained Steven Brandl, executive director at the law firm. “There are fewer requests by the secretaries to have portable lamps added to their workspaces.”

“The old space represented an amalgamation of spaces acquired over time,” said Brandl. “It was a hodge-podge before and this renovation unifies the spaces with the help of the new lighting scheme.”

“These 10-in. x 48-in. fixtures can be tandem mounted so they look like custom parabolic coves, but for a fraction of the price,” said Klein. And there is no discomfort caused by direct view through louvers into the interior of the fixture.

The lighting design team received an IESNA Edwin F. Guth Memorial Award of Merit for the lighting of this project. ■

THE LAW OFFICES ARE UNIFIED VIA THE THEME OF FLUORESCENT COVES, ESTABLISHED FIRST IN THE LOBBY (OPPOSITE). ART GLASS AT THE TOPS OF THE COLUMNS FLANKING THE RECEPTION DESK IS LIGHTED FROM WITHIN BY INCANDESCENT SOURCES (LEFT). DECORATIVE SCONCES AND A PENDANT ADD RICH TEXTURES TO THE LIBRARY (ABOVE).

DETAILS

PROJECT

Michael Best & Friedrich LLP

LOCATION Madison, WI

ARCHITECT

Plunkett Raysich Architects-Michael Sobczak, AIA, Design Architect; Mark Herr, AIA, Project Manager; and Jennifer Poch, Interior Designer

LIGHTING CONSULTANTS

Steven L. Klein and Lynn Howard

ELECTRICAL

ENGINEER & CONTRACTOR Pieper Electric

WOODWORK

Carley Wood Associates

PHOTOGRAPHER

Eric Oxendorf, Eric Oxendorf Studios

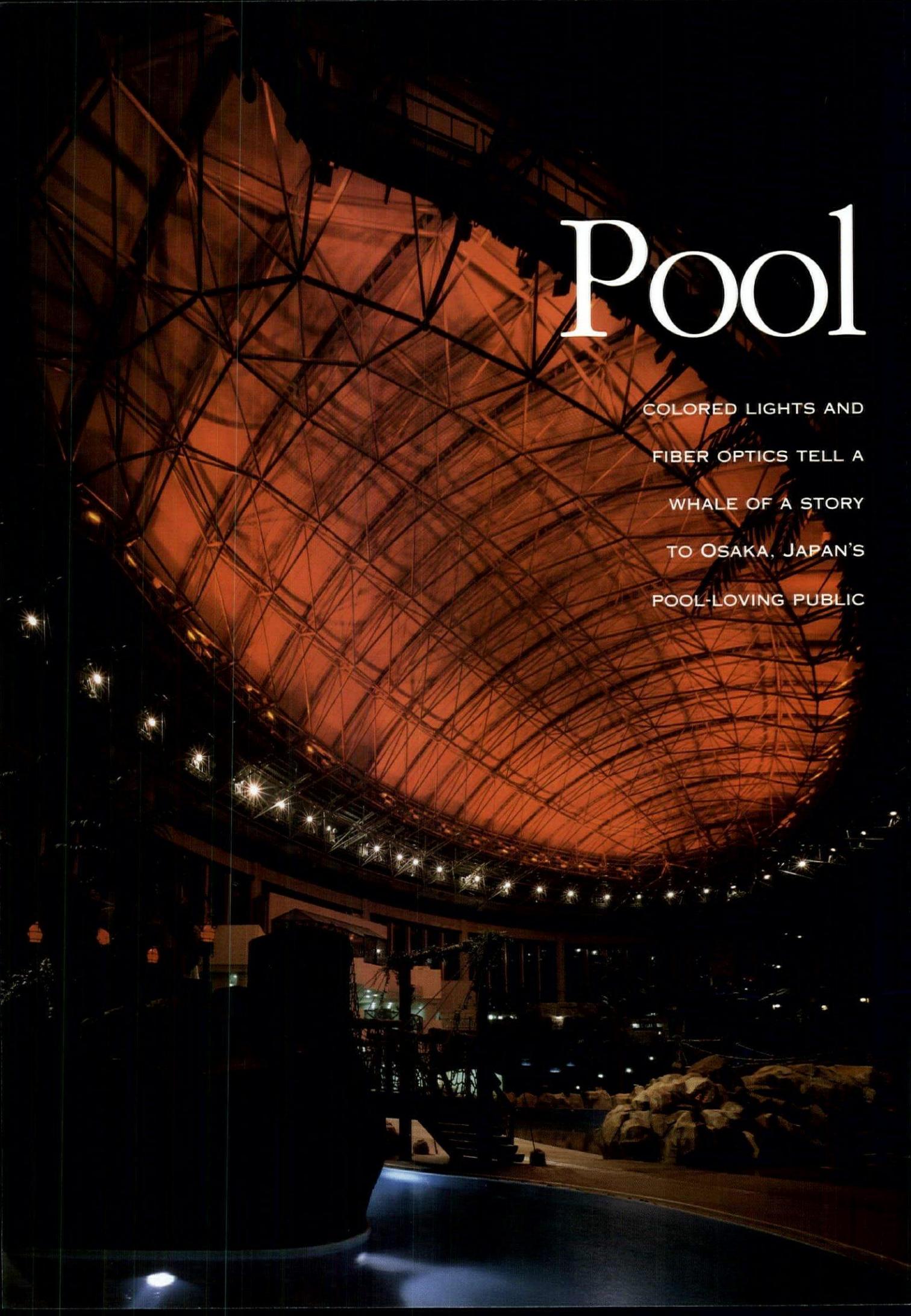
LIGHTING

MANUFACTURERS

Baldinger; SPI; Lightolier;

Ardee





Pool

COLORED LIGHTS AND
FIBER OPTICS TELL A
WHALE OF A STORY
TO OSAKA, JAPAN'S
POOL-LOVING PUBLIC

of Lights

BY WANDA JANKOWSKI, CONTRIBUTING EDITOR

The presence of elaborate light and sound shows extends far beyond the conventional theatrical venues of the Broadway stage and the Las Vegas show palace. Today's technology allows elements of light and sound entertainment to blend with architectural lighting as attractive and integral parts of large-volume public spaces.

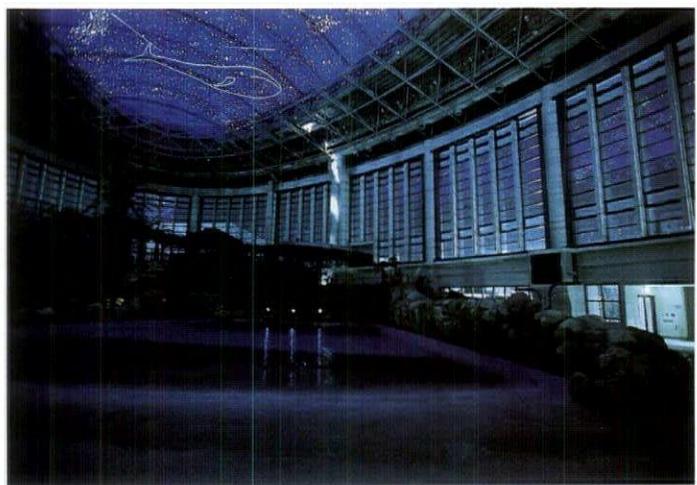
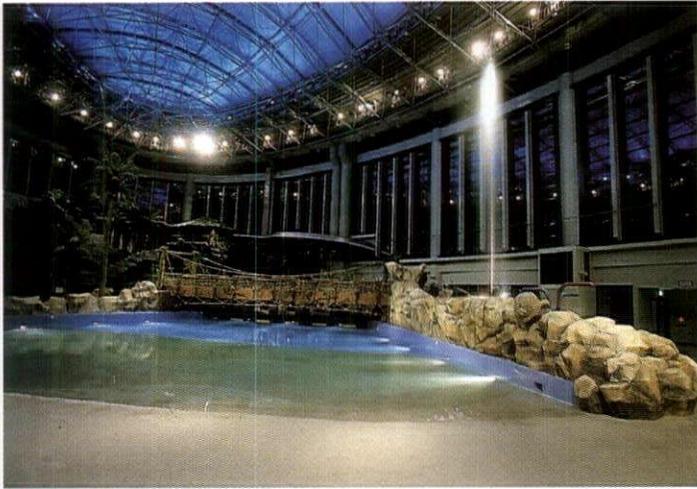
The Tsurumi Ryokuchi Swimming Pool, opened in June 1997 by the City of Osaka, Japan, for the enjoyment of its public year-round, is a water-lover's paradise, complete with a water slide, lush waterfalls, mist-emitting whirlpool and varied-sized wave, children's

and river pools. All of this is presented in a fantasy setting with artificial rock formations, live palm trees and light and sound shows that enliven the sensory enjoyment of the space by the bathers.

The most spectacular show is five minutes long, runs daily at 7 and 8 pm, and tells the story of a child whale who is permitted to fly into the sky for a big adventure the night before it becomes an adult. The show begins at ground level with palm trees and rocks color-washed and spotlighted. Whale and surf sounds signal the entrance of the baby mammal, which is depicted in a moving light pattern that

THE LIGHT PERFORMANCE DURING THE EVENING HOURS (LEFT) HAS THE CEILING LIGHTED BY MORE THAN 50 500W HALOGEN SPOTLIGHTS FITTED WITH AMBER-COLORED FILTERS. THE FABRIC-COVERED CEILING ALLOWS THE POOL (RIGHT) TO SERVE AS A COLORFUL BEACON FOR THE CITIZENS OF OSAKA, JAPAN.





dances on the ground and climbs up the wall until a larger, fiber-optic version of the whale appears in the “sky” of the domed ceiling.

Stars, both stationary and shooting, appear and disappear in a sky that constantly changes color. Spinning geometric patterns dance on the water and bathers below, and linear fiber optics race light in changing colors around the perimeter of the water slide in time to vibrant instrumental music.

As the shooting stars fade and the sky darkens, the whale descends back into the water, and the great adventure comes to an end.

COLOR SCREEN

Fabric spread taut beneath the ceiling dome serves as the screen upon which the colors and patterns of light play. The lighting effects are accomplished with a variety of fixtures attached to catwalks, used for relamping and maintenance, that are suspended beneath the two long sides of the oval ceiling.

Color glass filters are fitted onto 500W halogen spotlights vertically and horizontally positioned along the catwalks. Amber filters are included on 54 fixtures, light blue filters on 56 fixtures and dark blue filters on 86 fixtures.

The stationary “stars in the sky” are created with a multitude of fiber-optic strands. A large bundle of fiber optics travels out from each box housing the light source and the fibers separately to become individual “stars,” which are held in place suspended through stainless steel mesh.

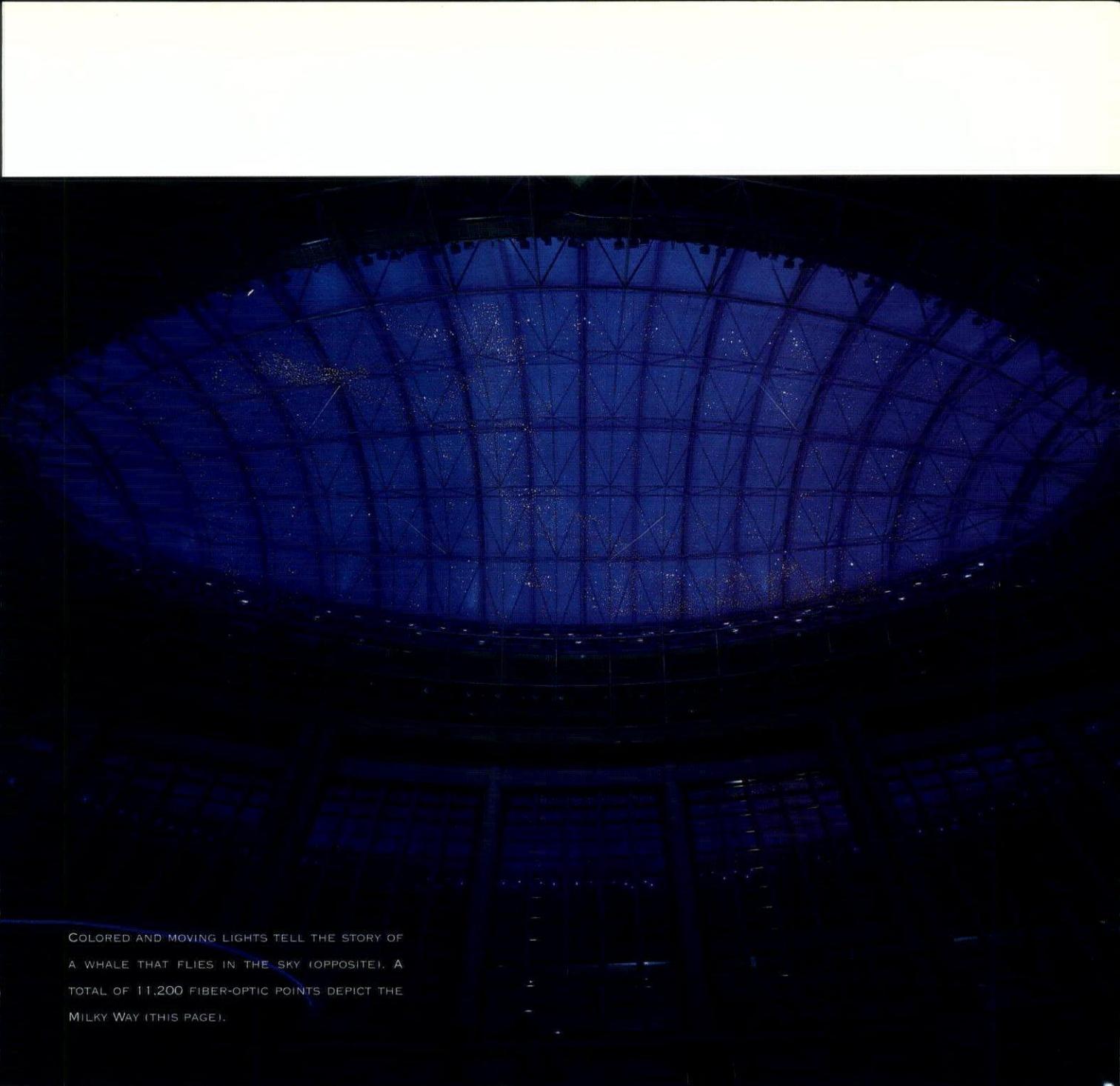
The shooting stars are made by passing bursts of light through a linear tube of fiber optics to create the illusion of movement. A total of 11,200 fiber-optic points are used to represent the Milky Way, random stationary stars and shooting stars. The outline of the whale that appears in the “sky” is also made with linear fiber-optic tubing.

The light source boxes for all the fiber optics are reachable via the catwalk—eight are mounted on one side of the oval ceiling, nine on the other.

The six moving light fixtures that cast changing patterns onto the water and bathers, are mounted in two groups of three diagonally across from each other on the long sides of the oval ceiling.

General lighting is accomplished with 250W halogen spotlights that are turned off during the light and music shows.

At ground level, three spotlights at the deep end of the wave pool cast light in changing colors across the water. Specialty lights include pole-mounted fixtures that resemble red flames positioned to illuminate the cave area.



COLORED AND MOVING LIGHTS TELL THE STORY OF A WHALE THAT FLIES IN THE SKY (OPPOSITE). A TOTAL OF 11,200 FIBER-OPTIC POINTS DEPICT THE MILKY WAY (THIS PAGE).

STAR-STUDDED SHOW

Even when there is no whale light and sound show, the illumination alters the experience of the environment through computer-programmed, 30-minute cycles that include gradual changes in color and the appearance of stars. In the daytime hours, the ceiling is washed in a light blue that changes to amber and then to dark blue with the addition of fiber-optic stars. During the evening, the ceiling is illuminated in shades of amber light. And at night, the ceiling mimics the natural night sky, illuminated in dark blue with fiber-optic stars

appearing and changing their patterns.

In a cave-like area where rock formations enclose a whirlpool, a performance of lights, mist and music is presented regularly throughout the evening as well.

Since the structure of the pool uses an abundance of glass panes and metal trusswork, the color changes in the dome and interior can be seen and enjoyed outside the building from miles away, endowing the pool with a landmark presence in the cityscape. ■

DETAILS

- **PROJECT** Tsurumi Ryokuchi Pool
- **LOCATION** Osaka, Japan
- **CLIENT** City of Osaka
- **DESIGN AND PLANNING**
Sogo Setubi Consulting Co., Ltd.;
ALS Landscape Design Institute Inc.
- **LIGHTING FIXTURE
FABRICATOR**
Mitsubishi Electric Corp.
- **PHOTOGRAPHER** Yoshihisa Araki
- **LIGHTING MANUFACTURERS**
Yamagiwa Corp.; Mitsubishi Rayon
Co., Ltd.; Irideon; Martin (Roboscans);
Toshiba; Matsushita (National); Ushio;
Mitsubishi Electric; Osram; Philips

Core Components

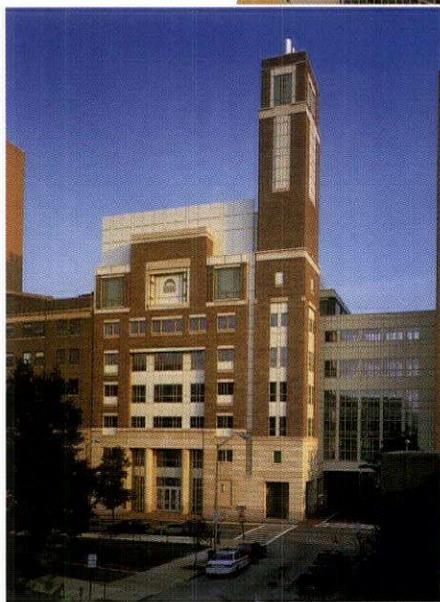
WARM FINISHES, RICH DESIGN ELEMENTS AND AN INTEGRATED LIGHTING SCHEME ENHANCE THE CENTRALLY LOCATED ATRIUM LOBBY OF THIS BALTIMORE RESEARCH FACILITY

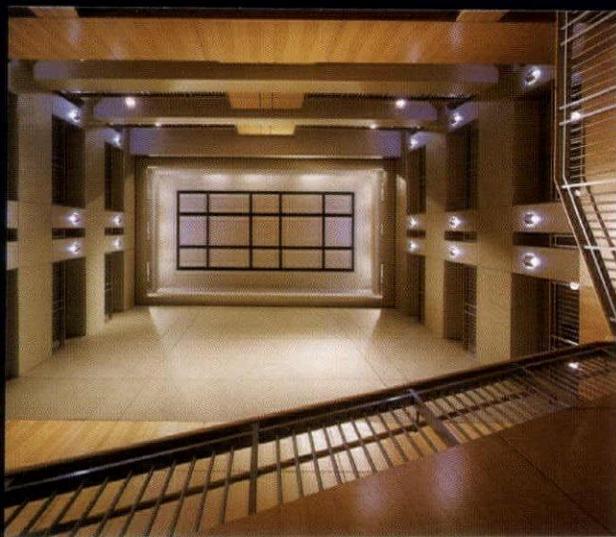
BY JEAN GORMAN, CONTRIBUTING EDITOR

The lobby of a public building is ostensibly a potent space. Its appearance alone can make a powerful statement about all of the other spaces in the facility, and, by extension, those who occupy those spaces.

With that in mind, the architects of the two-year-old \$56 million Health Sciences Facility at the University of Maryland at Baltimore created an atrium lobby for the building that was intended to serve as a welcoming port of entry as well as a practical central hub linking four other related existing buildings that comprise the University's School of Medicine. According to Robert Rowan, the University's assistant VP of facilities management, the design of the atrium is a conscientious response to both of these objectives. "From a facilities management point of view," he said, "the design of the space includes innovative solutions to what are usually pretty difficult problems in an atrium."

One of the key components in the thoughtful design of this lobby is the clever integration of lighting. Developed by the in-house lighting design team of architecture and engineering firm CUH2A, which joint-ventured on the project with the Baltimore-based





TRANSLUCENT PANELS AT THE TOP OF THE TOWER (INSET OPPOSITE) GIVE THE BUILDING A VISIBLE PROFILE IN THE CITY'S SKYLINE. CEILING-MOUNTED 250W HALOGEN SOURCES EVENLY WASH WOOD paneled WALLS (OPPOSITE), AND COMPACT FLUORESCENT SCUNCES ON THE COLUMNS ADD SPARKLE (BELOW). METAL HALIDE LAMPS AROUND THE PERIMETER OF THE CEILING MIMIC THE EFFECT OF A SKYLIGHT.

DETAILS

PROJECT

University of Maryland at Baltimore Health Sciences Facility Atrium Lobby

LOCATION Baltimore

CLIENT University of Maryland at Baltimore—

Robert Rowan, assistant VP of facilities management

ARCHITECT CUH2A—John Rivers, project director; Ayers/Saint/Gross—

Adam Gross, project designer

INTERIOR DESIGNER CUH2A

LIGHTING DESIGNER CUH2A—Thomas Lyman

PHOTOGRAPHERS Robert Creamer; Alan Karchmer

LIGHTING

MANUFACTURERS

Lighting Services Inc.; TIR Systems, Ltd.; Perry Pratt Lighting; Edison Price; GE

firm of Ayers/Saint/Gross, the lighting design graciously enhances the quality of the interior architecture and contributes to an overall sense of well-being within the 206,000-sq.-ft Health Sciences Facility. It is also easy to maintain, and, combined with the lighting systems employed in other spaces in the new building, it meets the energy-efficiency requirements for the facility as well.

John R. Rivers, AIA, director on the project, attributes the success of the lighting in the atrium to the harmonious early collaboration between architects and lighting designers. "When lighting designers work side by side with the designers and engineers, they can have more influence in the process as it evolves," he said. "And the result is lighting that is better integrated with the architecture."

BEACON OF LIGHT

The smart integration of lighting in this building can first be seen from outside. Located on the University's downtown Baltimore campus, the structure quietly stakes its place in the nighttime city skyline thanks to the understated yet effective approach the designers took to illuminating the top of the atrium tower. "We backlit the tower to create a beacon," said Thomas Lyman, who was CUH2A's group leader for lighting when the project was designed. They did so by mounting a unistrut grid holding four 10-ft.-long fluorescent tubes positioned about 18 in. apart in front of each of four 10-ft. by 12-ft. openings covered with translucent panels at the top of the tower. At the ground level, a series of standard monumental lattice-work sconces containing high-output fluorescents reinforces the transitional style of the architecture and the colonnade along the walls leading to the entrance.

FORM & FUNCTION

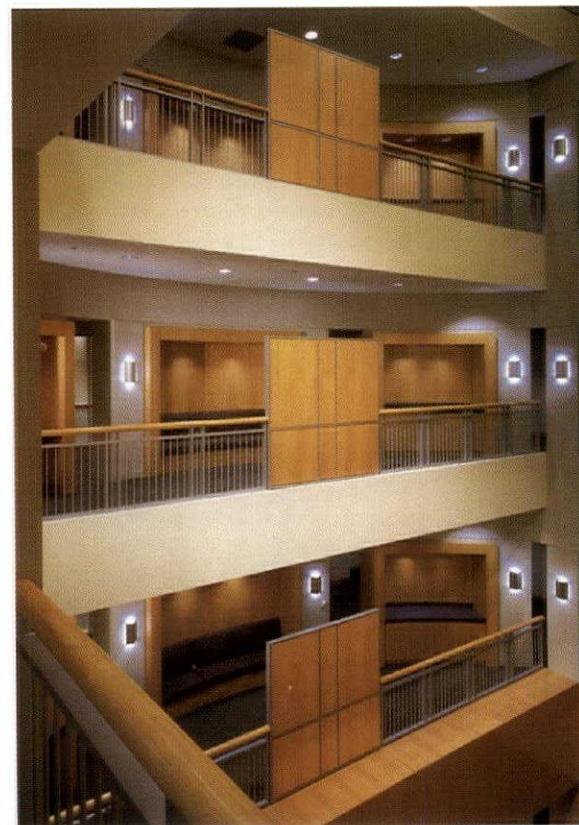
Inside the atrium, the designers used three different lighting strategies to respond to aesthetic and functional needs of the five-story space. "First we recognized that since the space would be a hub, it would have to be attractive, inviting and comfortable, and that the lighting would have to reinforce those ideas," said Lyman. "We knew that the lower levels of the space would have rich finishes—slate pavers on the floor and beautiful wood paneling on the walls—and we wanted to highlight those elements." To wash the quarter-sliced anigre wood-paneled walls on the first two levels with light, the designers mounted 250W PAR halogen accent lights around three of four sides of the rectangular ceiling. "We used 10-degree spots to do that," said Lyman. "They were mounted so far away that there is a big distribution of light by the time it reaches the lower levels. The reflected glow off

the wood paneling provides the circulation lighting in the corridors and more than half the ambient light in the space. When you approach the space from outside, the glowing wood almost looks alive."

The level illumination on the lower levels is fairly high, so the designers knew they also had to put some light at the top to relieve the darkness at the ceiling. To mimic the effect of a skylight and create a sense of natural light in the windowless space, the designers covered the ceiling in aluminum leaf and illuminated it with a light pipe mounted in a cove around its perimeter. This solution solves the problem of disrupting the atrium with scaffolding when light sources need to be changed. With the aid of the reflective light tube, only four 250W metal halides with custom reflectors are needed to evenly light the 20- x 40-ft. ceiling creating a sparkling plane overhead. Mounted in the corners, the lamps are easy to access through panels on the corridor side on the sixth floor.

To break up these uniformly lit planes of light—the wall paneling on the lower levels and the ceiling—the designers opted to punctuate the columns on the upper levels with decorative sconces containing compact fluorescents with a color temperature of 3500K. These fixtures create sparkling grace notes in the space and highlight the textured wallcovering cladding the columns. And when viewed as an entire composition, said Lyman, the lighting is reminiscent of a classical, tripartite column. "The warm light on the wood is like a base, the neutral light in the middle is like a transitional shaft, and the cool light at the ceiling is like a capital."

Since the completion of the building, there has been a 233 percent increase in research funding, which now exceeds \$100 million. ■



The New Energy Code

All lighting professionals have firsthand experience at how the lighting in commercial spaces has changed dramatically in the past 25 years, with the rate of change accelerating rapidly in the past 15.

Most of us conjure up images of electronic ballasts and T8 lamps, parabolic troffers and compact fluorescents at this statement. But also consider that lighting requirements have changed as well. In 1970, a maintained light level of 100 footcandles was often preferred. Today, 30-50 fc is desirable for the same tasks.

Between the two, a lot of energy can be saved in commercial spaces compared to the old days. Energy-efficient design and retrofits have been carried out wholesale since the 1980s, and while energy savings is sometimes reviled as overemphasized, the focus on lighting as a key area of reducing energy use has advanced the profession in numerous ways. And changed it.

From basic requirements to codes to the techniques and equipment we use, energy consumption concerns has changed the face of lighting design. This year is the 10th anniversary of the Appliance Energy Act of 1988, and six years ago the National Energy Policy Act was passed; between the two of them, the ballasts and lamps we called once "standard" are now no longer manufactured in most cases.

Within the next two years, we will see another major change. Most lighting professionals have already become aware of it. It is the ASHRAE/IESNA 90.1-1989 standard, now in revision as 90.1R and due to be published 1999 (or later, depending on the number of revisions it must go through).

THE EXISTING STANDARD

The existing standard has now been adopted by more than half of the states in the Union as the basis for their own energy codes. In fact, the National Energy Policy Act of 1992 requires all states to have energy codes that are as stringent or more

stringent than 90.1. It is comprised of two parts. The ASHRAE portion deals with heating, ventilation and air conditioning. The IESNA portion deals with lighting. The standard is dedicated to new commercial and high-rise residential buildings. Another standard, the ASHRAE/IESNA 100, deals with existing buildings. Renovation is sometimes covered by 90.1; some states require their energy code to be applied on any project that requires a building permit. New York State requires the code to be applied whenever 50 percent or more of a building is being renovated. While it sets minimum energy requirements, it does not prescribe solutions; how to meet the requirements is up to the designer's professional judgment.

THE NEW STANDARD

As stated, the 90.1 standard is being revised and copies are available at www.ASHRAE.org for public comment through March 30. Lighting professionals should be aware of the code as it will provide guidelines and restrictions on how they can design lighting systems. The first public review period generated several hundred comments on the lighting section; the draft is being revised to deal with these comments.

If the second draft is acceptable, it could be published next year; it will then have to be implemented by the states. But again, the state energy codes by Federal law must be at least as stringent as 90.1.

Special features of the proposed 90.1R now in development include:

- New language makes the code easier to use and, for code officials, to implement.
- Lighting unit power densities (LPDs) are based on real-world applications.
- Some 90.1-1989R LPDs are lower than the existing standard because of advancements in energy-efficient technology.
- Appropriate room cavity ratio (RCR) figures are used rather than using an RCR of 1 and applying an adjustment factor.

ENERGY LEGISLATION IS CHANGING THE WAY WE DESIGN LIGHTING

- The 90.1-1989R addresses energy use in addition to connected load via mandatory use of lighting controls for all types of lighting except emergency and egress lighting. Automatic shut-off (occupant sensors or timeswitches) and daylighting controls are required.

- A method allows designers to use decorative or special solutions called "use it or lose it"; the designer can indicate a special lighting need and add in the extra power allowance it requires, but that lighting equipment must be installed in the final project.

- These power allowances are made for special spaces such as lobbies with ceilings higher than three levels, and offices with VDTs.

- There are LPD allowances for entire buildings in addition to a space-by-space requirements. Designers can choose between two methods, allowing design flexibility in meeting the total building requirement.

MAKE YOUR COMMENT

To obtain a copy of the existing standard ASHRAE/IESNA 90.1-1989, you can purchase it from the Illuminating Engineering Society of North America's New York City headquarters at (212) 248-5000. Order it as #90.1-89; you can also order the Users Manual as #UM-90.1-93. To see the proposed 90.1R standard public review draft and review it for comment, you can download it at www.ASHRAE.org or call ASHRAE at (800) 527-4723.

Get involved. Since the standard will be available for public review, you are encouraged to pick up a copy, read it and make comments. After all, it will be your energy code and will significantly impact your future lighting designs. ■

SUMMARY OF CURRENT ASHRAE/IESNA STANDARD 90.1-1989 —ENERGY-EFFICIENT DESIGN OF NEW BUILDINGS

Purpose of Standard

- Set minimum requirements for the energy-efficient design of new buildings without constraining the building function, nor the comfort or productivity of the occupants
- Provide criteria for energy-efficient design
- Provide sound guidance for energy-efficient design; this is not a design procedure

Scope

The standard applies to

- New buildings intended for human occupancy except single and multifamily residential buildings of three or fewer stories above grade;
- Building interior spaces, building exteriors and exterior areas such as entrances, exits, loading docks, etc.
- Roads, grounds, parking and other exterior areas where lighting is required and is energized through the building electrical service

The standard does not apply to

- Manufacturing, commercial or industrial processing spaces
- Buildings with fewer than 100 sq. ft. of gross floor area;
- Buildings or areas where the total combination of heating, service water, ventilating, air conditioning or lighting systems' peak design rate of energy usage is less than 3.5 Btu/(h-sq. ft.) of gross floor area.

Basic Lighting Requirements

- Total lighting power allowance consists of Exterior Lighting Power Allowance (ELPA) and Interior Lighting Power Allowance (ILPA).
- ILPA has two methods of calculation, prescriptive and systems performance methods.
- Lighting controls are required for all lighting, except for emergency or exit lighting. There are both mandatory requirements for manual controls and incentives for automatic controls. Exterior lighting has mandatory requirements for automatic/programmable controls.
- The standard includes two additional mandatory requirements: ballasts (efficacy and power factor requirements) and tandem wiring (requirements for single- and three-lamp fixtures)

Lighting Exempt from the Standard

- Outdoor activities such as manufacturing, commercial greenhouses and processing facilities
- Theatrical productions, television broadcasting, audio-visual presentations, entertainment facilities, stages—specialty

lighting for these functions

- Specialized fixtures for medical and dental purposes
- Outdoor athletic facilities
- Display lighting for art exhibits or galleries, museums and monuments (interior/exterior)
- Special lighting for research/plant growth
- Emergency lighting and high-security areas
- Spaces primarily used by the visually impaired
- Lighting for signs
- Store-front and display windows for retail
- Lighting for dwelling units

Two Methods for Determining Interior Lighting Requirements

- Prescriptive path: A single whole building ILPA (in Watts) number for different building types. This method is intended for use in determining requirements for speculative buildings or during a preliminary design phase.
- Systems performance path: A space-by-space method to determine total building ILPA based on individual space type and geometry. The individual spaces are summed to obtain a whole building limit.

Power Adjustment Factor

The Connected Lighting Power (CLP) of a building can be reduced by using Power Adjustment Factors (PAF). These PAFs are credits given for the use of various automatic controls. The CLP of a specific space can be reduced by multiplying it by the PAF of the control device used for that space.

Mandatory Requirements—All Buildings Fluorescent Ballasts

- Minimum ballast efficiency factor (BEF)
- Tandem wiring* is required when using electromagnetic one- and three-lamp fixtures <10 ft. on center, pendant or surface-mounted within 1 ft. (three-lamp ballasts may be used)

Computer Program—LTGSTD

This program comes with the standard. It provides a way of showing compliance and is a way to help tabulate the building's requirements. It also calculates controls requirements.

Lighting Controls Requirements

The purpose of the lighting controls requirements is to enable lighting to be turned off when it is not needed. The requirements apply to both interior and exterior lighting. Accessible controls are required for each lighting system. A separate lighting system must serve each enclosed space. In addition, multiple controls are required

where there are multiple tasks in a space.

Exterior Lighting Controls

- Exterior lighting, except lighting that must be on 24 hours a day, requires the use of either a photosensor or astronomical timeswitch (or a combination of the two). This requirement ensures that lighting is turned off during daylight hours or when it is not needed.

Interior Lighting Controls

- Each space enclosed by walls or ceiling-height partitions must be provided with a minimum of one control point. In addition, one control is required for each task location (within an area of 450 sq. ft.). These controls must be capable of turning off all the lighting within that space.
- All lighting systems must have some means of control, except for emergency and exit lighting. Acceptable means of control include manual switches, programmable timeclocks, photocells and occupancy sensors.

Control Accessibility

- Lighting controls must be in the room and readily accessible. This means visible and easily operated by the occupants of the space.

Control Points

- The standard uses a scoring system for lighting controls where each type of control is awarded a certain number of control points. Each control point is indicative of its ability to save energy—the more, points the more efficient the lighting system can operate.

Minimum Number of Controls

- Regardless of the control points required or earned, at least one control must be provided for each 1500W of connected lighting power.
- An important exception to this requirement is for large spaces that must be used as a whole such as warehouses, retail and department stores, public lobbies of office buildings, hotels and hospitals.

Hotel/Motel Guest Rooms

- A master lighting switch must be located at the entrance door to a hotel or motel room. The master switch must operate all permanently installed lighting and all switched receptacles.

Special thanks to Jim Yorgey, PE, specification sales for Lutron and a member of the Energy Management Committee of the IESNA, and JoAnne Lindsley, IALD, Lindsley Consultants Inc., also a member of the Committee.

NCQLP: The Results Are In

One hundred and forty-six lighting professionals passed the inaugural NCQLP Lighting Certification Examination, held November 1, 1997 in 21 sites in the US. This indicates an 87 percent passing rate for the total 168 candidates who sat for the exam. More than 100 long-time practicing professionals have achieved granted certification (as of January 8, 1998).

The successful are entitled to use the LC (lighting certified) appellation after their name for professional purposes. The LC credential indicates that a lighting professional has demonstrated the necessary knowledge, understanding and ability to apply lighting principles and techniques successfully.

Though the demographics are not yet available, a wide variety of lighting professionals turned out: architects, electrical engineers, salespersons, researchers, lighting designers, contractors, utility personnel, etc. "We were extremely pleased," said Gary Gordon, LC, IALD, president of the National Council on Qualifications for the Lighting Professions, which is based in Bethesda, MD. "Between the people who signed up to take the exam and those who applied for granted certification, we had 50 percent more people than our highest hopes...I know that many people were waiting a year to see whether NCQLP's exam would be accepted by the industry, so I expect that the numbers of exam candidates will keep increasing." Granted certification applications are still being reviewed; the deadline to apply is September 5, 1998.

Since 1991, the NCQLP's purpose has been to establish a voluntary certification process for lighting practitioners, and it has done just that. "Overall it is a very valid test for lighting design," said lighting

designer Gloria Koch, LC of Gloria Koch Design Group, Bellevue, WA. "The most consistent comment we've received is that it is a fair exam," said Gordon. "That's the best comment one can get on a certification exam."

Most lighting professionals admit freely that lighting practice is difficult to evaluate objectively. And it was the

THE EXAM IS OVER—
MORE THAN
87 PERCENT OF
TEST-TAKERS
CAN NOW ADD LC TO
THEIR NAME

"WE WEREN'T
TESTING THE QUALITY
OF LIGHTING DESIGN
BUT RATHER OUR
ABILITY TO MEET
WHAT A SURVEY OF
PRACTITIONERS
DEFINED AS
COMPETENT LIGHTING
PRACTICE."
—GARY GORDON,
LC, IALD

design simulation half of the exam that gave many candidates problems. This portion of the LC exam is intended to test a professional's ability to solve design problems. According to Gordon, both the method used to arrive at a solution and the solution itself are assessed. Koch questioned the designation of any single design solution as "correct." "The reason why there are so many different types of lighting consultants is

because there's so many different ways to light a space," she said.

"I think the biggest problem we had here was that the vast majority were unfamiliar with simulations," said Fred Oberkircher, LC, IALD, chair of the LC Examination Committee and director of the TCU Center for Lighting Education. His advice: "Set aside what you do on a day-to-day basis and think about what the test is looking for." Gordon added that the test questions and simulations on the exam and the preparatory materials provided by NCQLP are reviewed annually.

"In no way were we testing the quality of lighting design," said Gordon. "We were simply testing our ability to meet what a national survey of lighting practitioners defined as competent lighting practice."

NCQLP endorsed two educational courses to help candidates prepare for the LC exam. The Lighting Design Lab, Seattle, conducted two days of training in October for 17 lighting professionals, which will be repeated this fall. The course followed the exam outline provided by NCQLP, and provided some traditional instruction along with ample discussion. Koch, who attended the workshop, said that the structured review was valuable: "Because they touched on a little bit of all the subjects that were covered, it showed me where my weakness was, so I could study on that particular area."

The Illuminating Engineering Society of

North America developed a seven-week course, Lighting Application I, which is available for purchase. The course, which will be offered by IES sections and others, is organized around discussions and exercises based on readings from the Primary Reference List from NCQLP. Hartranft, who participated in an abbreviated version of the course, said, "The IES material was very helpful in reminding me in some areas, in bringing them to the fore."

Oberkircher strongly recommends that candidates participate in study groups and include as wide a diversity of lighting professionals as possible.

BUILDING A PROFESSION

Beyond demonstrating lighting application knowledge and ability, candidates sat for the LC exam for many reasons: competition for government contracts, to enhance a resume and because "it's there." But as yet, it is not vital to a lighting professional to carry the LC. But many, particularly those with more than 10 years experience and a solid portfolio behind them, took the exam to support the effort and build the credibility of the profession.

More than 100 individuals, each with more than 20 years of lighting experience behind them, have applied for granted lighting certification. "It's important to show that you are part of the overall process," said lighting designer Jeffrey A. Milham, LC, IALD of Design Decisions, Inc., New York City. "The government and the rest of the design disciplines are finally recognizing lighting." The granted LC application includes sections to list professional affiliations; awards and recognition; as well as design, education, management and research efforts and their significant challenges and achievements. Granted applications are subject to a blind peer review process.

Even those "granted" are subject to recertification every three years, which is intended to keep LCs abreast of changes in lighting technology, research, and practice. Several activities will earn LEUs, or Lighting Education Units: continuing education related to lighting, teaching and

speaking, writing, attending industry conferences and trade shows, receiving professional recognition, industry leadership, workshops, LC preparatory courses and seminars.

MEMBERS & SUPPORTERS

The International Interior Design Association (IIDA) and the National Lighting Bureau (NLB) recently became NCQLP member organizations, joining 12 existing supporters. The U.S. Environmental Protection Agency has dropped its Green Lights Surveyor Ally recruitment program and is recommending that lighting professionals pursue the LC. The U.S. Department of Energy and the U.S. General Services Administration have formally recognized the LC as a strength in

federal contract proposals as well. As a further endorsement, the DOE Federal Energy Management Program provided a substantial grant to NCQLP for 1998.

NCQLP has also reached out to the lighting manufacturing community, which has made a significant financial effort in NCQLP's first year of seeking support. Manufacturers' employees have been deeply involved in NCQLP, and the exam, since its inception. According to Gordon, "Certification in any profession raises the bar of professional practice, which in turn raises the credibility of the profession...The more knowledgeable consumers there are and the more knowledgeable lighting practitioners there are, the more people will want to buy quality lighting equipment that is designed to perform optically." ■

NCQLP CONTRIBUTORS

- American Society of Interior Designers (ASID)
- Amerlux Lighting Systems
- Bega
- Belfer Lighting
- Bodine
- California Institute for Energy Efficiency
- Cooper Lighting
- DesignPlan Lighting
- Edison Price Lighting
- Electrical Power Research Institute
- H.E. Williams Inc.
- Holophane Corporation
- Hubbell Lighting
- Illuminating Engineering Society of North America (IESNA)
- International Association of Lighting Designers (IALD)
- International Facility Management Association (IFMA)
- Legion Lighting
- Lighting Corporation of America
- Lighting Services Inc
- Lightolier
- Litecontrol
- Lithonia
- Louis Baldinger & Sons, Inc.
- Lucifer Lighting
- Lutron Electronics
- National Electrical Manufacturers Association (NEMA)
- Neo Ray Lighting
- Osram Sylvania Inc.
- Peerless
- Prudential Lighting
- Phillips Lighting Co.
- Robertson Ballast Co.
- Shaper Lighting
- Simkar Light Fixture Corp.
- Sterner Lighting Systems
- Sylvan R. Shemitz Designs, Inc.
- Elliptipar
- The Kirlin Co.
- Thomas Lighting
- Tivoli Industries
- U.S. Environmental Protection Agency (EPA)

APPLYING LIGHT & COLOR

BY LOIS BURGNER, CONTRIBUTING EDITOR

Just as there is no universally "correct" light level or fixture layout, so too is color selection a matter of architecture, task and interior finishes. Because of the eye's ability to adapt to almost any ambient color and make it look "white," the color of white light is felt more than seen. Beyond aesthetics, the emotional impact of color temperature can influence a space as much as any attribute of lighting.

Just as the visual system adapts from bright sunlight to a darkened movie theater, the eye-brain will become used to the light from a reddish-hued sunset, golden high-pressure sodium parking lot lighting or the cool blue of an afternoon sky. Just because the lighting looks normal, however, doesn't mean that colors in the space will be rendered well. Colors in which a light source is completely deficient will appear gray or black. Color critical spaces such as hospital diagnostic rooms, color print production areas, frame and matting stores and some other retail areas (to name a few) require a spectrally balanced white light source of CRI 90 or better.

Due to reflections, surface color can influence the color of light in a space, as can filters or finishes within a fixture. In general, warm color temperatures enhance decors done in warm tones, including many woods, and are associated with a relaxed atmosphere and low light levels. Cool light sources

are associated with brightly lighted, active environments. In addition to blues and greens, cooler sources flatter modern designs done in white, black, chrome and glass. A mixture of both warm and cool interior finishes calls for a neutral color temperature source, which also lends flexibility for accent lighting and a middle-of-the-road ambience.

WARMTH AND LUXURY

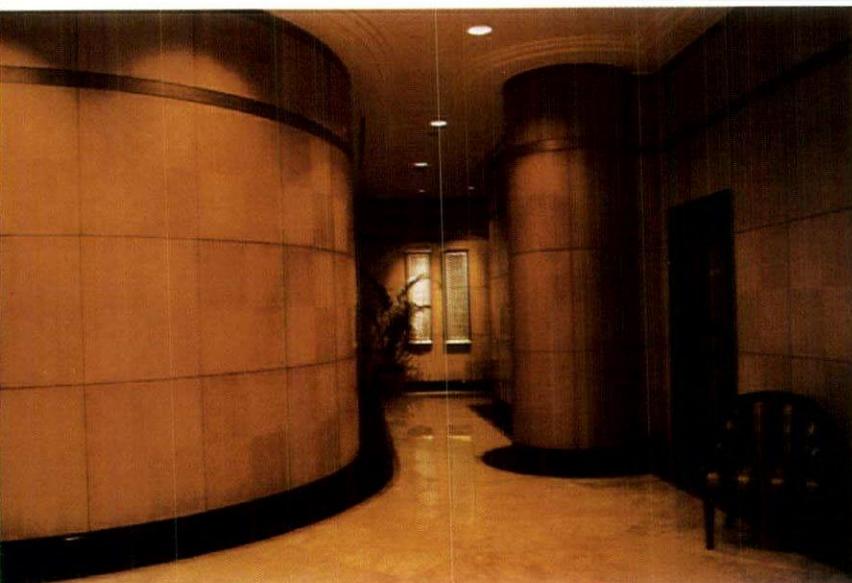
Interior designer Deborah Lloyd Forrest of Deborah Lloyd Forrest Associates Inc., Dallas, can't remember the last time she specified a cool source for one of the luxury hotels she's designed. "I think [warm sources] make people feel more comfortable," she said. "They instill more of a sense of well being and certainly luxury." Because people have grown up with 2700K incandescent lighting in their homes, warm lighting is almost always the best choice for residential and hospitality applications, as well as high-end retail.

"The most important thing for me when choosing a light source is its color rendering capabilities, because designers spend an awful lot of time selecting the perfect colors," Forrest said. Incandescent and halogen sources, at CRI 99+, offer the highest-rated color rendering among interior electrical sources. Newer fluorescent, compact fluorescent and metal halide sources in warm colors offer good color rendering in the 80s. Though they are recommended for general lighting in many public areas, such as corridors where the lights burn 24 hours, Forrest complained that the lesser color rendering lends a "flatness" to finishes, furnishings, artwork and flowers.

HIGH-ENERGY ENVIRONMENT

At the other end of the spectrum, cool ambient lighting in the neighborhood of about 5000K creates a very modern, high-energy atmosphere suitable for many public spaces, including lobbies, airports, sports venues and fast food restaurants. "If there's a lot of daylight in the space, you would probably tend to use the cooler lights," according to lighting designer Barry Hannaford, a partner in DPA Lighting Consultants in London. But Hannaford tries to include a method of warming up the light in the evening, as cool lighting at night becomes "refrigerator-like," very cold and unfriendly.

Dimming from higher light levels to lower will invariably bring out preferences for warmer colors. In interiors, lower light levels and nighttime are associated with candlelight and a warm fire. Cool light is generally much more accepted for higher light levels and daytime. These preferences are propitious in that the cooler fluorescent and discharge sources usually called upon to produce higher levels are much more energy efficient.



WARM COLORS LIGHTED WITH DIMMED INCANDESCENT SOURCES CREATE AN INVITING AND COMFORTABLE ATMOSPHERE. THIS HOTEL INTERIOR HAS A RICH AND ROMANTIC FEELING REINFORCED BY THE LIGHTING.

PROJECT: *Sheraton Surabaya*; INTERIOR DESIGNERS: *Design One & Manny Samson Interiors*;
LIGHTING DESIGNER: *Lighting Design Alliance—Mark Frank, Chip Israel, Alex Friend*
PHOTO: *Mark Frank*



NEUTRAL COLOR LIGHTING IS USED TO BRING THIS HIGH-TECH OFFICE INTERIOR TO LIFE. THE LIGHT HAS GOOD COLOR RENDERING TO ACCURATELY PORTRAY THE COLORS OF THE INTERIOR AND PEOPLE USING IT, WHILE THE WHITENESS OF THE LIGHT DEFINES THE ENVIRONMENT AS A CORPORATE SPACE.

PROJECT: *Sony Imageworks*; **INTERIOR DESIGNER:** *ISI Interiors*; **LIGHTING DESIGNER:** *Lighting Design Alliance—Andrew Powell, Chip Israel*; **PHOTO:** *Hedrich Blessing*

Cool light sources are, however, perfectly acceptable outdoors at night, where the cool tone of moonlight is natural. Except for warm-toned structures, like brick or stucco, cool metal halide and fluorescent sources generally provide standout facade and signage lighting. Lighting Designer Mark Frank, a senior designer with the Lighting Design Alliance in Long Beach, CA, also recommends metal halide lamps for landscaping: "The higher color temperatures do much better with the greenery." Mercury vapor can also make foliage stand out but renders other colors not as well. Frank recommends metal halide in parks and other outdoor areas designed for people.

Cool light with superior color rendering is often selected for art galleries—perhaps stemming from some artists' preference for studios with northern exposures, which provide more consistent daylighting. But remember, no matter how high the color rendering index, a cool color temperature will bring out blues and greens in the artworks. Neither does cool lighting fit comfortably with curators' conservation requirements for lower light levels. "Given that a lot of these works would have been painted under all sorts of lighting conditions," said Hannaford, "you've got a lot more flexibility and variety with tungsten halogen [only 3000K]."

COMFORT AND FLEXIBILITY

Neutral light sources in the range of 3500K to 4000K provide a wide middle ground, appropriate for most offices as well as a variety of retail and other public areas. Good color rendering, triphosphor fluorescent lamps in 4000K compliment many of today's popular interior office finishes: grays, blues, and greens. "The cool and the warm colors come out pretty well, and skin tones look fine," according to Hannaford.

Grocery and discount stores can enjoy a comfortable, moderately upbeat ambiance with the flexibility to accent with warmer or cooler sources, as the merchandise and displays demand. In department stores, "departments move around and they don't change the lamps... It might be white goods one season and female fashions the next," Hannaford said. "The intermediate light source allows them to move things around." ■



COOL COLORS ARE USED TO BUILD EXCITEMENT AND REINFORCE THE COLOR SCHEME OF THIS CASINO INTERIOR. THE COOL COLORS ENLIVEN THE SPACE AND REINFORCE THE OUTDOOR FEELING OF THE SPACE.

PROJECT: *Silver Legacy Resort and Casino*; **INTERIOR DESIGNER:** *Yates Silverman & Urban Design Group*; **LIGHTING DESIGNER:** *Lighting Design Alliance—Mark Frank, Chip Israel*

FIBER-OPTIC FIXTURES— RECENT DEVELOPMENTS

BY RUSSELL L. DEVEAU, CONTRIBUTING EDITOR

Fiber-optic systems have advanced in the last few years. Some of the most notable advancements have occurred in the area of components and accessories, such as fixtures.

Early fixtures were generic. Often in limited finishes, they were typically marked as "spot" lights with the same fixture used in downlighting, underwater and museum applications. These fixtures generally served only as decorative surface devices that provided performance impressions. Unless a lens was incorporated, light coming from the fiber at a particular angle simply passed through the device without modification. Although in many cases this concept hasn't changed, today's fixtures are made of diverse materials, allow for a selection of exterior finishes and often provide a high degree of optical control.

TYPES OF FIXTURES

Most fixtures currently produced are marketed as being application-specific and include downlights, decorative downlights, adjustable fixtures, display and showcase fixtures, exterior fixtures and fixtures specifically designed to be used underwater. Although promoted for particular applications, many fixtures can be utilized in a variety of interior and exterior lighting projects.

Downlights. The majority of companies that offer fixtures market at least one that is promoted as a downlight. These fixtures are generally made of molded plastic or cast aluminum and are available in a wide range of colors and finishes. A non-adjustable lens is usually incorporated into their housing. Their small size and flexibility pertaining to mounting positions allow for these fixtures to be used in a wide range of task and accent lighting applications.

The newest fixtures tend to add decorative elements to downlights and are growing in popularity because they are designed to provide a lighting element that combines with or complements the interior or exterior design.

Decorative downlights usually incorporate an element that light

passes through in order to provide reflections or glowing effects. These elements may include acrylic molds, high-quality crystals, or shaped clear, frosted or colored glass.

Wall Wash and Accent. Several companies offer fixtures that are adjustable for use in wall-washing and accent lighting. Often referred to as "eyeballs," they are adjustable by means of a socket and can be easily aimed. Many of these fixtures include an adjustable lens that allows for light to be focused from small to wide beams.

Although almost any fiber-optic fixture can be used for display illumination, there are many fixtures developed specifically for this purpose. Directional systems are mounted in showcases or in ceilings to illuminate many individual objects or entire gallery walls. These fixtures can contain numerous light outlets that are positioned in mounting bars or rails. Fewer outlets can be used depending on the illumination requirements. The outlets usually swivel in a socket to direct light to almost any area in the display while also offering the ability to focus or diffuse light.

Landscape and Exterior. Numerous fixture options are available for illuminating landscapes, sidewalks and gardens. These fixtures can often be mounted flush to the ground for uplighting or resemble traditional bollards that can diffuse or reflect light. Some manufacturers offer outdoor fixtures that are extremely flexible and can be aimed at specific areas in the landscape. Decorative elements that glow are often incorporated into these fixtures.

In addition to fixtures designed to illuminate landscapes, wall-mounted fixtures for exterior wallwashing, stair lighting and patio and sidewalk lighting are also available. Many of these fixtures come in a variety of shapes and allow for controllable light output. Some of these fixtures can be buried in the ground or mounted in concrete, and numerous decorative options are available.

Underwater Applications. Although many fixtures are waterproof, there are fixtures designed specifically for underwater locations. These fixtures usually include only a lens, but custom decorative options are also available. They are used to illuminate swimming pools, whirlpools, fountains and a variety of underwater locations.

Specialty. An assortment of small fixtures designed to provide tiny points of light are available from certain manufacturers. Although generally used for decorative purposes, some of these fixtures may offer some degree of light control.



ADJUSTABLE
DOWNLIGHT,
SCHOTT-CML FIBRE OPTICS
CIRCLE NO. 50



DECORATIVE FIXTURES,
STARFIRE LIGHTING, INC.,
CIRCLE NO. 51

These fixtures include "bullets" and Christmas tree lights (such as "icicles") and are usually made of shaped clear, colored or frosted glass.

Custom Fixtures. As is the case with any custom lighting design, standard fixtures are not always appropriate in particular environments. Many fiber-optic applications make use of custom-designed fixtures that the designer develops based on the lighting effects desired and the overall decor of the environment. Given the lack of electrical restrictions associated with a fiber-optic fixture, designers have few limitations to consider when designing a fixture to be used with fiber. Even with an extensive selection of standard fixtures readily available combined with unlimited custom options, designers have more fiber-optic fixture choices at their disposal. Fibers are generally extremely flexible and function well in a variety of temperatures. This often means that, depending on the fiber utilized, they can be mounted in almost any material. Many ordinary objects, such as furniture, handrails, works of art, floor and a variety of other architectural and decorative elements have been transformed into fiber-optic "fixtures" by incorporating fibers into their construction.

FIXTURE SELECTION

One of the first questions designers tend to ask about fiber-optic fixtures usually pertains to how many can be obtained from one illuminator. Although there are definite limits, there is no standard answer. The exact system components selected to obtain the desired lighting results will be the determining factor and many variables will apply. Component selection depends on the specific application and will include issues related to the illumination or brightness levels desired from each fixture used in the design. Ambient light levels will always need to be considered and mock-ups are often suggested.

The necessary illumination levels will generally determine the type of light source that will be used in the illuminator and the size of the individual fibers that will attach to each fixture.

Generally, in decorative applications, where light levels are based strictly on brightness, the designer can expect to supply anywhere from a handful up to several hundred fixtures with light from an illuminator. The maximum numbers become significantly less as applications require increased amounts of light.

More variables, many of which are not directly associated with the fixture, come into play when consistent light output from fixture to fixture is required. Proper system design is imperative in order to ensure that each fiber receives an even distribution of light to the illuminator. Light inconsistencies at the input end of the fiber will show up at the fixture to illuminated surfaces as well. Fiber type and length will also play a role in how much and what quality of light reached the fixture. Different fibers possess varying light transmitting characteristics and light will diminish as lengths increase. Special care should be taken during installation to ensure that fibers are not bent beyond the manufacturers' recommendations as excessive bending will also affect light output.

FIXTURE INSTALLATION

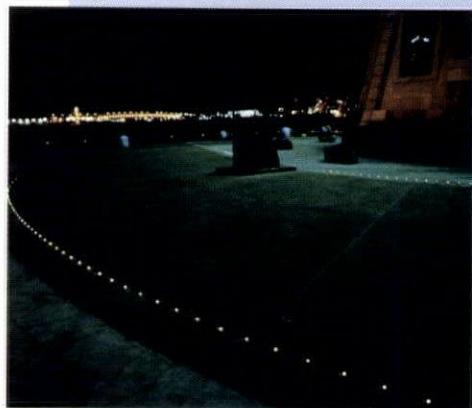
Installing a fiber-optic fixture is generally easy when compared to the procedures needed to install a traditional lighting fixture. No special tools are required and, in many cases, electricians are not involved. Ceiling-, wall- or surface-mounted fixtures require a hole of the appropriate size be prepared so that the fixture can be inserted. Dimensioning is important for proper fit and straight holes are necessary to ensure that the fixture isn't mounted at an unwanted angle. Some fixtures utilize a mounting sleeve for the fixture to slide through in order to assist in the securing process, but many fixtures are simply held in place by spring clips, screws or adhesives. Fixtures used in display or showcase applications are just as easy to install, if mounting rails are used, they are cut to the correct length (either by the manufacturer or at the job site) and individual fixtures either click into or slide into the desired locations onto the rail. It often takes very little time to install a fiber-optic fixture and once installed, maintenance is usually limited to occasional dusting.

Most manufacturers provide detailed instructions that explain how fiber should attach to fixtures. Although the exact methods will vary depending on the fiber and fixture utilized, dust and impurities are usually addressed. The installer should make sure that both the fixture and optical areas of the fiber are kept clean and dust-free

Selected list of fiber-optic fixture manufacturers and representatives:

- Conservation Lighting International Ltd., (215) 568-4572
- Drama Lighting Inc., (716) 626-9300
- Fiberstars, Inc., (800) 327-7877
- Lightly Expressed Ltd., (714) 556-6655
- Lumenyte International Corp., (714) 556-6655
- Pinpoint Fiberoptics Ltd., (310) 276-3437
- Schott CML Fiberoptics LLC, (508) 229-8312
- Starfire Lighting, Inc., (800) 443-8823
- Supervision International, (407) 857-0050

LANDSCAPE FIXTURES,
FIBERSTARS, INC.
CIRCLE NO. 52



throughout the connection process. Any debris on these areas will effect the quality of light coming from the fixture.

Some fibers attach to the fixture by means of a ferrule (see Figure 1). Ferrules are devices that attach to the end of the fiber and assist in providing efficient coupling to the fixture. Ferrules are usually factory-designed to work with particular fibers and are therefore ideally sized to attach to certain fixtures. When ferrules are used, the attachment process is often completed by simply inserting the ferrule into the fixture's connection sleeve. In other cases, custom ferrules or compression systems may be used to hold the fibers in place. The goal in connecting the fibers to the fixture should be to ensure that the fibers are properly secured and correctly positioned so that the necessary light output is achieved. Varying fiber locations within like fixtures will allow for varying light output characteristics.

COST CONSIDERATIONS

Fixtures are generally sold as part of an entire fiber-optic system, but they are also available as individual units for designers who are interested in putting their own systems together. Prices vary greatly. Generally, simple decorative fixtures are priced much lower than fixtures that are designed for task or accent lighting. Fixtures that offer a high degree of optical control or are made of expensive or unique materials will be priced even higher. Specifiers should check quality and performance characteristics in order to ensure that particular fixtures meet the lighting design requirements.

Developments related to fixtures are allowing fiber optics to be installed in more diverse environments at a rapid rate. But advancements related to fiber-optic technology are not limited only to new fixtures. Technological improvements are occurring in the unseen components as well. Illuminators are becoming more efficient and fibers are carrying light further. Of course there are limitations, but the industry's commitment to overcoming them by means of new product development and system-wide improvements will continue to allow for increased applications. Keeping informed of developments isn't easy. But maintaining updated catalogs and paying special attention to new products are good ways to ensure that the designer stays updated in the latest in fiber-optic lighting design possibilities. ■

Russell L. DeVeau is the author of Fiber Optics: A Guide for Lighting Specifiers, published by Architectural Lighting. At the time of publishing, Mr. DeVeau joined a fiber-optic lighting manufacturer.

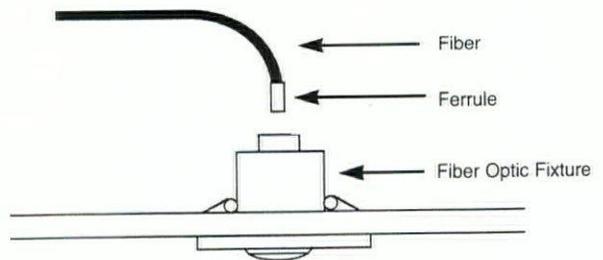
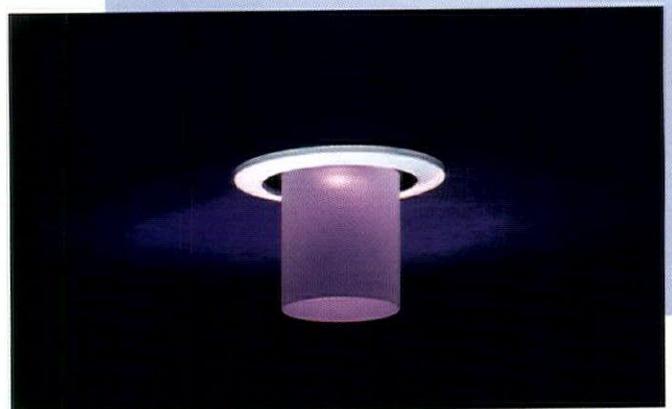
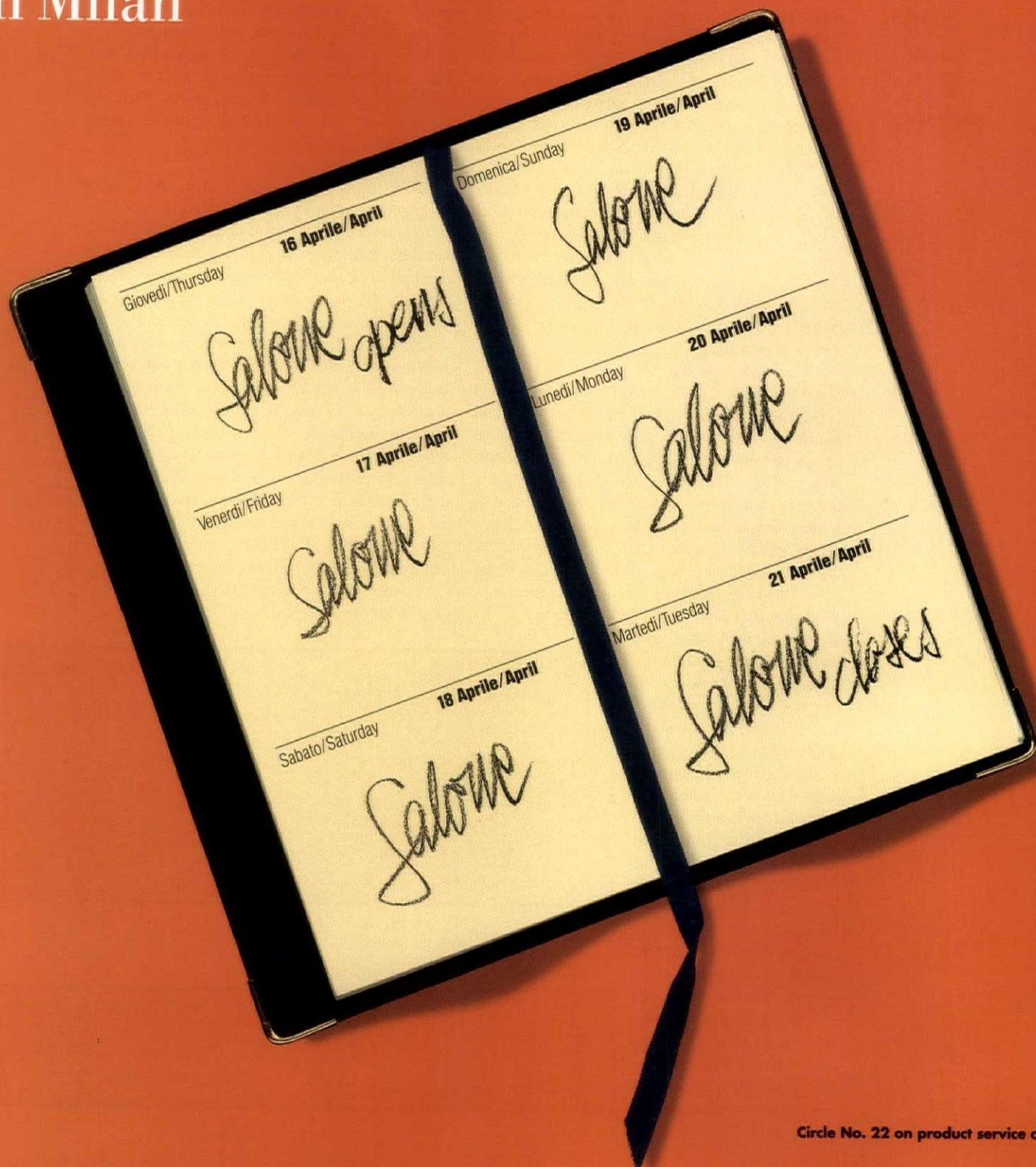


FIGURE 1: FIBER OFTEN CONNECTS TO A FIXTURE BY MEANS OF A FERRULE

SUPERVISION INTERNATIONAL,
CIRCLE NO. 53



Euroluce-International Lighting Exhibition together with Salone Internazionale del Mobile Furnishing Accessories Exhibition 16/21 April 1998 in Milan



Circle No. 22 on product service card

LIGHTING FOR HUMANS, NOT FOR METERS

BY KEITH YANCEY, CONTRIBUTING EDITOR

Unfortunately, lighting is one of those environmental aspects that can be measured numerically, and as a result, many times relied upon disproportionately in evaluating our visual environment. We tend to trust the light meter before we trust our eyes. Minimum or maximum illuminance levels or uniformity ratios are established by codes, standards or recommendations, all of which do not guarantee an appropriate or aesthetically pleasing luminous environment. Since we light our built environments for human beings, we should use physiology and psychology as a basis of design, relying on calculations and numerical analysis only as verification. The most useful way of testing the subjective aspects of a lighting system is to use "subjects." This can be done during the design process with a full scale mock-up, (a pre-occupancy evaluation), or after a project is constructed and occupied (a post-occupancy evaluation).

FULL-SCALE MOCK-UP

The ability to calculate illumination levels and computer model and render space accurately during the design process has become well utilized for client presentations. Yet even an actual photograph of a finished space cannot precisely represent the mood or feeling that space portrays in the same way as a direct experience. Walking through a space, observing the changes in light levels, shadows and color, is not something easily captured by computer renderings. When time and budgets allow, the most effective tool for experiencing the finished space during the design process is a full-scale mock-up. Something the end-users can actually touch, feel and use in order to get a sense of the final product.

An effective mock-up must contain all of the elements of the actual finished project. For instance, if a lighting system for an office space is being evaluated, furniture, finishes and equipment must all be included. Observers of the mock-up will focus on lighting hardware if it's the only thing to observe. This would obviously be a misrepresentation since most users would be more concerned with the character of the light incident upon desk tops or computer screens, as opposed

to the light fixture color, brightness or distribution. Having a mock-up that occupants can use for a variety of real tasks will provide the most useful information to the lighting designer as well as the entire design team.

Mock-ups can also be used to acquire numeric data. The illumination levels measured in a mock-up can be used as a cross check for calculated levels. Therefore, any adjustments in the lighting design, based on acquired data, can be made prior to construction.

CONDUCT A SURVEY

Conducting a survey of the observers or users is the most common way of acquiring information about a lighting system. Data from these surveys should be acquired somewhat scientifically to extrapolate the most useful conclusions. Therefore, the structure and design of the survey itself is just as important as the space being evaluated. Commonly, survey forms are distributed to the occupants to fill out at their convenience. A post-occupancy survey of user response to a new system should be conducted several weeks after the users have been in the space. This period allows adaptation to the new system. Questions on the survey form should relate to specific tasks and qualitative aspects of the space; leave questions of absolute magnitude to be answered by the light meter. A sample format of an office lighting survey may include the questions shown in Figure 1.

Another way of evaluating the lighting may be by ranking, as shown in Figure 2.

FIGURE 1	YES	NO	UNSURE
The space is appropriately glare free?			
I can clearly read this form?			
I can clearly read my computer screen?			
The room finishes seem natural?			
The color of the light seems appropriate?			
There are conspicuous areas of excess light or underlighting?			
The lighting is comfortable and enjoyed by the occupants?			

FIGURE 2	BRIGHT	APPROPRIATE	DARK	UNSURE
This room seems . . .				
The light on the desk seems . . .				
The light on my bookshelves seems . . .				

Monitoring the perceptions of the luminous environment should include an affective component. Give the users the opportunity to indicate all that apply:

- | | |
|--------------------------------------|--------------------------------------|
| <input type="checkbox"/> pleasant | <input type="checkbox"/> comfortable |
| <input type="checkbox"/> distracting | <input type="checkbox"/> dim |
| <input type="checkbox"/> bright | <input type="checkbox"/> ordinary |
| <input type="checkbox"/> ugly | <input type="checkbox"/> glare-free |
| <input type="checkbox"/> interesting | <input type="checkbox"/> appropriate |
| <input type="checkbox"/> chaotic | <input type="checkbox"/> gloomy |

And, finally, finish the survey form with an overall appraisal:

My overall reaction to the lighting is . . .

POSITIVE	NEGATIVE	NEUTRAL

Survey forms for different types of areas will obviously contain different questions and possibly different formatting. For instance, a classroom lighting survey may ask, "I can see the blackboard or professor clearly." An exterior lighting survey may include such questions as, "I feel safe and secure from harm walking here at night, compared to during the day," or "I can recognize approaching faces," and so on.

In analyzing the results of a survey, one must look for trends that characterize the general level of user acceptance. The reasons for a positive or negative impression of the lighting may be due primarily to architectural features including room size and proportions, furnishings and layout, and colors and finishes. In addition, are there windows in the space?

The evaluation of a space depends on how well it meets the expectations of the users. Surveying a wide range of users from managers to custodians could yield as wide a range of responses. Other aspects to consider when analyzing survey results may include the dispositions of the user: Is the user healthy? Is the user happy at his or her job? Did the users answer the survey according to their own feelings, or according to how they "think" they should have answered?

The more responses to analyze in the statistical lot, the more accurate the results.

With the many projects that come through a design office, and tight design fees, it is often difficult to perform a thorough scientific post-occupancy evaluation. Many times, documentation from a casual walk-through by an observant designer can produce valuable information. It can show a level of care taken by the designer to the client or help remind the buildings management to follow up on incomplete details. Finally, any type of post-occupancy evaluation can provide a designer with issues to consider for future designs.

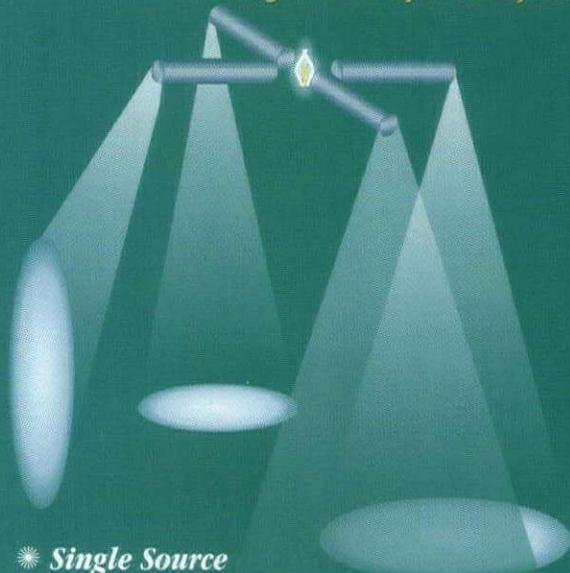
Frank L. Wright when asked what was his best project, always answered, "the next one." Gaining experience from each project allows us to best design the next. Utilizing data and testimonials from past projects allows us to convince our next client it's best. ■

Keith Yancey, AIA, PE, is lighting designer at Brinjac, Kambic & Associates Consulting Engineers.

Winner: Lightfair International '97
New Product Showcase Gold Award of Distinction

Multi Beam²⁰⁰⁰™

Light Conveyance System



- ★ *Single Source*
- ★ *Multi Beams*
- ★ *Major Savings*



SERIES MBR Remote

Recessed format transports multiple beams up to 10' from source

- Transports light from a single 100W HID lamp into multiple light beams, 85 CRI
- **High Energy Efficiency** - twice the beam intensity, under half the electrical power per beam*
- More than **4:1 energy utilization improvement**
- Fewer lamps to change, no redirecting of beams
- **Dramatic Savings** from less installation, less power, and less maintenance
- A-thermal beams produce **No Heat** - lamp life is increased by 300%*
- Selection of beams - 14° spot to 25° flood, hard and soft edge formats
- Utilizes "fiber-optic free" conveyance technology

*Compared to 60W PAR 38 Halogen lamp



MultiBeam 2000™ is an environmentally friendly "Green" product. Resulting energy reductions help decrease emissions associated with the electrical generation process.

LIGHTRON
 OF CORNWALL, INC.

Phone (914) 562-5500
 Fax (914) 562-3082
 85 River Road, New Windsor, NY 12553

MultiBeam 2000™ is a trademark of Lightron of Cornwall, Inc., is copyrighted, foreign and domestic patented, patents pending, UL listed and IBEW made.

Under the direction of assistant professor Paulette Hebert, Ph.D., IALD, third- and fourth-year architecture, interior design and industrial design students at the University of Southwestern Louisiana were charged with designing custom, operable and electrically safe lighting fixtures for a lighting fixture design competition.

Students' fixtures were required to manifest two of the lighting techniques introduced by Fran Kellogg Smith's book *Bringing Interiors to Light*. Entries included fixtures made from found and recycled materials, including straw baskets, PVC pipe, wire mesh, corrugated cardboard and copper tubing. The students chose "clients" familiar to them—musicians, scientists, fellow students and business people—and based their designs on the needs and interests of the selected clientele. The resulting lighting fixtures were displayed in a campus-wide exhibit.

Projects were judged in four categories by three outside judges and first-place students presented their projects at a local IES meeting; IES members then chose an overall winner who received a certificate. Projects were judged in craftsmanship, creativity, utilization of two lighting techniques, clarity of design concept, appropriateness of solution for client, task and space selected, utilization of recycled or reused materials and adherence to directions and meeting deadlines.

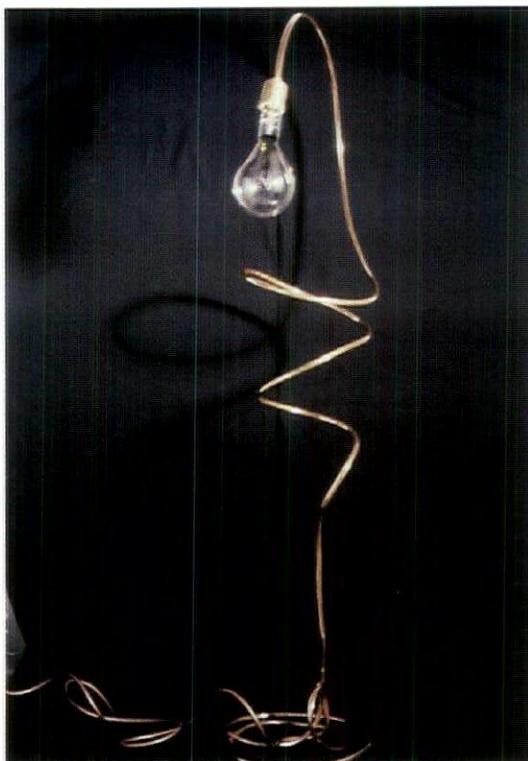
According to Hebert, the objectives of this project included:

- teaching design students about lighting techniques through hands-on experience
- designing and constructing operable, expressive lighting fixtures as works of art
- designing for a client's particular personality and needs
- encouraging students to utilize recycled components in order to reinforce the idea of sustainable design
- broadening students' understanding of materials and construction
- educating others at the university about design
- encouraging excellence in student design through a competition

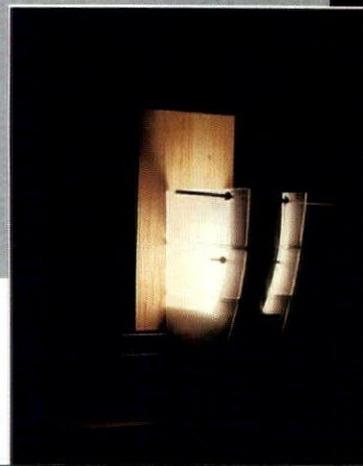
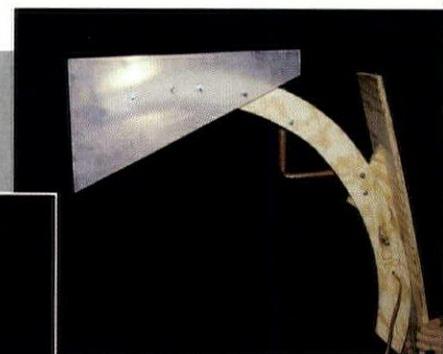
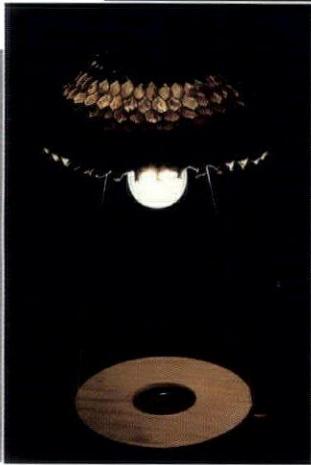
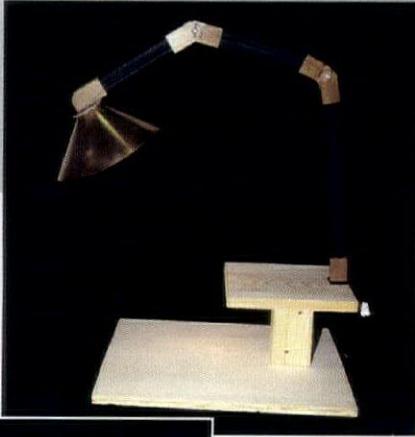
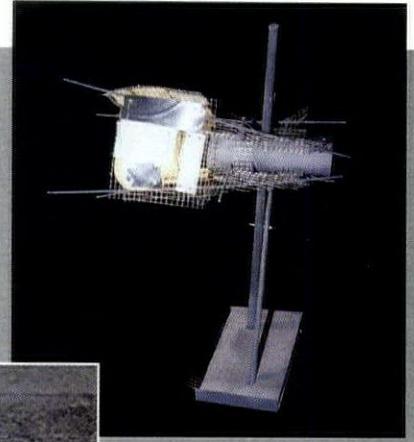
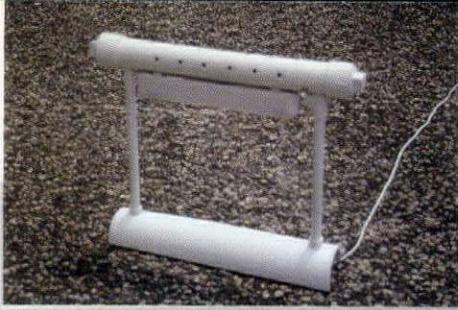
Students worked closely with the instructor through all phases of the project. They had the opportunity to purchase an instructor-prepared packet at a local electrical distributor that consisted of necessary electrical components and accessories for energy-saving incandescent lighting fixture operation. Many students chose this option, while others experimented with other incandescent or fluorescent sources.

In addition to participating in several in-class lectures about lighting sources, students attended a guest lecture by an electrical engineer on principles of electricity, safety, lighting fixture construction and operation. This included a demonstration of the proper connection of wires and components. Students also attended seminars on lighting techniques, participated in evaluating catalogued lighting fixtures, identifying the materials, lighting techniques and sources used, had informal meetings with lighting fixture sales representatives and fabricated the fixtures in the design building's workshop.

The next page displays the finished products. The staff of *Architectural Lighting* was inspired by the whole concept and liked the results—we hope you do too. For more information, call Dr. Hebert at (318) 482-5900.

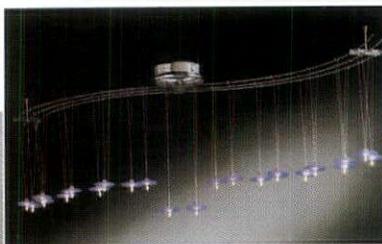


Amanda Bernard's fixture was chosen by the IES New Orleans chapter as the overall winner in the lighting fixture design competition. Ms. Bernard designed the fixture under the tutelage of Dr. George Lori at USL.



Lumiere, the Paris-based international lighting exhibition, was held January 8-12 at the Paris Expo Porte de Versailles. More than 200 manufacturers of commercial and residential, architectural and decorative lighting exhibited at the show. France constitutes the second largest lighting and illumination market in Europe, with many French manufacturers exporting their products. On these two pages are some of the products available to U.S. specifiers. *Note: Most of the products shown are designed for European electrical frequencies and are not UL-listed.*

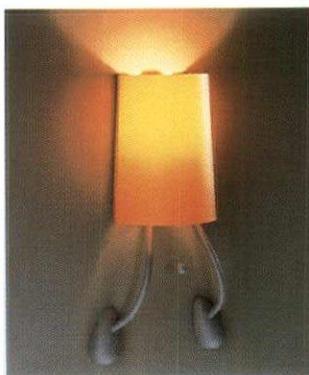
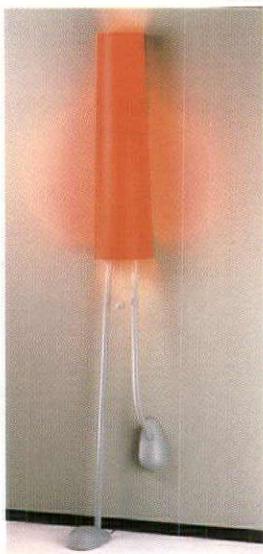
Page 58 features a sampling of prototype designs displayed at Lumiere. Sponsored by Groupement des Industries du Luminaire (GIL) for more than 10 years, these designs showcase the creativity of young designers and facilitate relations with fabricators interested in the designs. The designs are often poetic, fresh and whimsical. This year, 25 designers presented more than 40 models. Turn the page to view some of them. For more information, contact GIL at 01 42 78 48 05, or fax 01 42 78 21 34.



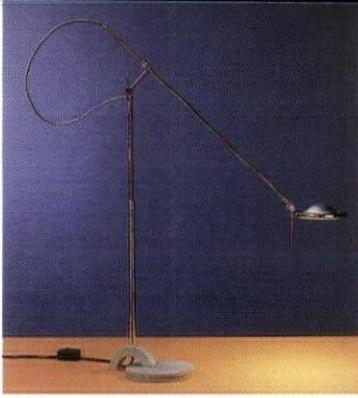
I Mughetti (left) from **Metal Spot** is offered in a variety of styles including the suspension model, which measures 60 x 78 cm. This fixture is available in nickel-plated or opaque brass with colored, frosted, blown Murano glass diffusers. Lucciole (right) is a chrome-plated low-voltage metal fixture with metal discs or frosted or colored diffusers. The fixture shown measures 55 x 200 cm. **Circle No. 33**

LUMIERE PARIS

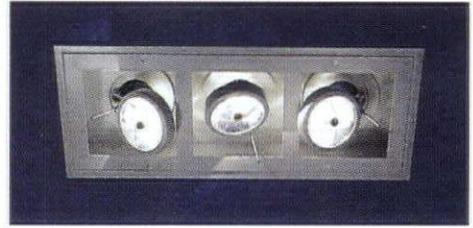
Fluffy from **Igor** is a floor lamp that features a textured fabric shade offered in green, yellow or white. The fixture measures 170 cm high and uses an incandescent lamp. **Circle No. 34**



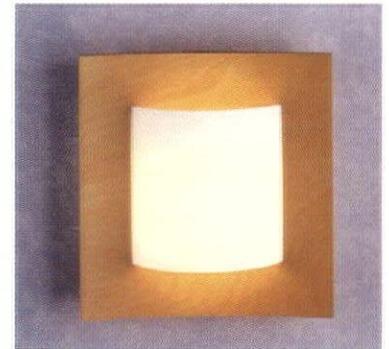
Nestor (left) and Elvis (right) from **Wombat** are designed by Frederic Sofia. Both wall fixtures feature a metallic gray frosted epoxy-coated base and a silk-screened polycarbonate shade available in five colors—red, white, blue, orange and yellow. **Circle No. 35**



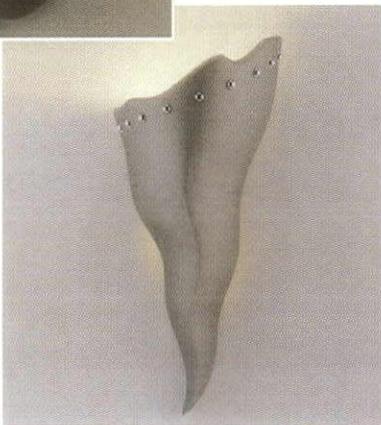
Via Bizzuno offers Traffic Light (right) a built-in wall or ceiling fixture that can also be mounted flush to the wall with a special frame. It uses either halogen or compact fluorescent lamps and is equipped to house three lamps. Traffic Light measures 22 cm long, 60 cm high and 8 cm deep, and is available in white. Mexcal Ta task light (left) in the Form M collection represents "light in motion." Fixtures in the collection are made from chrome-trimmed brass and feature telescopic arms. Available in table, floor, wall, ceiling and hanging versions, they use low-voltage halogen lamps. **Circle No. 36**



Eva, designed by Soren Eriksen for **Lucid**, is a wall fixture made of wood (beech, cherry, dark exotic) with an opal glass diffuser. Eva uses a 60W incandescent lamp, and will soon be available for fluorescent. The fixture measures 10 1/4 in. high x 10 1/4 in. wide x 3.5 in. deep. **Circle No. 37**



Lucien Gau offers Cocci (top) and Cyrano (bottom), available through IMC Lighting. Cocci is made of casted aluminum and satinated glass and measures 15 cm high and 12 cm wide. Finishes include polished brass, polished aluminum, white, dark gray and faux wood. Cyrano, designed by Bernard Dequet, is casted aluminum available in four finishes—gold-plate, polished aluminum, dark gray or copper. Cyrano measures 32 cm high and 16 cm wide. **Circle No. 38**

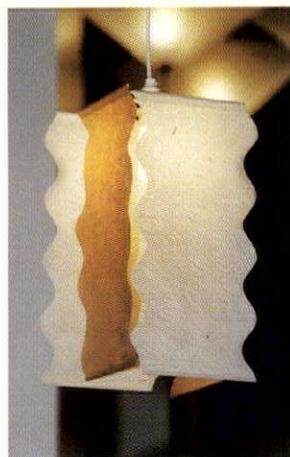


Moskva (far right) and Shiraz (right) from **Mr. Light** are part of the Zanzibar Silk Shades collection. Design influences for these fixtures include ancient Byzantine mixed with Gaudi and Hindu, as well as mid-20th-century contemporary. The shades are crafted from pure silk and bound to lightweight metal frames. Moskva measures 45 cm high with a 43-cm diameter and uses a 100W lamp; Shiraz is offered in three sizes with lamps ranging from 60W to 100W. **Circle No. 39**

product focus

PROTOTYPES
FROM
LUMIERE PARIS

Eole, designed by Marc Vacher, is a suspended fixture made of metal and paper. It uses a 40W incandescent source and measures 36 cm x 18 cm.



Undula, designed by Christine Charles-Messange, is finished in brushed nickel and features a floral motif.

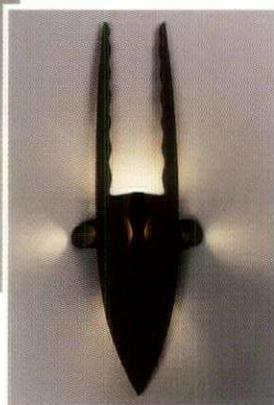
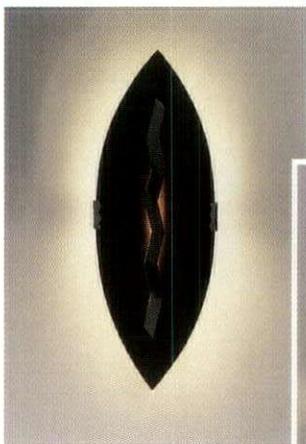


Between, designed by Damien Langlois-Meurinne, is a modular floor lamp that features a telescopic stem to facilitate movement of the fixture. The diffuser is opal polycarbonate; the source is a 40W incandescent.



Lichen, designed by Malika Bensmaïa, is an acrylic wall sconce that measures 30 x 20 cm and uses an incandescent lamp.

Ekla, designed by Lucas Vienne, is an adjustable multi-directional task fixture that is offered with a flat or clamp base.



Tribu (far left) and **Safari** (left) wall sconces, designed by Marc Vacher, feature an African motif and with brushed aluminum and metallic details, incandescent sources.



Sort of takes
THE ROMANCE
out of dimmable
FLUORESCENT
LIGHTING
doesn't it?

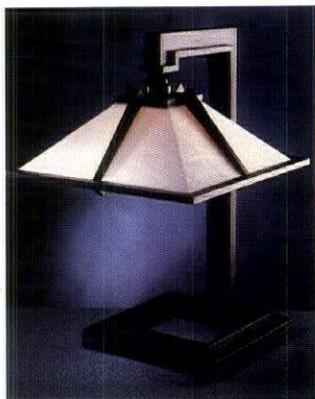


At Advance, we believe improving a room's ambience shouldn't require first having to destroy it. So we created a full line of electronic dimming ballasts for fluorescents and CFLs that eliminate the hassle of tearing apart walls and ceilings — saving you up to half the installation costs. All of our Mark X ballasts work with existing power lines, using simple electronic dimmers that control full brightness down to a very romantic 5%. You now have no reason for not replacing all of your inefficient dimmable incandescents. Call Advance today at 1-800-372-3331. You won't find any holes in our story.

THE BRIGHTEST GUYS
IN THE BALLAST BUSINESS.™

HISTORIC DESIGN

The **Yamagiwa U.S.A. Corp.** and Herman Miller Inc. have introduced a lighting collection based on the master designs of Frank Lloyd Wright. Yamagiwa, working with the Frank Lloyd Wright Foundation at Taliesin West, has reproduced 15 pieces that vary in style from fluid and organic forms to more abstract, geometric renderings. Now part of the Herman Miller Residential Collection is the Taliesin Black 1 table lamp (shown), designed in 1925 for Wright's own home. The fixture measures 20 in. high x 14 in. wide x 16 in. deep. The base is ash wood stained black, also featured on the acrylic shade. The fixture uses one 60W frosted incandescent lamp. UL-listed. **Circle No. 55**



DECORATIVE PENDANTS

The Venus series from **Leucos** now offers an adjustable "lazy cord" pendant in two sizes: the S15 (shown) with a 6-in. shade and the S20 with an 8-in. shade. Five Murano shade options are offered—white; amber; spotted amber reminiscent of ostrich leather (shown); white zebrato; and white con Murrine. The Venus series also includes table and floor lamps and two sconce models. UL-listed. **Circle No. 56**



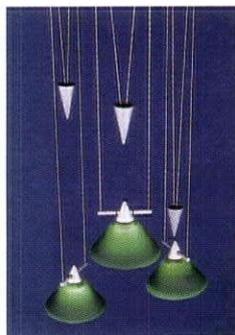
HALOGEN DOWNLIGHTS

The Cronocolor series from **Artemide** provides direct and diffused downward low-voltage halogen lighting. Each fixture

features a colorful glass trim diffuser in molded transparent or sanded glass with a 4-in. chromed steel ring. Medea, Erilo (shown together) and Cabari are available in white, blue, peach or aquamarine, and Tia and Tieste are offered in clear, blue, green and rust. ETL-listed. **Circle No. 57**

The Libra line from **CSL** includes counter weight suspension units (shown), wall sconces and wall- and ceiling-mounted spotlights. The suspension units feature interchangeable glass shades that attach to a lampholder suspended by two thin lead wires fed through a pulley mechanism in the ceiling canopy. The weight of the glass shade and the lampholder is counter balanced by a

conical-shaped weight at the other end of the wires. This allows the glass shade/light source to be adjusted vertically by pulling down or pushing up on the glass. Fixture finishes include satin, silver and gold; glass shades come in three shapes and four colors (blue, white, green and yellow). ETL-listed. **Circle No. 58**



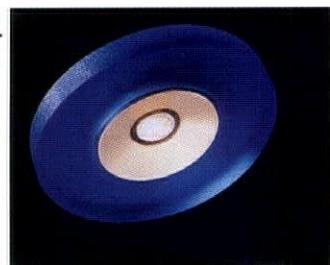
LOW-VOLTAGE LIGHTING

Kri, manufactured by Lucitalia for **Illuminating Experiences**, is an adjustable low-voltage monopoint lighting system. Specified with a track adapter, Kri can be track-mounted with staggered heights. Kri is available in different metal stem lengths. Various accessories allow the system to be used in many types of installations. The track heads are available in seven colors—blue, green, white, gold, red, silver and black—in MR16 and MR11 sizes. UV and non-UV frosted glass lenses are available. UL-listed. **Circle No. 59**



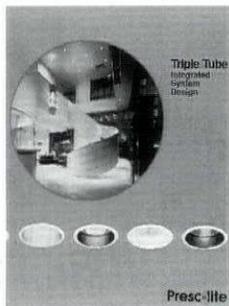
ACCENT LIGHTING

Fiberstars has added "Cup and Saucer" point-source fiber-optic accent lighting fixtures to the Fibrescent series: FE-4133-XX and FE-4134-XX (shown). The FE-4133-XX is a shallow, cylindrical glass fixture reminiscent of a demitasse cup and measures 1 1/4 in. deep with a 1 1/4-in. diameter. The 4134 is a saucer-shaped frosted glass fixture with a 2 1/4-in. diameter and a polished gold center ring. An optional standard or custom color wheel inside the fiber-optic illuminator provides sequential color changes. **Circle No. 60**



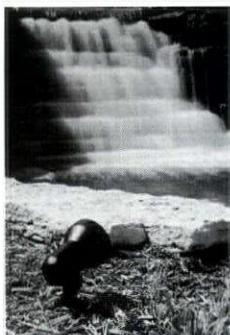
COMPACT FLUORESCENTS

A new brochure from **Prescolite** details the company's line of energy-efficient triple-tube compact fluorescent products. The full-color gatefold brochure features cut-away illustrations of Prescolite's original vertical triple-tube downlight as well as new one- and two-lamp models including lensed and open downlights and downlights with horizontally positioned lamps. Drawings illustrate distribution patterns for corridor, task and area lighting. Specification and ordering information is included. **Circle No. 61**



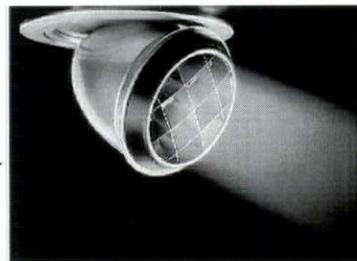
FLOODLIGHTS

Ruud Lighting's new Directional Floodlight Series is designed for security, landscape, signage or accent lighting. Offered in four die-cast aluminum housing sizes for ground, wall or soffit mounting. The units are available in black, white and verde finishes in MR16 or PAR36 low-voltage models. Line-voltage metal halide or halogen units are also available (PAR20, PAR30, PAR38). UL-listed. **Circle No. 62**



CEILING PROJECTOR

Fixtures in **Tivoli Industries'** Mondial Series of orbital directional recessed ceiling projector lights utilize low-voltage halogen sources—ranging from 35W to 150W and 12V to 277V with remote transformers. The Series features specular metal computer-enhanced reflectors with a sharply controlled focal point; the fixtures adjust vertically to 65 degrees and rotate 359 degrees. The projectors are finishes in a choice of non-reflective epoxy powder-coated white, black or aluminum gray and in chrome or polished brass plate. Color and UV glass filters are offered. UL- and CUL-listed. **Circle No. 63**



A CROWNING ACHIEVEMENT IN FIXTURE DESIGN

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

Unique, timeless, and patented design (U.S. Des. 373,437), and patent pending fixture aiming mechanism set these fixtures at the summit, above all others in their class. The ADEX Award winner for landscape lighting, the Coronado series adds to the roster of Lumière fixtures honored for design excellence.

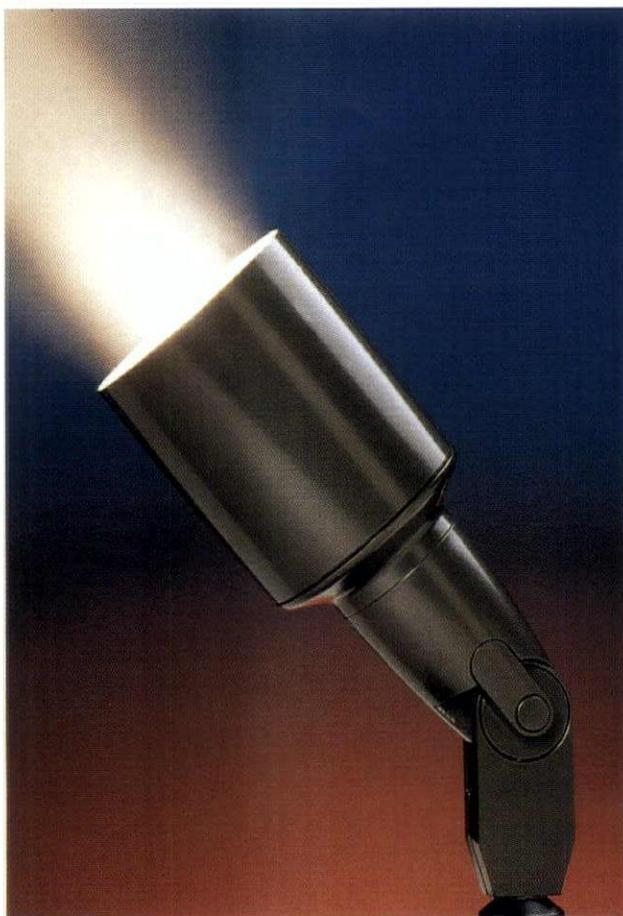
Available in versions to accept the PAR 20, 35 watt (Cat. #720), PAR 30, 35 or 70 watt (Cat. #730, pictured), and PAR 38, 70 or 100 watt (Cat. #740) metal halide lamps. Coronado fixtures can be mounted in the ground, on trees or walls, and can be remoted from their waterproof composite ballast compartment.

Another groundbreaking, award winning fixture?

Of course, its Lumière!



Design & Manufacturing, Inc.
2382 Townsgate Road, Westlake Village, CA 91361
TELEPHONE: (805) 496-2003 □ FAX (805) 496-2303



Circle No. 24 on product service card

Winner: Lightfair International '97
New Product Showcase Gold Award of Distinction

Multi Beam²⁰⁰⁰TM

Light Conveyance System

- *Single Source*
- *Multi Beams*
- *Major Savings*



SERIES MBL Linear

*Linear format offers the Perfect
"Feature Wall Lighting Solution"*

- Transports light from a single 70W HID lamp into multiple light beams, 83 CRI
- **High Energy Efficiency** - under one third the electrical power per beam*
- More than **4:1 energy utilization improvement**
- Fewer lamps to change, no redirecting of beams
- **Dramatic Savings** from less installation, less power, and less maintenance
- A-thermal beams produce **No Heat** - lamp life is increased by 300%*
- 17° medium spot beam, hard and soft edge formats
- Utilizes "fiber-optic free" conveyance technology

*Compared to 60W PAR 38 Halogen lamp



MultiBeam 2000TM is an environmentally friendly "Green" product. Resulting energy reductions help decrease emissions associated with the electrical generation process.

LIGHTRON
OF CORNWALL, INC.

Phone (914) 562-5500
Fax (914) 562-3082
65 River Road, New Windsor, NY 12553

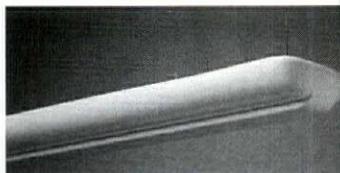
MultiBeam 2000TM is a trademark of Lighttron of Cornwall, Inc., is copyrighted, foreign and domestic patented, patents pending, UL listed and IBEW made.

Circle No. 25 on product service card

products

INDIRECT LIGHTING

The LT5 Series linear indirect fluorescent lighting system from **Lam Lighting** is suited for commercial, institutional applications where less efficient, more intrusive deep-cell parabolic fluorescent ceiling troffers would ordinarily be used. The LT5 Series models may be specified in sculpted or inverted V designs, in 4-, 8-, 12- and 16-ft. lengths. Ceiling-suspended models are designed to adjust from 12 in. below the ceiling, and wall bracket models are affixed to a narrow-diameter metal arm anchored through a metal faceplate directly into the wall or a recessed junction box. The fixtures accommodate two parallel T5 compact fluorescent lamps. UL- and CUL-listed. **Circle No. 64**



ACCENT LIGHTING

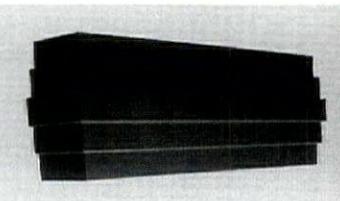
The Lovo/Lux recessed and surface-mounted accent lighting fixture from **Specialty Lighting** features a compact 2¹/₁₆-in.-diameter housing. Units are available individually or in sets of

two, three or six fixtures. Press-in side tabs allow for easy recess mounting, attachable 7/8-in.-deep spacer cups allow ready surface mounting. Integral ribbed self-trim rings are standard. The fixtures are finished in polished brass or chrome and matte black or white. Units accommodate T2 bi-pin halogen lamps, either 10W or 20W. UL- and CUL-listed. **Circle No. 65**

ADA BRACKETS

Lumiform 7300 series ADA-compliant wall brackets from **Vista Lighting** provide uniform, energy-efficient

upward and downward light for a wide range of commercial and institutional installations. The series consists of four models—Colonial, Convex, Fluted and Stepped (shown)—that are available in 2-, 3- and 4-ft. lengths. Light is provided from dual T5 or T8 compact fluorescent lamps placed in a one-up/one-down position behind each wall bracket's face. An optional perforated metal diffuser or opal polycarbonate lens provides additional light-diffusing capability. Standard finishes include Coral Sands, Landmark Gray, Madcap Violet and Monsoon Green. UL-listed. **Circle No. 66**



ADVERTISER	PAGE	RS#
Advanced Transformer.....	59	29
Architectural Landscape Lighting.....	14	10
Bega Lighting.....	9	7
Bruck Lighting.....	15	11
Cosmit.....	51	22
High End Systems.....	17	13
Hubbell Lighting.....	20, 22	15, 17
Hydrel.....	29	21
Kaltek.....	23	18
Lam Lighting Systems.....	21	16
Lighting Corp. of America.....	10, 11	8
Lighting Services Inc.....	4	4
Lightron.....	27, 53, 62	20, 23, 25
Lithonia Lighting.....	Cov.4	28
Luceplan USA Inc.....	1	2
Lumiere Design & Mfg.....	61	24

Luxo Corp	16.....	12
Osram Sylvania	Cov.2.....	1
Philips Lighting Co.	18, 19.....	14
Ruud Lighting	3.....	3
Supervision	25.....	19
Ushio America, Inc	5.....	5
Visa Lighting Corp	6, 7.....	6
Zumtobel Lighting Inc	13.....	9

Publisher is not liable for errors
or omissions

Lightfair International

98

Pre-Show Conference:
Tuesday, May 26, 1998

Trade Show &
Conference Program:
Wednesday, May 27-29, 1998

An Event in Lights

The Design and Business of Lighting

Las Vegas Convention Center • Las Vegas, NV

Plan now to join over 12,000 architectural, engineering and design professionals who will be attending LIGHTFAIR INTERNATIONAL 1998...North America's largest architectural and commercial lighting Trade Show and the World's largest architectural and commercial lighting Conference Program.

PLAN TO ATTEND LIGHTFAIR INTERNATIONAL 1998

YES! I am serious about The Design and Business of Lighting. Please send me more information about LIGHTFAIR INTERNATIONAL 1998.

Name

Title

Company

Address

City State Zip

Phone () Fax ()

Email

Contact us in one of the following ways and your name will be added to the mailing list to receive complete program information in February, 1998.



Return this card by fax to 972-620-3065.

Call 1-800-856-0327 or 972-620-3838.



Return Mail to: LIGHTFAIR INTERNATIONAL 1998
1515 Champion Drive, Suite 100
Carrollton, Texas 75006



Visit our Website at: www.lightfair.com

IALD Sponsored by The International Association of Lighting Designers

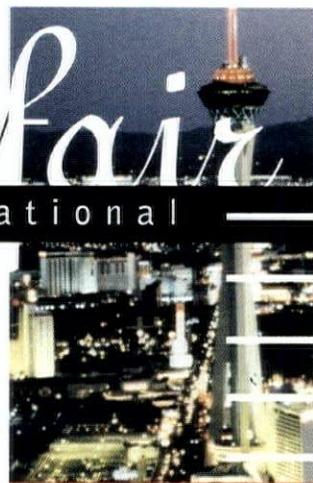


AMC Produced and Managed by AMC, Inc.

IES Sponsored by The Illuminating Engineering Society of North America



LD+A Official On-Site Show Directory



THE BUSINESS OF LIGHTING... FOR SERIOUS PROFESSIONALS ONLY

In its ninth year, LIGHTFAIR INTERNATIONAL 1998 will be the premiere showcase to see the newest products and the latest technology from more than 350 exhibiting manufacturers in over 800 booths; plus the International Lighting Pavilion; and the multi-media New Product Showcase.

LIGHTFAIR INTERNATIONAL HAS DESIGNED THE WORLD'S LARGEST ARCHITECTURAL LIGHTING CONFERENCE PROGRAM

Recognized as the most comprehensive and technically challenging lighting education source available, the 1998 Conference Program features a Pre-Show Conference with day-long Workshops (AIA, ASID, IIDA, IESNA and NCQLP CEU/Learning Unit Accredited); plus 30 broad based, in-depth architectural lighting Seminars.

CELEBRATING LIGHTING...AWARDS AND SPECIAL EVENTS

Join the architectural and commercial lighting industry at these official LIGHTFAIR INTERNATIONAL events...The annual IALD Awards Dinner; An Evening at Cirque Du Soleil; The Nuckolls Fund for Lighting Education Luncheon; The National Council on Qualifications for the Lighting Professions (NCQLP) Breakfast; The Designers Lighting Forum Luncheon; The IESNA International Illumination Design Awards Breakfast; The IALD Lighting Industry Resource Council (LIRC) Luncheon, and much more! All of this and more will take place in one of the world's most vibrant cities...Las Vegas.

Visit Our Website at:
www.lightfair.com

A TWO-COMPONENT APPROACH TO LIGHTING

BY FRANK J. FITZGERALD

Over the past two decades, the advancement and widespread use of the desktop computer has truly revolutionized the American office landscape. With PCs and other video-display equipment resting atop virtually every desk in most workplaces, creating an effective workspace in which to perform what are increasingly computer-oriented tasks has become a priority for the designers and management of office facilities. Yet lighting design professionals should note that one of the most crucial—and still too often overlooked—elements essential to achieving effective office design today is adequate, glare-free lighting for VDT users and for office employees and visitors in general. One very successful lighting solution that is both ergonomic and economic is the use of a two-component lighting system.

Lighting professionals know there are two primary types of office lighting: task and ambient. The two have been employed together for some time, but often with varying results. Their use together in a simultaneous, integrated plan is only now gaining wider acceptance in the U.S. A two-component approach to office lighting combines ambient indirect with portable, adjustable task lighting to create a work environment that supports frequent VDT use, while it can meet the comfort needs of individual users and visitors to the space. One of the main advantages of specifying two-component lighting is to meet the guidelines of the Illuminating Engineering Society/ANSI American National Standard for Office Lighting, RP-1.

The primary study that supports two-component lighting effectiveness and cost-efficiency was completed in Europe and the results were not widely shared in the U.S. until a few years ago. That study, "Lighting and Health" by Drs. Ahmet and Gisela Cakir of the ergonomic Institute for Social and Occupational Sciences in Berlin, was conducted between 1979 and 1989 with additional polling conducted during the winter of 1989-90. The findings of the report are startling. Of the employees polled, 57 percent blame their lighting system as a major contributor to work-loss impairments. Complaints include lethargy, rapid fatigue, dry eyes, irritability, headaches and other visual impairments. The Cakir study suggest that, when a direct lighting system, such as a 2x4 parabolic lens troffer, is replaced by a two-component approach, incidences of employee health complaints were drastically reduced.

In another study conducted in the early 1990s, Dr. Allen Hedge, a professor of human factors in ergonomics at Cornell University, examined one component of two-component lighting at a Xerox facility in New York State that was scheduled for renovation. The study sought to uncover if differences in employee visual comfort were related to differences in employee health and productivity. Standard overhead direct fluorescent lighting was used in one-third of the facility. Another third used direct downward fluorescent lighting employing parabolic reflectors for improved directional control of the lighting. The last third of the facility involved the use of indirect lighting. Hedge's study showed that the indirect lighting section of the Xerox facility reported lower absenteeism and improved employee health. Workers' productivity increased as

much as 30 percent in offices with reduced lighting glare from indirect ambient light.

Although indirect lighting is the base element of any two-component plan, it is frequently bypassed by lighting designers and their clients because initially it costs more than other forms of traditional direct downlighting—such as the rows of overhead ceiling fluorescent troffers frequently specified during the 1980s. As with standard direct downlighting, indirect fixtures are essentially unmovable without considerable additional expense and disruption of the facility. Further, many indirect fixtures on the market today do emit some glare and often employ older, less energy-efficient light sources. Newer types of indirect fixtures, however, are extremely low-glare and employ high-performance, energy-efficient compact fluorescent sources, with equally compact job-rated electronic ballasts. Many of these models are also designed for portability within offices that experience high "churn" rates.

In specifying and installing two-component lighting, it is important to examine the role of task lighting. The traditional desk light is often called a task light, which is a misnomer. A true task fixture is one that adjusts to its individual user, as well as to the individual task at hand. A task light must have a movable multi-directional head and a movable articulated light arm. The best task lights offer infinitely adjustable precision lighting with energy efficiency and a task-related design. Task lights should illuminate keyboards and printed materials without reflecting on VDT screens. Their light needs to be highly aimable and the light arm amenable with finger-touch adjustability.

One new office redesign that is benefiting from installation of a two-component lighting system is the Norwegian Trade Council in New York City. According to architect Raymond Bennett of the Bennett Design Group Inc. a primary goal for the 5,600-sq.-ft. facility was to eliminate glare, which had previously hindered the performance of the Council's employees who perform intensive computer tasks. The retrofit gutted the office but left the troffers in the ceilings. A network of compact fluorescent pendant- and wall-mounted fixtures were installed in tandem with portable, adjustable task fixtures at each desk. The two component plan, a format which Bennett was specifying for the first time, created an open feeling as well as eliminated glare.

As corporate America continues the trend towards more flexible office environments that can be reconfigured as employee needs, tasks and staffing levels change, two-component lighting is an advantage to lighting and other design professionals. It will become more commonplace and, because of its efficiency and benefits to employees at all levels, will join the ranks of such indispensable office equipment as the telephone, copier, fax or the ubiquitous desktop computer. ■

Frank J. Fitzgerald is director of commercial lighting for Luxo Corporation in Port Chester, NY.