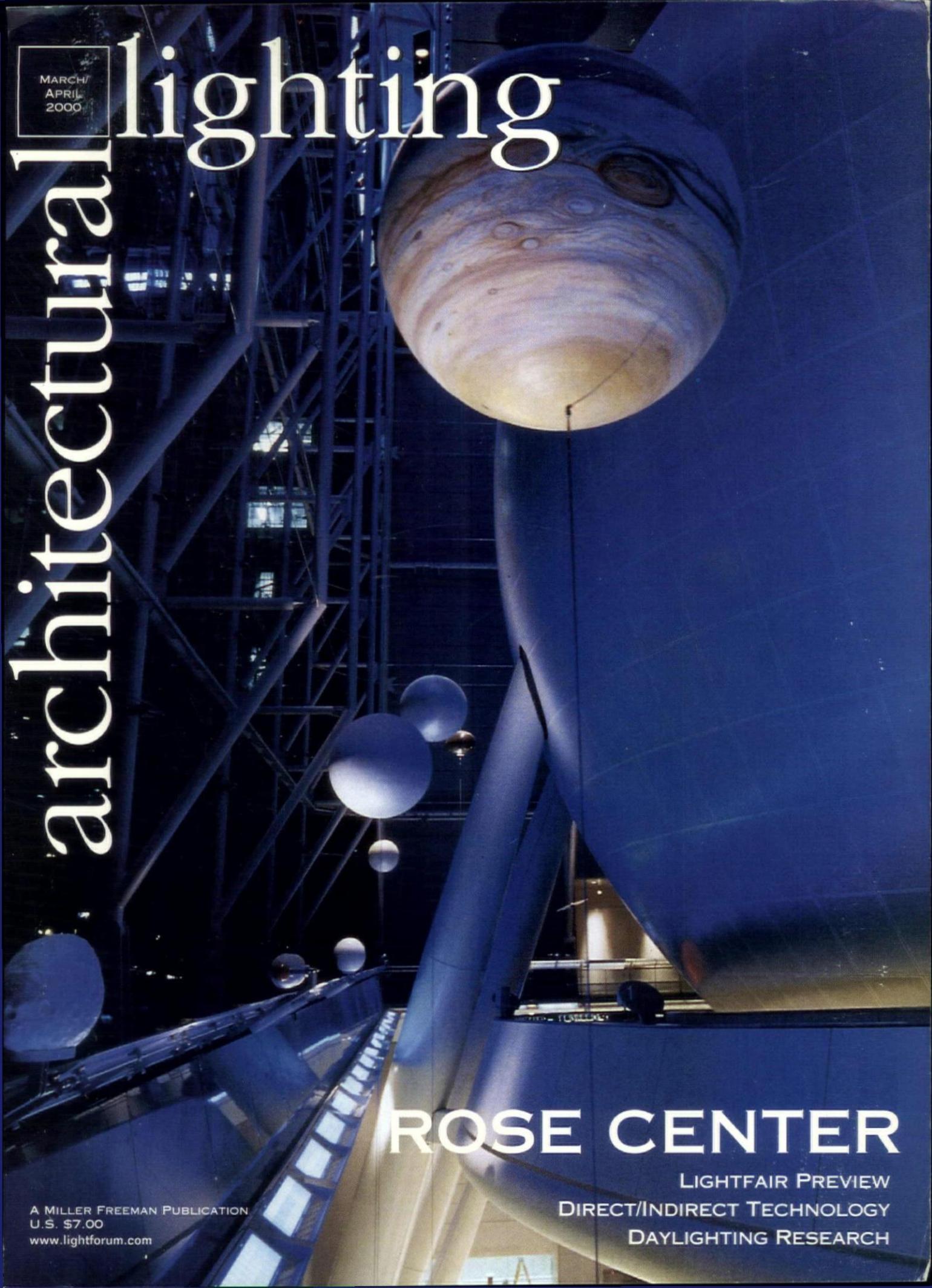


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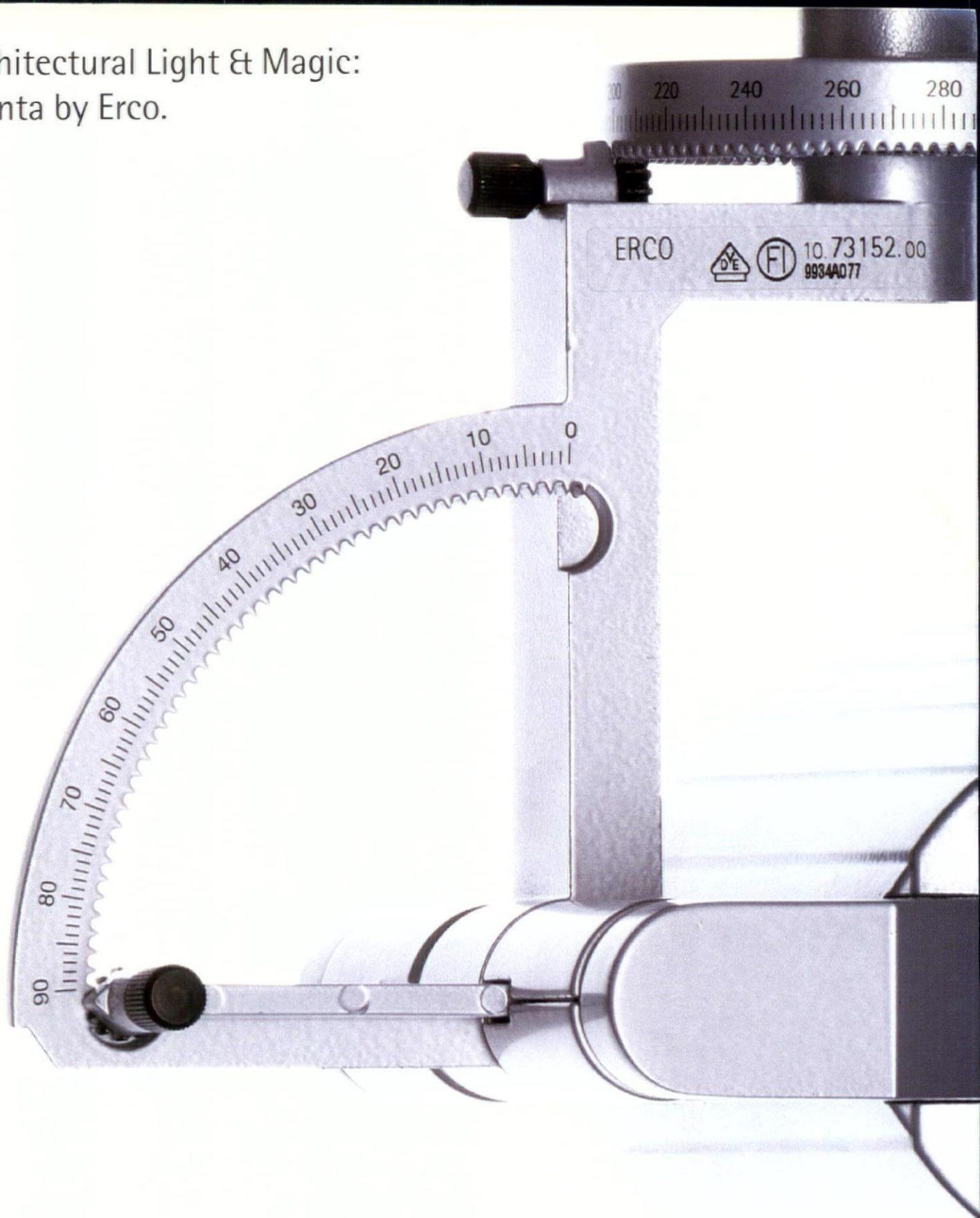
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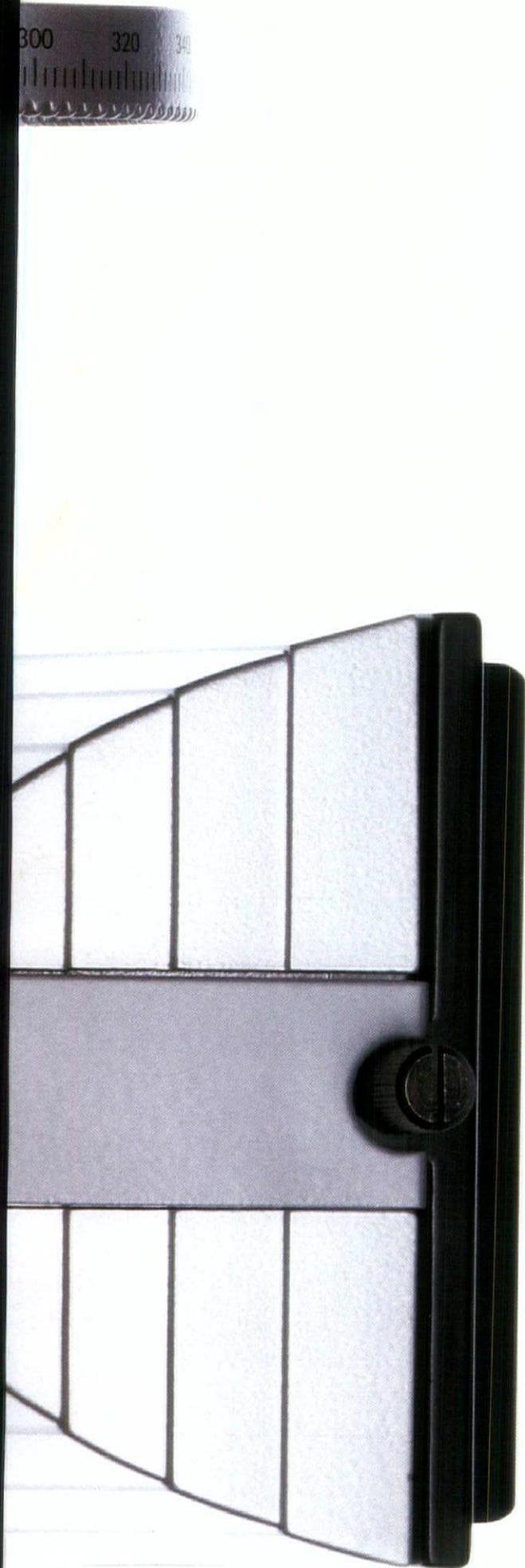
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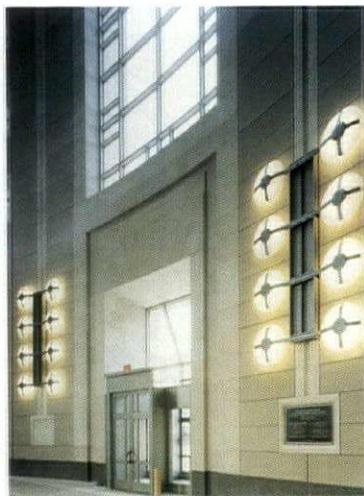
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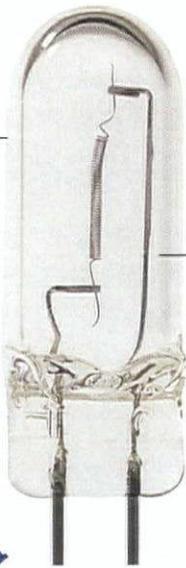
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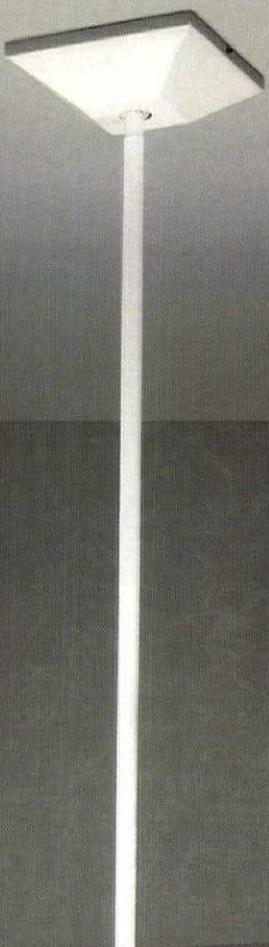
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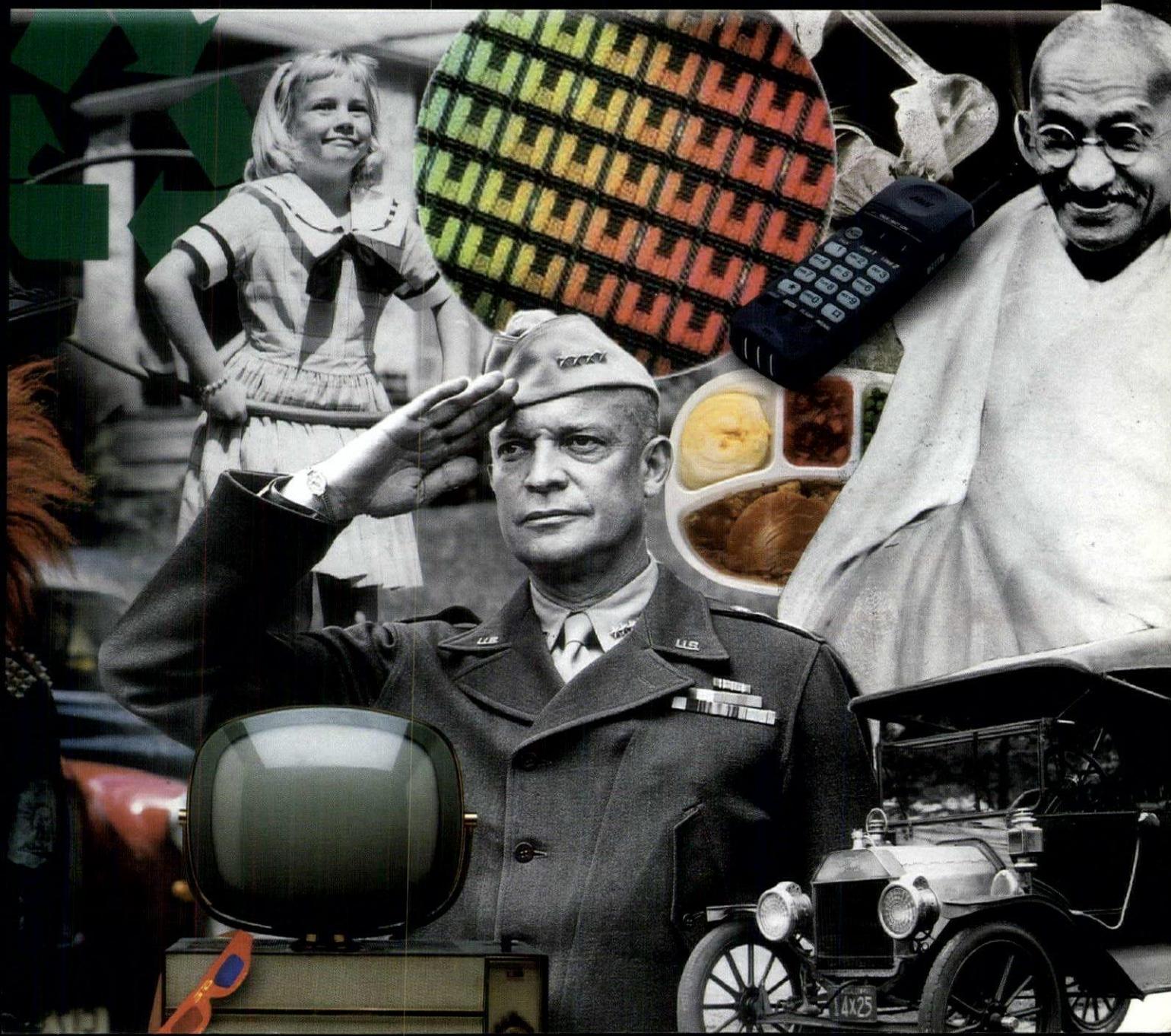


E V O L U T I O N O





F A C E N T U R Y



ADVICE WELL HEADED

What's the best piece of advice you've ever received? When I posed that question to JoAnne Lindsley—lighting designer and new chair of the IALD—for this issue's Insights column, she at first replied that she needed some time to think about it. Shortly thereafter, she contacted me with her response, confidently asserting that the most rewarding piece of advice that had been shared with her was not only a motto for business but one for life. It was a lesson learned, she said, from the late Carroll Cline, FIALD, whom, in her words, "embodied a truly admirable approach to life and design." *Approach each situation with a fresh mind.* She went on to explain that it is often easier when we are busy to fall back on past successes or familiar approaches, and instead of continually striving for the best or most appropriate solutions, start to function and perform by rote. We easily become programmed into "getting it done" and can often neglect the all-important *how* it gets done.

Yes, work has changed. We all know that. As I'm sitting here at midnight, I know I'm not alone. Professionals—from lighting industry members to publishing personnel—are bemoaning long hours while simultaneously embracing 24-hour accessibility via voicemail, email and the Internet. The electronic connectivity of workers has enabled, and in many cases forced, extended workdays and faster project and product development cycles than the world has ever known. And while the good news is that firms and people are prospering, it is tempered by the fact we have never been busier—or been faced with so many options to accommodate the vastly differing needs of the client. Technology makes it seem as if we're working more—and to our families and friends as if we're working *only*. We're in the midst of a good economy where it's difficult to fill positions with qualified workers and hence, take on the added load ourselves. And most of us would say gladly so (as we lament the exhaustion of the 24/7 existence). After all, being busy equals doing well. Consequently, it is increasingly difficult—and seemingly impossible—to "approach each situation with a fresh mind" and tackle each project, design or task with individual thought.

Staying current. Looking forward. Learning about new technologies, discovering innovative techniques—or simply rediscovering basic yet effective ones—embracing the electronic world as tools not only for calculations and design but for marketing your businesses, can provide the edge that is necessary for fulfilling that goal. This "education" comes in all forms. It starts as individual growth and expands to industry effort. And support is a major factor in accomplishing both personal and collective success. While support can be defined in various ways, a good example is the strides that manufacturers and lighting designers have made in working as a team to accomplish mutually beneficial results—and the realization that combined strength strengthens the entire industry. For instance, a reader recently emailed me and brought to my attention an ad campaign that was created by Italian lighting manufacturer Targetti. While the series presented different images and concepts based on a similar theme, the underlying message was always the same: "Lighting issues require innovative products and above all independent professionals. These experts are called Lighting Designers. They are the only ones able to eliminate incorrect use by giving lighting its full emotional value. Light is a friend for life."

Promoting a synergistic relationship can be fostered and found on many levels. The Lighting Industry Resource Council (LIRC), the manufacturer arm of the IALD, was formed not long ago to develop ways to create dialogue between designer and supplier, to discuss innovative product development and how the two parts of a design team can move forward to better the industry. While still in its infancy, the LIRC has produced the recent completion of the "Specification Integrity Document," which will appear in our May Market issue, in an effort to get everyone on the same page of thinking when it comes to specifying product, a topic near and dear to both "sides" of the lighting industry. Conversation and communication are further enhanced through the development of updated courses, workshops and seminars offered by manufacturers aimed at educating the specifier. The Trends & Issues story on page 84 presents a "guide of sorts" to the various facilities and schools.

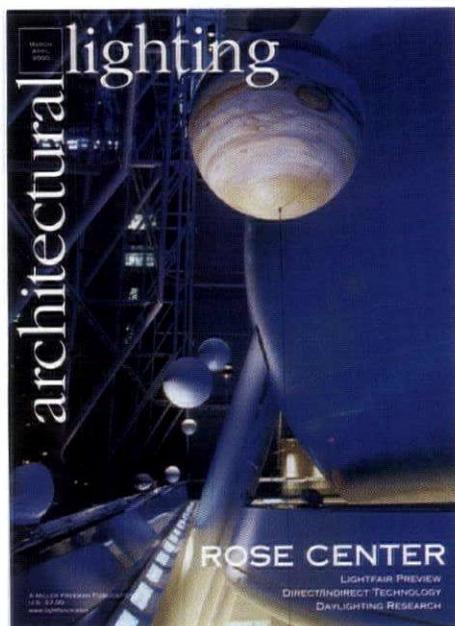
And Lightfair, which is just around the bend, presents in many ways, the ultimate opportunity to bring the entire lighting and lighting-related industries together under one roof to share, communicate and learn. This year, the much-anticipated event promises to be the biggest and best ever, with a record-breaking number of exhibitors and attendees expected. The staff of *Architectural Lighting* looks forward to seeing you there.

So, what's the best piece of advice you've ever received? Drop me a line.



PHOTO BY CHRIS LAMB

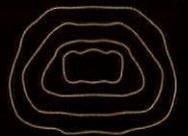
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INVISIBILITY

To the Editor:

Having just received my copy of the January/February issue of *Architectural Lighting*, I wanted to immediately congratulate you on a truly fine job. Quite seriously, I think this is one of the very best issues of any lighting magazine ever published.

You tackle a number of timely and very important subjects therein, from "The Urge to Merge," which represents an area of concern to everyone in the industry, to the subject of e-marketing and commerce, wildly misunderstood entities in the lighting industry. The technical column on metal halide is excellent and even the special supplement on site/roadway lighting—a format which is often abused for the sake of advertiser interests—is informative and very useful. Further, I enjoyed your project coverage (as always).

Craig (DiLouie) and I have spoken for years about what the magazine should be (at least in our own minds), and I think that you have achieved a milestone in lighting education and usefulness. Again, my congratulations. You have set a standard for *Architectural Lighting* that will be hard to maintain, but I have a feeling that you will indeed match its quality in future issues.

Guy Esberg

Guy Esberg & Company
San Anselmo, CA

To the Editor:

In response to the 21-page special supplement in your January/February issue, I would like to point out the following errors:

1. *Page D*. The candlepower curves do not obey polar graph convention. That is, the curve crosses the same radial line twice, indicating that there are two values at a given angle. This can be seen on the candlepower curve through maximum candela in vertical plane. If you align a straightedge at approximately 75 degrees, this can be seen clearly. It is not uncommon to see a candlepower curve that has been redrawn by an illustrator make this mistake.

2. *Page J, Definitions*. The definitions given for all of the cutoff types are incorrect. The two metrics used to determine cutoff are candelas and lamp lumens. They also omitted the classification of full cutoff, which although is not listed in the eighth edition of the *Handbook*, is certainly in two recent Recommended Practices and is found in the ninth edition of *IESNA Lighting Handbook*, now available.

3. *Page L, figure 11.2*. Granted, this is a depiction of one manufacturer's data, but given the same goal of 5:1 min/max ratio on this roadway, one does not have to be satisfied with illumination on the centerline varying from 2.0 fc to 4.0 fc. The shape of this luminaire's isofoot-candle curve simply pushes too much light toward the diagonal (between four poles). The "perfect" distribution would be one that gives you half as much as light at the diagonal, resulting in 2.0 fc at this point, and thereby a smoother distribution on the centerline of the roadway.

4. *Page P, Houseside Shields*. Here a broad generalization is made that "Vertical lamp orientation provides even greater [houseside] control, as the arc tube is already deeper in the optical system." This is not generally true across the industry.

Doug Paulin, LC

VP of Design & Application, IESNA

Kevin L. Willmorth, MIES, Director of Marketing at Kim Lighting responds:

Kim's reputation is founded on providing useful information for producing quality lighting systems designs. We at Kim are proud of the scrutiny to which all our publications are subjected.

With this in mind, I offer the following in response to each of Mr. Paulin's comments:

1. *Page D*. Technically, the curve does have a minor graphic flaw. However, this has no impact on the illustration or its intended purpose of showing the relationships presented.

2. *Page J*. In this case, Mr. Paulin is correct. The descriptions for the various cutoff designations are incorrect. The IES definition of cutoff is determined by the relationship between lamp lumens and candela distribution, not maximum candela. I have included a copy of the corrected page showing the proper definitions, including the "Full Cutoff" definition (IES RP33-99, 2/99). (See opposite page.)

3. *Page L, figure 11.2*. I agree that this may not represent an ideal application example. It is a simple illustration of how isofootcandle plots are used to estimate rough illuminance on a lighting layout.

4. *Page P*. It has been our considerable experience that the combination of a vertical lamp in an asymmetric optical system with a houseside shield is very effective (as stated) and is offered by many manufacturers.

The fact that Mr. Paulin is currently VP of Design and Application for the IES, the Product Manager for Ruud Lighting, as well as a former Kim Lighting Territory Sales Manager, is an indication of how involved he is in the business of lighting. I appreciate his qualified observations. We at Kim are proud to be part of the lighting community and appreciate any input that makes us a more valuable resource to lighting professionals.

To the Editor:

Just wanted to let you know how much I enjoyed the article on neon in *Architectural Lighting's* August/September 1999 issue, but I'd like to point out one error.

It is an excellently written article with good information. The one mistake is that it states that neon is available in only two diameters—15mm and 25mm. This is absolutely false. Neon is available in 8 commercial diameters from 8mm through 18mm. The most common in the U.S. being 10mm, 12mm and 15mm. In Europe 15mm and 18mm diameters are more common. So-called cold cathode comes in diameters of 22mm and 25mm.

An additional side note is that there are a handful of neon artist/glassblowers who also work with unusually large and unusually small diameters, thus extending the range.

In any case, congratulations on the article.

Kenny Greenberg

Kenny Greenberg—Neon Scenic and Environmental Art
Krypton Neon
Long Island City, NY

CUTOFF

Definitions and Methodology



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CANDELA TABULATION

	STREET SIDE								HOUSE SIDE													
	0.0	15.0	35.0	55.0	71.0	75.0	90.0	115.0	135.0	155.0	180.0	0.0	15.0	35.0	55.0	71.0	75.0	90.0	115.0	135.0	155.0	180.0
180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
170.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
165.0	0.	0.	0.	0.	5.	0.	5.6	9.	9.	9.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
160.0	0.	0.	0.	9.	0.	9.	12.	12.	12.	11.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	4.	7.	9.	12.	12.	9.	12.	15.	15.	15.	9.	12.	12.	11.	0.	0.	0.	0.	0.	0.	0.	0.
150.0	7.	9.	15.	15.	15.	15.	18.	18.	18.	18.	12.	12.	12.	12.	0.	0.	0.	0.	0.	0.	0.	0.
145.0	18.	24.	27.	36.	36.	36.	36.	45.	45.	45.	36.	36.	36.	36.	26.	26.	26.	26.	26.	26.	26.	26.
140.0	37.	49.	70.	170.	432.	432.	432.	500.	500.	500.	300.	300.	300.	300.	218.	218.	218.	218.	218.	218.	218.	
135.0	72.	74.	74.	401.	859.	859.	859.	872.	872.	872.	470.	470.	470.	470.	1437.	1437.	1437.	1437.	1437.	1437.	1437.	
130.0	78.	81.	246.	433.	691.	691.	814.	4466.	1810.	1737.	1483.	1483.	1483.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	
125.0	167.	198.	262.	4066.	432.	663.	3250.	2001.	2010.	1655.	1496.	1496.	1496.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	
120.0	219.	219.	2310.	239.	1946.	228.	1974.	1865.	1865.	1719.	1674.	1674.	1674.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	1110.	
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110.0	982.	964.	1137.	1674.	455.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	1956.	
105.0	582.	600.	664.	655.	363.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	600.	
100.0	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	
95.0	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	
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Vertical axis labels: 180, 175, 170, 165, 160, 155, 150, 145, 140, 135, 130, 125, 120, 115, 110, 105, 100, 95, 90

Horizontal axis labels: 0.0, 15.0, 35.0, 55.0, 71.0, 75.0, 90.0, 115.0, 135.0, 155.0, 180.0

Annotation: Maximum Candela at vertical angle of 90° (shown: 18 candela)

Example Luminaire Rated Lamp Lumens = 16000

figure 9.1

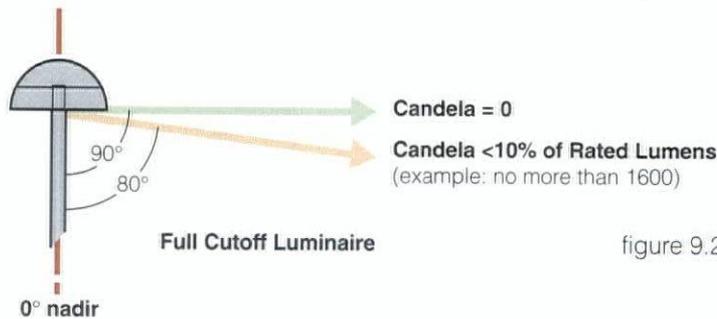


figure 9.2

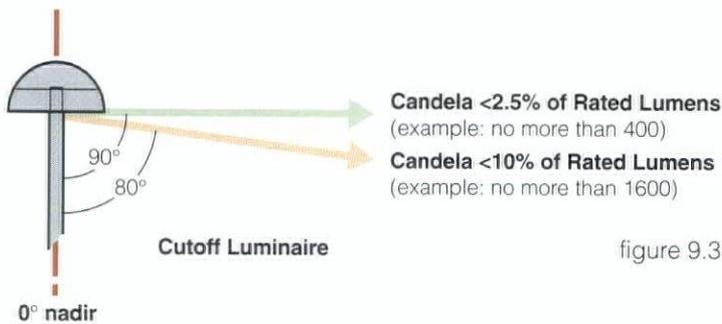


figure 9.3



figure 9.4

WHAT IS CUTOFF?

Beyond distribution and range, luminaires are defined by how well they control light at angles above 80° from nadir.

Designs without significant cutoff characteristics distribute light in zones unlikely to contribute to useful visibility, contribute to light pollution, and are inefficient.

DEFINITIONS

Definition of Cutoff is based on what proportion of a luminaire's output is being distributed at 80° and 90° above nadir.

NONCUTOFF

A luminaire's light distribution is designated as Noncutoff when there is no luminous limitation in any zone.

FULL CUTOFF

A luminaire's light distribution is designated as Full Cutoff when the candela at 90° above nadir is 0 and less than 10% of rated lumens at 80° above nadir.* See figure 9.2

CUTOFF

A luminaire's light distribution is designated as Cutoff when the candela at 90° above nadir is less than 2.5% of rated lumens, and less than 10% of rated lumens at 80° above nadir.* See figure 9.3

SEMICUTOFF

A luminaire's light distribution is designated as Semicutoff when the candela at 90° above nadir is less than 5% of rated lumens, and less than 20% of rated lumens at 80° above nadir.* See figure 9.4

EXAMPLE:

The luminaire represented in the sample Candela Tabulation (figure 9.1) produces **18 candela at 90°** (<2.5% of Rated Lumens) and **55 candela at 80°** (<10% of Rated Lumens). These values fall within the defined ranges shown in figure 9.3, classifying this as a **Cutoff Luminaire**.

* Extracted from IES Publication RP33-99 (2/99)

The Internet is a fantastic resource for our salespeople and our customers. Designers no longer have to rely on the manufacturer's representative to be a librarian. If specification sheets, IES Format photometrics, application photos or a complete catalogue is needed—this information can be downloaded or ordered instantly. It's a beautiful thing! Our customers get immediate information and our salespeople can focus on promoting new products and educating designers on new technologies rather than being burdened with administrative tasks.

*Ann M. Reo, VP of Product Development & Marketing
Focal Point LLC, Chicago, IL*

Presently, the industry regards the Internet much like direct current. In this case, bits of data flow one direction at a time (e.g. obtaining data about a company and the products or services it may offer; transmitting project information through ftp sites; or sending or receiving email with attached documentation).

Few companies in the lighting industry alone have the resources or the number of customers to develop sophisticated Internet portals to get to the next level where this static form of information exchange will give way to a more dynamic one. While company websites will maintain a presence for specifiers and contractors, the industry faces the challenge of business-to-business sites that will appear from outside the industry.

Large commercial sites will allow for product comparison, minimizing the need for independent manufacturer agents, much like Internet travel websites are eliminating travel agencies. These sites will set up sales arrangements mainly among the conglomerates who, like the auto industry, see the opportunity for reaching out directly to contractors while maintaining ongoing relationship with suppliers.

However, the smaller independent manufacturers of downlights and cable track or fiber-optic systems will be represented by competing Internet portal shopping malls—e-bazaars where specifiers will sift through luminaire thumbnails as if they were piles of Persian rugs.

The dynamic Internet will offer the design community easier methods of collaborating on projects and the exchange of information in real time. The Internet will eliminate geography and language as design constraints as every office in the world will have webcams to discuss project work among design team members and with the owner.

Lighting specifiers will, independent of commercial portals, have direct access to manufacturer's production lines. Lighting fixture schedules will be automatically updated by hot-syncing current product information, availability and costs to the designer, while feeding back project quantity takeoffs and required accessories to the manufacturer.

During construction administration, specifiers will, along with contractors, track product order and delivery from the production line through the warehouse to the job site.

Education of designers will allow students to visit lighting learning centers that provide access to greater information as they

gain more knowledge. Their work will be able to be critiqued over the Internet by guest lighting designers.

The Internet's biggest contribution to the industry will be to close the communication gaps that exist between specifier and manufacturer and the end-user through an open and dynamic exchange of lighting product information.

*Lee Waldron, IALD
Grenald Waldron Associates, Narberth, PA*

The ability to email CAD drawings has changed the design production process. More often than not, drawings are now generated via CAD, even for smaller jobs. Each consultant is able to access his/her layer, draw on it and email-return it to the architect for final issue. Formerly, we would generate a hand-drafted plan on the architect's mylar or sepia background. They would combine that information along with the engineers' and other's in a newly drawn document and issue it as the final plan. We usually reviewed this prior to issuance to verify that all information was "translated" appropriately.

The implication of electronic production and issue has been profound. We now have a larger investment in computer systems, software and plotters as well as in training. Our computer consultant is regularly on the scene because there seems always to be some glitch to fix, even though our hardware and software are the "latest." Because we bill for our time, we keep track of it by project or non-billable category. We now have an item called "computer" because we spend that much time in the maintenance of our systems. As a five-person firm, we are not prepared to hire a person strictly for IT, but let's just say our computer consultant makes a good living.

The advantages, of course, are in the speed of exchange of information and the voracity of that information. For example, we were in the concept phase in a recent project where there was a very unique tensile (stretched fabric) structure being considered. The architect had made a small model of the structure, but there were no drawings yet. We needed to discuss with a fixture manufacturer what the options were for mounting their fixtures to this tensile structure. It was a very organic form and no verbal description was really going to clarify the circumstances. We took digital photos of the model, emailed them to the manufacturer who readily understood the situation and proceeded to suggest solutions.

Additionally, we can access photometric information as well as other descriptive information relating to fixtures we are thinking about specifying. This relates not only to the larger manufacturers, but also to small shops around the country (the world). We were looking for some antique fixtures for a high-end retail store located in a Fifth Ave. mansion. An Internet search located a shop in San Francisco that had a website with photos of some fixtures that interested us. We emailed them, which started a dialogue by Internet and phone and we emailed the interior designers who were located in Canada. The interior designers were actually making the selections; and I don't believe any of the San Francisco fixtures were used. But

(Continued on page 16)

(Continued from page 14)

I have retained their address (URL) as a potential future resource. It certainly brought the marketplace "closer."

Another rather interesting, but unusual, effect is in marketing our studio. While we do not have a website, we were recently featured at a site called "lighting.com." We have received a few emails from unfamiliar people—just wanting to discuss the industry. But, like print media, we have no idea what the impact will really be in the long run. We did contact a selected list of clients letting them know about the article and several responded favorably. So at the very minimum, it just gave us another chance to put our name "out there."

Renée Cooley

Cooley Monato Studio, New York, NY

How will the Internet impact the lighting industry?

- Very quick access to information. That is, we can wait for a rep to respond on a technical aspect of a product which that person might not have an answer for, or go directly to a website and view specifications, FAQs, communicate with specialists, etc.

- More efficient exchange of information with clients and suppliers.

- Hopefully it provides a way for designers to communicate more directly with manufacturers. Many manufacturers' representatives have created a "firewall" between the lighting designer and the manufacturer, who once had a much more collaborative relationship.

- The Internet gives us the ability to understand our clients better and their philosophy so that we can give them a design that is directed to their sensibilities and image.

- Our firm has always been global—now we can be reached and reach out to our worldwide clients and be responsive without down time because of time differences. We can communicate with visuals even though we are 10,000 miles apart to solve a field problem or offer an opinion without the time and expense of travel.

- Broaden our recognition with access to our website.

- It should only benefit the industry. With more and more manufacturers getting online, more and more things are available to us faster. We can get cut sheets, photometrics, etc. at the click of a button. Being able to email plans and specs is also a huge benefit. In order to keep up with the industry, everyone will have to become computer literate.

Barbara Horton

Horton•Lees Lighting Design Inc., New York, NY

There's no escaping the Internet these days—and that's a great thing for our industry. On the one hand, you've got the traditional benefits of the Web, like being able to sell and market products and services to a much wider audience of potential customers, establishing a global presence no matter what the size of your business. But this really only scratches the surface of what the Internet can offer. Beyond the obvious e-commerce possibilities, I believe that one of the most exciting and significant opportunities lies in actually integrating digital lighting with the Internet

and making it a component of the whole Web experience, just like what was done with other digital technologies such as sound, animation and video. It has the potential of offering an "immersive" experience and it will give lighting manufacturers and lighting designers the chance to create for a whole new medium—one that is becoming as pervasive in our lives as lighting itself.

George Mueller, Co-founder, President and CEO

Color Kinetics Inc., Boston, MA

The impact will be in two areas. The first one, which we are already seeing, is in communication. Drawings and specifications are travelling to all the parties involved with projects at amazing speed. Later, when all computers are online all the time, multiple groups of people will be able to use updated drawings instantly, rather than when whole documents are issued.

The second area will be in search functions for specifiers. Currently, everyone still has a library of lighting binders. Even those with CDs of a manufacturer's data will still have a hard binder. Easier search engines, with capabilities of asking specifier-type of questions, "aperture size" or "recess depth," will drive the market flow to Internet sites with quick answers.

Matthew Tirschwell

Tirschwell & Co., Inc. Architectural Lighting Design, New York, NY

First, I think the Internet is impacting our industry now: it's not just a question for the future. I have two independent thoughts:

The Internet has become a daily part of our office life. We are using it to transfer and retrieve project drawings and written documents. The shipping of hard copy progress documents has virtually disappeared with the instantaneous transfer of information over the Internet. We find that in order to respond to our architectural clients we must have the ability to work in this way.

With regard to product and technical information, sometimes it can be found easily on the Internet; sometimes it takes an inordinate amount of time to find information when it is readily available in a catalog. As the Internet becomes more organized and Internet sites make it easier to find targeted information, we will use it more and more for product and technical reference.

Patricia Glasow, IALD

Auerbach + Glasow, San Francisco, CA

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One Peachtree Center
H.M. Brandston & Partners, Inc., Lighting Designer
Timothy Hursley, Photographer



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The screenshot shows a web browser window with the title "Lightforum.com, The Resource Center and Referen...". The address bar contains "http://www.lightforum.com/". The website header features the "lightforum.com" logo and the tagline "The Resource Center and Reference Library for the Lighting Industry". Below the header is a "LightNow Newsletter Free Subscription" link with a "Comments" link underneath. The main content area is a grid of eight categories, each with a small image icon and a title with a link to a sub-page:

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	Ask a Lighting Question Join our discussion forum		Search Search this site using keywords... Find Lighting Industry links...

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Final Application Deadline: **September 22, 2000**

Examination Date: **November 4, 2000**

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NCQLP

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2000 lighting certification examination

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Comprised of 17 member organizations representing government agencies and lighting-related organizations, the NCQLP is supported by its member organizations and industry contributions supplemented by major grants from the Environmental Protection Agency (EPA) and the Department of Energy (DOE). Membership is open to organizations and associations in lighting and related industries.



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MERGERS & ACQUISITIONS

Litetronics International has been acquired by an investment group headed by Robert C. Sorenson. Terms of the acquisition are undisclosed. Sorenson will serve as chairman and CEO of Litetronics and Michael Shaechter will remain as president. Litetronics is currently celebrating its 30th year in business.

Osram Sylvania has completed its purchase of **Motorola Lighting**, based in Lake Zurich, IL. Financial terms of the transaction were not disclosed. Following the purchase, Motorola Lighting operations will become part of Osram Sylvania's ballast business, known as Electronic Control Systems. VP and general manager of Electronic Control Systems, Dr. Fritz Schipp, will continue in that position. Tom Goldner, formerly in charge of manufacturing for Motorola Lighting, will head manufacturing for the new organization. Additional appointments will be announced in the future as transition teams complete their work.

Lutron Electronics Co., Inc. has purchased **VIMCO** (Virginia Iron and Metal Co.), a manufacturer of window shading systems. Terms of the deal were not disclosed. This acquisition represents the first in Lutron's 39-year history. VIMCO is based in Richmond, VA.

Fiberstars, Inc. announced the closing of its acquisition of selected assets of **Unison Fiber Optic Systems**. The assets were acquired from Advanced Lighting Technologies, Inc. (ADLT). Unison had originally been a joint venture of ADLT and Rohm & Haas (ROH). ADLT acquired rights to Unison from ROH in January, 2000. Fiberstars acquired key personnel, technologies and other assets and, subject to achievement of development milestones, up to \$2 million in development funds from Unison. John Davenport, former general manager of GE Lighting, has become Fiberstars' chief technology officer. Jeff McDonald, who held sales and marketing positions at GE and Unison, has been named national key accounts manager for Fiberstars. Fiberstars acquired eight patents and a number of patents-pending, including technology in lamps, optics and fiber. Fiberstars entered into an ongoing technology exchange agreement with ADLT covering lamps, power supplies, optical coatings and fixtures for fiber-optic lighting applications.

SOM & ULTRAWATT FORM LIGHTING PROGRAM

Architecture and engineering firm Skidmore, Owings & Merrill LLP has formed an alliance with Ultrawatt Integrated Systems, Inc. through its subsidiary, Alliance Equi-Serve, Inc. (AESI). The alliance offers a trademarked lighting program called the Ultrawatt Service Program, which reduces energy demand and lowers maintenance costs for high-volume energy consumers.

The lighting program combines current lighting technologies with a cost-effective maintenance program and offers end-users a high-quality lighting solution, service package, reduced energy costs and an environmentally friendly lighting system with no maintenance costs. SOM will provide lighting design, analysis and engineering services, which will then be integrated with other alliance members, including providers of lighting products, services and financing.

The Ultrawatt Service Program is designed for both fluorescent and HID lighting systems in large open spaces with extended operating hours such as distribution centers, manufacturing facilities, large retail outlets, industrial centers, parking garages and government properties.

On April 18, The Department of Energy held a public hearing on proposed energy efficiency standards for fluorescent lamp ballasts. Published in the *Federal Register* on March 15, the proposed standards are based on an agreement worked out between lamp ballast manufacturers and energy efficiency advocates in October of 1999.

Residential ballasts are exempt from the proposed standards, which if adopted, are expected to save between 1.2 and 2.3 quadrillion BTUs of energy over a 30-year period. The agreement is also expected to reduce greenhouse gas emissions by 11 million to 19 million metric tons and nitrous oxide emissions by 34,000 tons to 60,000 tons over a 20-year period.

Did You Know....?

On March 29, the Smithsonian's National Museum of American History in Washington, D.C. opened a new gallery and refurbished the Thomas Edison exhibit to create "Lighting a Revolution II"—an expanded exploration of electricity and electrical invention in the 20th century. Edison's invention of an incandescent electric lamp provides a backdrop for the museum's newly refurbished "Edison: Lighting a Revolution," which explores the history, meaning and effect of this technological breakthrough. The story behind Edison's lamp is told as is the process of invention in the late 19th century. As an extension to this exhibition, "Lighting a Revolution II" brings the story of electric lighting into the modern era. By examining the history of several latter 20th-century lamp inventions, the new gallery illustrates similarities and differences between the process of invention in Edison's era and in the late 1900s. Modern energy-efficient ideas are examined in the context of how the lighting industry has transformed these ideas into available energy sources. "The light bulb has come to symbolize invention and innovation," said Spencer Crew, director of the National Museum of American History. "From Edison's incandescent lamp of 1879 to a microwave-powered sulfur lamp from the 1990s, visitors can follow the timeline of electric lighting inventions."

Artifacts in the new gallery include an experimental tungsten halogen lamp (1955), various experimental compact fluorescent lamps (late 1970s) and two experimental silica carbide lamps (1989). Interactive stations invite visitors to learn about light sources and how they work. For more information, visit the companion website at <http://americanhistory.si.edu/lighting>.

This project was made possible through the support of the U.S. Department of Energy, Eveready Battery Co. Inc., General Electric Co., Philips and Osram Sylvania. Light fixtures were provided by Lightolier, lamps by Osram Sylvania. For more information, call (202) 357-2700.

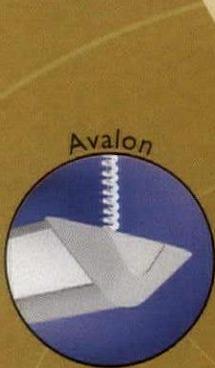


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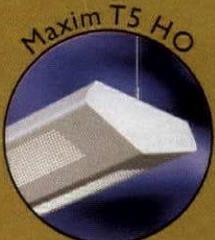


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NCQLP ANNOUNCES THE LC CLASS OF 2000 AND EXPANDS COUNCIL MEMBERSHIP

NCQLP president and Advance Transformer VP Norman Grimshaw, PE, LC announced that 137 individuals have earned the Lighting Certified (LC) credential after passing an examination held at the end of 1999. The pass rate for the 1999 examination was 80 percent. Currently, 798 LCs in lighting and related professions represent 46 states and the District of Columbia, Australia, Canada, Hong Kong, Mexico and Saudi Arabia.

As its certification program gains momentum, the NCQLP has also expanded its council membership, which now includes: American Society of Interior Designers (ASID), California Energy Commission, Electric Power Research Institute, Illuminating Engineering Society of North America (IESNA), International Association of Lighting Designers (IALD), International Facility Management Association (IFMA), International Interior Design Association (IIDA), Lighting Research Center, National Electrical Manufacturers Association (NEMA), National Lighting Bureau (NLB), the Nuckolls Fund for Lighting Education, U.S. Department of Energy/Facilities Energy Management Program, U.S. Environmental Protection Agency and U.S. General Services Administration.

Following are the names of those who recently passed the exam. Congratulations!

Frank J. Agraz, Jr.
Mary Alcaraz
Mary Andalia
Brent A. Andrews
Thomas Ballew
Jeff T. Bannard
William R. Banning
Wanda J. Barchard
Faith E. Baum
Steven Berthelette
John F. Bos, Jr.
Jeffery P. Boynton
E. Teal Brogden
William J. Broughton, III
Cynthia Burke
Kevin P. Burke
Bruno Campesi
Kerry D. Carr
Norman J. Chamberlain
Larry B. Chambers
Donald Cherwonka
Timothy R. Clarke
Jill Cody
Stephen A. Coffey
Margaret A. Cooper
Tracy R. Cuneo
Margaret Czebatul
Jimalée Dakin
Wilson Dau
Leslie E. Davis
Henry P. Dormberg
Kenneth A. Douglas
Bruce Dunlop
John K. Dunn
Laurie E. Emery
Glen R. Fasman
James H. Floyd
Marcia L. Fowler
Scott J. Freer
John R. Freese
Brian H. Friedman
John A. Funkhouser
Claudia R. Gabay
G. Michael Gehring
Joe E. Gibson
Mark A. Graham

Laura Grayson
Raymond W. Greenhalgh
Scott G. Guenther
Lee Harris
Melinda Haverland
Greg R. Hebets
Sarah Heenan
Steven Heidlauf
David J. Herscher
Margaret O. Hill
William B. Hodges
Lance D. Howitt
Edward D. Hyatt
Debra L. Jensen
Eric K. Jensen
David E. Johanning
Richard Johnstone
Emily Klingensmith
Darryl J. Knittle
Daniel A. Knutson
John C. Lamb
Stephen Leinweber
David R. Leslie
Lincoln Lighthill
Kim Loren
James A. Love
Lynn Lumsden
Dawn MacFayden
Michael MacPhee
Marianne Maloney
Dorene Maniccia
Michael McCarroll
James McCarty, III
Richard McDonald
Carlos Medina
Paul Mercier
Charles Michael, Jr.
Keith J. Mitchell
Andy Mullin, III
Lana M. Nathe
Linda Owens
Steven J. Parker
Tara M. Parks
Christine Paterakis
Scott T. Payne
Mary J. Pelican

Eric S. Perkins
Chris Yu Poon
Huel Pruitt
Frank J. Puliafico
Kelly S. Quinn
Ameé Quiriconi
Raymond Randall
Kenneth Reinhard
Susan M. Rhodes
Philip C. Richards
Vincent G. Roy
Joseph M. Scott
Jerry E. Shepard
Mahandra Singh
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David C. Smith
Gale Spencer
Carsten J. Stehr
Daniel O. Sterling
Richard J. Stern
Michael R. Stevens
David W. Steward
Cristian Sutavagau
Mark Tatarian
Tan V. Tran
Lauri A. Tredinnick
Christie M. Trexler
Ken Valentine
Adrian A. Vera
Tom S. Vohs
Debbie Voce
Stan Walercyzk
Christina S. Walsh
Gordon A. White
Mark B. Williams
Michelle L. Wilson
Jeremy Windle
Marcus Yahnke
Dany Yanusz
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Dennis Yee
James Youngston
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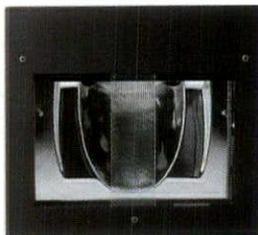
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EELA ANNOUNCES CERTIFICATION FOR ENERGY-EFFICIENT LIGHTING SERVICE COMPANIES

The Energy Efficient Lighting Association (EELA) has announced the new Certified Energy Efficient Lighting Service Company (CEELSCo) program for energy-efficient lighting services companies. The new program increases the basic knowledge level and capabilities of lighting service companies and identifies those accredited as upholding the technical and ethical standards of the EELA. Guidelines for becoming a CEELSCo company include demonstrating an industry recognized energy-efficient lighting certification such as CLEP, LC, EPA Green Lights Survey Ally or CLMC. Qualified companies must possess sufficient lighting and business experience, appropriate insurance coverage and provide specific information to clients for all lighting projects. For more information, contact association manager, Lynn M. Russo at (609) 799-4900, fax (609) 799-7032, email: lrusso@eela.com.

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BLACKMAN DESIGN LAUNCHES ENGINEERING DIVISION

Blackman Design Associates has launched the Integrated Product Engineering division, which will provide complete development and engineering services specifically for lighting manufacturers. Services offered include concept evaluation, product development, design engineering, project documentation, UL review and consultation, industrial design, rapid prototyping and model-making. For more information, contact Blackman Design Associates at (973) 377-8006. The company is located at 248 Columbia Turnpike, Florham Park, NJ 07932.

NORTHERN STATES METALS EXPANDS CAPABILITIES

Northern States Metals has expanded its lighting capabilities with a new 88,000-sq.-ft. manufacturing facility in Youngstown, OH. The new facility includes segregated areas for aluminum fabricating, finishing, metal bending, cutting, buffing, silk screening, welding and general assembly. The company's purchasing and technical support department are also located in the new facility.

W.A.C. LIGHTING HOSTS 15TH ANNIVERSARY

W.A.C. Lighting Co. recently hosted a worldwide series of parties and special events to celebrate its 15th anniversary. The series of celebrations began at W.A.C. Lighting's manufacturing facility in China and was given for the firm's 382 employees overseas who are involved with the manufacturing and assembly of the company's product lines. Tony Wang, president and founder of W.A.C. Lighting, hosted the second celebration at its new facility in City of Industry, CA. The final anniversary event began at W.A.C.'s Garden City, NY corporate headquarters and ended with a party and awards presentation for the firm's employees.

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ON THE MOVE...

Bega/US has moved into a new corporate center located at 1000 Bega Way, Carpinteria, CA 93013. Ten miles south of Santa Barbara, the new 81,860-sq.-ft. complex consists of a two-story office building and manufacturing facility connected by a "bridge." Bega/US can be contacted by phone at (805) 684-0533, fax (805) 684-6682, www.bega-us.com.

Lindsley Consultants Inc. has moved to 259 West 30th Street, 11th Floor, New York, NY 10001. The firm can be contacted by phone at (212) 564-2800, fax (212) 564-2843, email: jlindsley@leilight.com.

The **Chicago office of Cosentini Associates** is now located at One East Wacker Drive, Suite 200, Chicago, IL 60601. The office can be reached by phone at (312) 670-1800, fax (312) 617-1801.

Lighting & Electrical Design, Inc. has moved to 141 Cassia Way, Units B& C, Henderson, NV 89104; phone (800) 700-5483, fax (888) 223-6599.

Fisher Marantz Stone has relocated to 22 West 19th Street, New York, NY 10011. The office can be reached by phone at (212) 691-3020, fax (212) 633-1644.

NEW FIRMS & NAME CHANGES

Frank Callahan, IALD, has launched his new firm, **Callahan Lighting Design, LLC**. Callahan Lighting Design is located at 2201 Monaco Parkway, Denver, CO 80207. The firm can be contacted by phone at (303) 316-0445, fax (303) 316-0247, email: callahan@gateway.net.

Carolyn Iu and Natan Bibliowicz have formed **Iu+Bibliowicz Architects LLP**. The new firm is located at 57 East 11th Street, 7th Floor, New York, NY 10003; phone (212) 982-3663; fax (212) 982-6006; email: info@biarchitects.com.

Renee Cooley Lighting Design has changed its name to **Cooley Monato Studio**. The firm can be contacted at (212) 941-8333.

Lighting designer and energy manager Gary Markowitz has formed **Kilojolts Consulting Group**. The new consulting firm will offer lighting services such as design for the commercial, industrial and residential sectors; illumination system assessments and enhancements; lighting maintenance programs and turnkey lighting energy conservation retrofits. Kilojolts Consulting Group is located at: 37 Baker Avenue, Lexington, MA 02421; phone (781) 820-0075, fax (781) 674-9192, email: kilojlts@concentric.net, website: www.kilojolts.com.

Heriberto J. Brito, ASID and Margaret Gilchrist Serrato, AIA have announced the formation of **Brito Serrato, LLC**, a firm dedicated to architecture, interior and historic preservation design projects. The new firm is located at 147 15th Street, NE, Atlanta, GA 30309 and can be contacted by phone at (404) 872-5031, fax (404) 874-1621, www.britoserrato.com.

ISO CERTIFICATION

Fluorescent fixture manufacturer **Metalux Lighting** recently received ISO-9001 certification for its Americus, GA facility. The Eufaula, AL and Ellaville, GA facilities were certified in 1996 and 1998. Metalux is a brand of Cooper Lighting.

During a renewal registration audit conducted in January, **Sylvania Lighting Services** achieved ISO-9002 certification for their quality management systems. A business unit of Osram Sylvania, Sylvania Lighting Services received its initial ISO certification in 1997.

WEB LAUNCHES

High-Lites has launched a website at www.highliteslighting.com. Visitors to the new site can access new product news releases, product and application information as well as an overview of the company's product range. The site also offers information on the company's background and links to the JJI Lighting Group homepage.

Also providing links to the JJI Lighting Group homepage, **Vista Lighting's** new website at www.vistalighting.com offers visitors information on new products and a background on the company. Through the site, visitors can search for fixtures by fixture type or application and register to receive free literature.

Moody Ravitz Hollingsworth Lighting Design has announced its official website at www.mrhldi.com. In addition to providing a company profile and information, the site features lighting technical articles and a gallery of lighting history. Suggestions and comments on the site can be directed to webmaster Francis Mepin at francism@mrhldi.com.

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DOE AND LIGHTING INDUSTRY LAUNCH NEW PUBLIC-PRIVATE PARTNERSHIP TO FULFILL 20-YEAR VISION

On March 29, the U.S. Department of Energy (DOE) released a report detailing the results of a two-year strategic partnership between the lighting industry and the department. Representing the work of lighting industry professionals from more than 180 organizations, the report, *Vision 2020: the Lighting Technology Roadmap*, details how lighting can efficiently meet the demands of tomorrow's commercial buildings and the needs of those who design, build, own and occupy them. In particular, it will help guide the DOE in appropriately aligning its activities with the industry. For more information or a copy of *Vision 2020*, visit www.eren.doe.gov/buildings/vision2020.

FIBERSTARS HOLDS CONTEST

Fiberstars has announced that the customer who purchases the company's 250,000th fiber-optic lighting system will win a special Fiberstars 701S system, plus a week for two in San Francisco. A grand prizewinner and two runner-ups will be selected from three market segments: U.S. commercial lighting, U.S. pool and spa market and international sales.

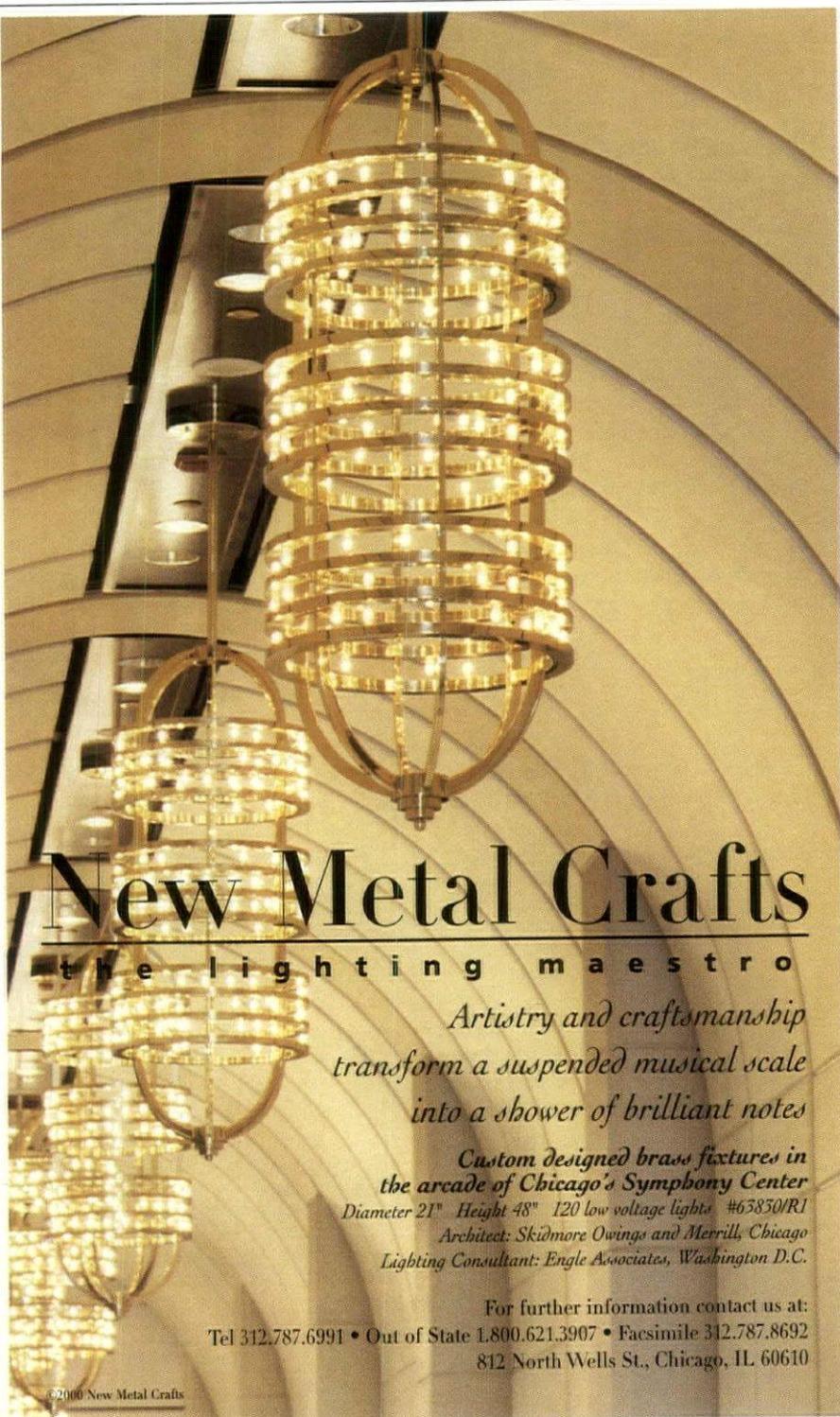
ADVANCE TRANSFORMER PRESENTS CD-ROM TO CONTROLS ASSOCIATION

In a ceremony held earlier this year, Advance Transformer presented the National Dimming Initiative CD-ROM to the Lighting Controls Association for the organization's exclusive use. Taking part in the presentation were Advance's executive VP of marketing and sales, Talbot Steel and Lighting Controls Association president, Dave Peterson of Horton Controls.

The CD-ROM, a key component in the National Dimming Initiative, is a lighting controls specification and application tool that includes a lighting controls tutorial, a controls estimator, case histories, a catalog of industry products and an educational lighting controls game.

VARI-LITE RECEIVES HONOR

During the USITT 40th Annual Conference and Stage Expo held March 22-25 in Denver, CO, Vari-Lite was honored with a special citation for contribution and innovation in the performing arts and entertainment industry. The award was given by the United States Institute for Theatre Technology, Inc.



New Metal Crafts

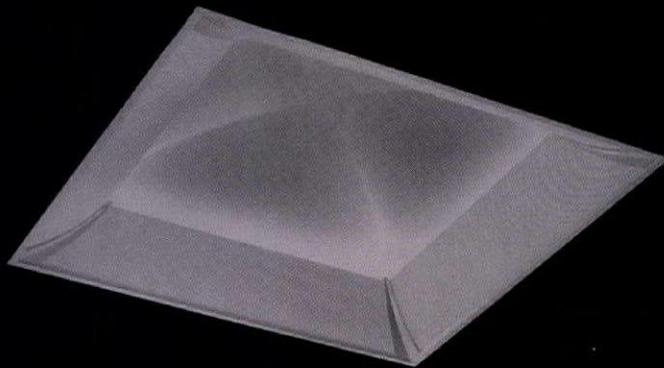
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DOE & AIA SPONSOR "SUN WALL" COMPETITION

The Department of Energy (DOE) and the American Institute of Architects (AIA) are sponsoring a design competition in which the goal is to build the world's largest solar energy system. A joint announcement made by DOE Secretary Bill Richardson and AIA President Ronald L. Skaggs revealed that the DOE's Forrestal building in Washington, DC, will become the home of the world's largest "sun wall" in the process of the competition.

Architects, engineers, other building design professionals and energy technology companies are invited to design a technologically advanced and visually exciting solar energy system for the south-facing wall of the department's headquarters building. Currently blank, the wall measures nearly two-thirds of an acre.

The "Sun Wall" Design Competition officially opened on March 1 and will close on August 1. The winning entry will be announced during Energy Awareness Month 2000 in October. The winning design team will be awarded \$20,000. For information on the competition, visit the Sun Wall Design Competition website at www.doe-sunwall.org or contact Dr. E. Jackson, Jr., The AIA, 1735 New York Avenue, NW, Washington, D.C. 20006-5292, phone (202) 626-7446.

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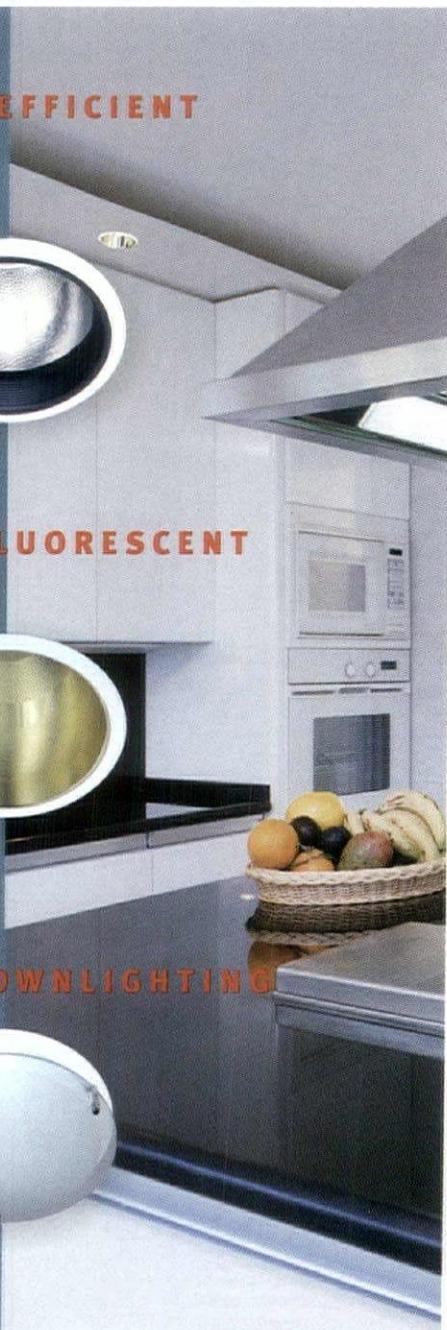
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NLPIP UPDATES
PRODUCT REPORT

The National Lighting Product Information Program (NLPIP) has updated its *1998 Specifier Reports: HID Accent Lighting Systems* with an online supplement. The NLPIP recently evaluated recessed and semi-recessed adjustable fixtures for metal halide parabolic aluminized reflector PAR20 and PAR30 lamps. Test results are available at www.lrc.rpi.edu/NLPIP/Online/SR/HIDsupp/index.html.

Administered by the Lighting Research Center, the NLPIP is an independent program sponsored by the Energy Center of Wisconsin, the Iowa Energy Center, the LRC, the New York State Energy Research and Development Authority, the Northwest Energy Efficiency Alliance, the U.S. Department of Energy, the U.S. Environmental Protection Agency and the U.S. General Services Administration.

IALD CONTINUES
INTERNSHIP PROGRAM

The IALD is continuing its internship program again this year. Applicants for the internship positions have been asked to apply for positions directly on the IALD website. Members of IALD and LIRC can search for potential interns directly on the site or call the IALD office for a summary of applications.

Log onto www.iald.org, click on the members only section, sign in and then go to the intern program. Members can access a list of applicants or search by educational background or geographic availability. Interns are asked to include a brief resume in the online description and can also provide a direct link to their own email. The IALD has notified all schools in the database of this procedure. Members are asked to notify the office if they select an intern from the program.

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Carroll B. Cline, FIALD, a lighting designer whose clients included the Santa Fe Opera Theater, the Norman Rockwell Museum in Stockbridge, MA and the lobby of 1251 Avenue of the Americas in New York City, passed away late February. Cline, who was trained as an architect at the Institute of Design of the Illinois Institute of Technology and worked for Skidmore Owings & Merrill in Manhattan, became VP of Edison Price in 1962 and began his career as a lighting designer. In 1985, Cline founded the firm of Cline Bettridge Bernstein Lighting Design, where he worked with partners Francesca Bettridge and Stephen Bernstein. Not

only was Cline the president of the IALD in the mid-'80s, he was elected to Fellow in 1989 and was the recipient of more than 30 lighting industry awards for his designs.

The International Association of Lighting Designers (IALD) has named new members: **S. Leonard Auerbach, IALD** and **Charles Stone, IALD** to Professional status; and **Jamie Yuk Chee Chui, Glenn Heinmiller, Maida Hot** and **Bridget Kay Williams** to Associate member.

Elisabeth Bernitt has been appointed managing principal of HOK Tampa.

Candela Architectural Lighting Consultants has promoted **Mary Claire Frazier, IALD** to associate.

Guy Smith, Rudy Rodriguez and **Angela Lawrence, LC** have joined Horton•Lees Lighting Design as project director.

Rob Hollis has joined Design Collective, Inc.

BBGM Architects & Interiors has promoted **Rostand (Rusty) Edwards, AIA** and **Hung Ngo** to senior associate, and **John Baselby, AIA** and **Bahram Kamali, AIA** to associate.

Kling Lindquist has appointed **Robert G. Thompson, AIA, CEO**; **Michael Lorenz, PE**, director of engineering; **Bradford White Fiske, AIA**, senior principal; and **Alan M. H. Sloan**, senior principal.

Lighting Corporation of America has appointed **Scott H. Muse** president and CEO.

Cooper Lighting has named **Jeff Bucar** VP, U.S. sales.

Michael Schaechter has been named president of Litetronics International.

Richard Belliveau has signed on to act as consultant to High End Systems.

Full Spectrum Solutions has named **Elizabeth Karl** sales manager.

FC Lighting has named **Chuck Beckmann** production and quality control supervisor.

Steel Craft Fluorescent has named **George Pizzo** director of sales and marketing.

Gary Powell and **Lisa Maxwell** have joined Vincent Lighting Systems.

W.A.C. Lighting and Light Lines have appointed **Scott Collins** sales representative.

ETC has named **Mike Lowe** managing director for ETC Europe.

David Kinkaid has been named national sales manager for Spero Lighting.

Philips Lighting Co. has appointed **Tom Nelson** product manager for the HID category.

Zachary Gibler has been appointed national sales manager for the Lithonia/Holophane Utility Program.

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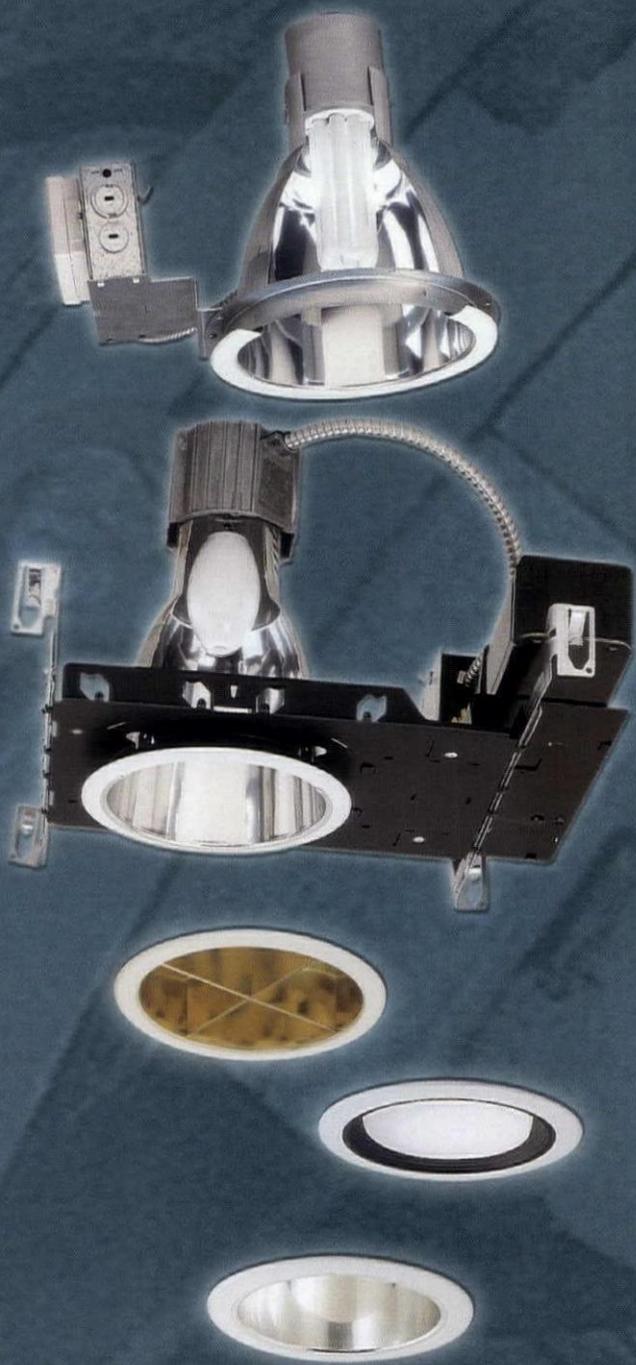
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2000 SCHEDULED EVENTS

May 20-23 International Contemporary Furniture Fair and Decorex USA, Jacob Javits Convention Center, New York; (914) 421-3215, (800) 272-SHOW, www.glmshows.com.

May 24 Boston Society of Architects Lecture Series: "Real Cities: Density, Complexity and Serendipity," Rabb Lecture Hall, Boston; (617) 951-1433, fax (617) 951-0845.

May 25-June 1 Designers Lighting Forum of New York Trip to Paris; (212) 613-1599.

June 5-8 A/E/C Systems 2000, Washington D.C. Convention Center, Washington, D.C.; (800) 451-1196, fax (610) 458-1553.

June 12-14 NeoCon, The Merchandise Mart, Chicago; (800) 677-6278, (312) 527-7714.

June 14-17 The International Design Conference in Aspen: "The Spirit of Design," Aspen, CO; (970) 925-2227, www.idca.org.

June 18-20 BOMA International's 93rd Annual Convention & The Office Building Show, San Diego Convention Center, San Diego, CA; contact Maureen Lynn at (888) 777-6956, fax (703) 528-1724, email: mlynn@pgi.com.

June 21 IESNY Lumen Awards Banquet, New York; (800) 217-5445, www.nyies.org.

June 21-23 Ambiente Japan, Tokyo International Exhibition Centre, Big Sight, Ariake, Tokyo, Japan; (81) 3-5275-2851, fax (81) 3-5275-2867, e-mail: mfk.kash@pep.ne.jp, www.ambiente.de.

June 22-25 44th Annual Construction Specifications Institute Convention and Exhibit, Georgia World Congress Center—East, Atlanta; (800) 689-2900, www.csinet.org.

June 23-27 Dallas International Lighting & Accessories Market, Dallas Market Center, Dallas; (800) DALMKTS.

July 31-August 2 IESNA National Conference, Washington, D.C.; (212) 248-5000, www.iesna.org.

September 7-9 Restoration & Renovation, Henry B. Gonzalez Convention Center, San Antonio, TX; (800) 982-6247, (978) 664-6455, ext. 14, fax (978) 664-5822, email: show@egiexhib.com, www.egiexhib.com.

September 8-12 Lumiere Paris, Paris-Nord Villepinte, France; (33) 1 44 29 02 47, fax (33) 1 44 29 02 43, email: info@lumiere-paris.com, www.lumiere-paris.com.

September 25-30 International Fair of Lighting Fixtures (FIAM), Valencia, Spain; (34) 96-386-11-00, fax (34) 96-363-61-11/96-364-40-64, email: ferivalencia@ferivalencia.com, www.ferivalencia.com.

October 8-16 Athens to Rome: Architecture 2000 trip; (800) 975-7775, email: aia@travelmgmt.com, www.travelmgmt.com/aia.html.

November 1-3 Luminaire Asia 2000, Singapore International Convention & Exhibition Centre, Singapore, Singapore; (65) 220-76-33, fax (65) 220-97-33, email: info@hfasin.com, www.hfasin.com.

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- **June 7:** "New Technology: State of the Art Lamps"—Helena, MT
- **June 8:** "Daylighting Workshop": Seattle, WA
- **June 13:** "Daylighting Workshop"—Spokane, WA
- **June 15:** "Daylighting Schools & Retail"—Boise, ID
- **June 20:** "Controls & Economics"—Seattle, WA
- **June 21:** "Controls & Economics"—Portland, OR
- **June 22:** "Controls & Economics"—Eugene, OR

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- "Fundamentals of Lighting Controls—Residential": **May 22-23; August 28-29; October 30-31.**
- "Lighting Controls for the Specifier": **June 1-2; September 7-8; October 5-6; November 2-3.**
- "Global Lighting Control Workshop": **August 14-16; October 16-18.**
- "Fundamentals of Lighting Controls—Commercial": **June 26-27; November 9-10;**
- "High-End Residential Seminar": **June 19-20; September 25-26; November 30-December 1.**
- "International HomeWorks Workshop": **October 19-20.**

OSRAM SYLVANIA—
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Danvers, MA

(978) 750-2464

- "Lighting Essentials": **May 22-24; August 21-23; October 9-11; November 13-15; December 4-6.**
- "Lighting Design & Applications": **June 26-28; October 2-4.**

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- "Lighting Fundamentals Workshop": **May 17-19; September 25-27.**
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- "Lighting Design & Application Workshop": **November 6-10.**

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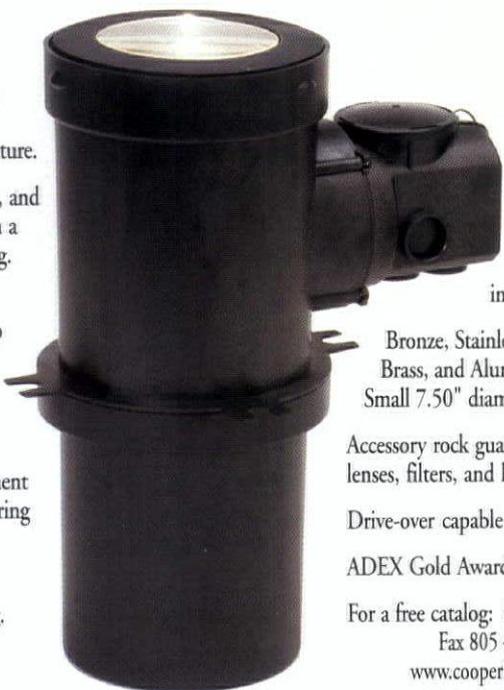
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- "Lighting Design & Application for Interior Spaces": **September 20-22.**
- "Lighting Design & Application for Exterior Spaces": **November 16-17.**
- "Office Lighting Workshop": **August 14-15.**
- "Residential Lighting Workshop": **September 21.**
- "Landscape Lighting Workshop": **May 8-10; October 2-4.**
- "USL Sports Lighting": **November 6.**
- "Home Theater Lighting": **October 6.**
- "Downlighting/Track": **May 18; September 7.**
- "Fluorescent Products": **May 19; September 8.**
- "HID Products": **May 22; September 11.**
- "Life Safety/Complex Environment": **May 23; September 12.**

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- "Fundamentals of Commercial & Industrial Lighting": **May 22-26.**
- "Lighting Educators": **June 19-21.**

JUNO LIGHTING EDUCATION CENTER

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- "Light Tech II": **August 24-25.**
- "New Technology": **July 6.**
- "Retail Lighting": **August 3.**
- "Residential Lighting": **September 28.**
- "Hospitality Lighting": **November 16.**

LIGHTOLIER—THE TECH CENTER

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- "Luminaire System Technologies for Commercial Applications": **October 9-11.**



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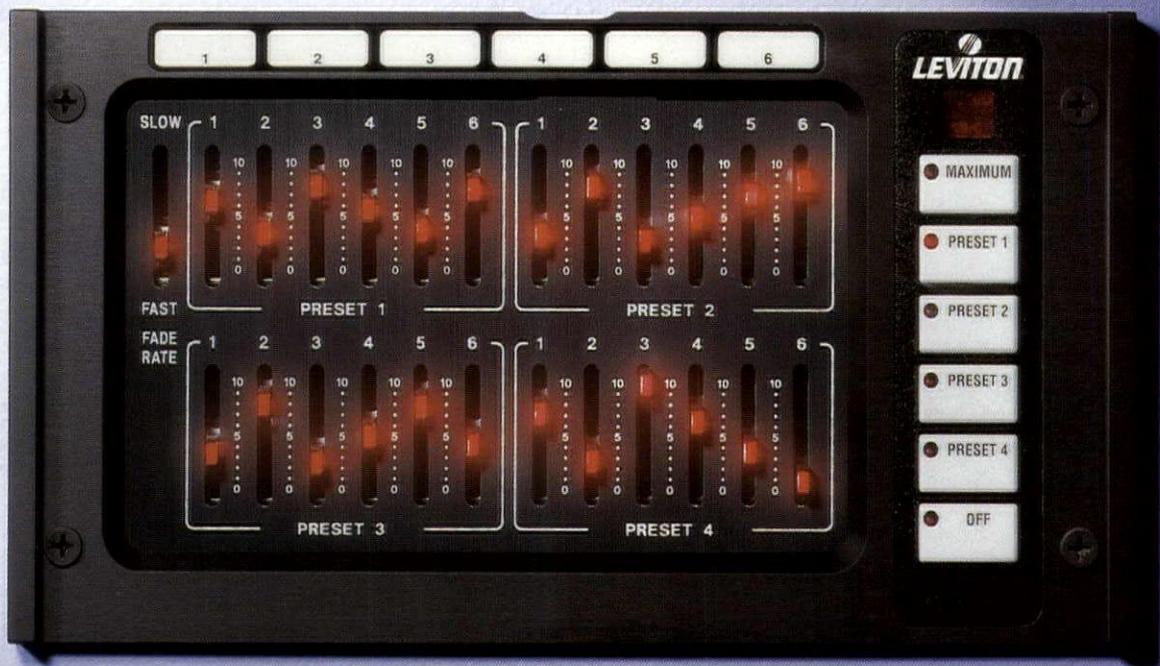
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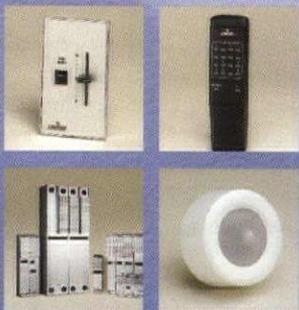
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In this issue Architectural Lighting interviews JoAnne Lindsley, FIALD, LC, principal of Lindsley Consultants Inc. in New York City. Lindsley began her career in lighting working for Bonvini/Kondos and Syska & Hennessy before launching her own practice, Synergy Consultants Inc., which she and her partner ran for 12 years. In 1996, Lindsley formed Lindsley Consultants Inc. In 1999, Lindsley was elected Fellow of the International Association of Lighting Designers (IALD) and in 2000, chairman of the association. Lindsley has been the recipient of numerous awards, including the Guth Award for lighting design, IESNA Presidential Award for the work of ASHRAE/IESNA 90.1 and the IESNA Taylor Technical Talent Award for her research on developing lighting energy standards.

—Christina Trauthwein

AL: Tell me how you entered the field of lighting design.

Lindsley: After getting my degree in interior design, I took a leave from the workforce to dedicate my time to raising my daughters. When the time came for me to focus once again on my career, I decided to return to school to enrich my professional development. Rather than opting to just refresh my skills in interior design, I decided to take a class in lighting at Parsons, which at the time of my initial education had not been offered to students. Jim Nuckolls was the teacher, and after taking the class, I decided to attend Parsons full time to take all their classes in lighting.

When I had finished the curriculum, Jim called me and told me a company was just forming and they could use someone like me. I accepted, and of course thought I'll gain the knowledge and tools I need to better my career as an interior designer and return to that field. But that was 1978 and 22 years later, I'm still here. I went to work for Bonvini/Kondos, a fledgling firm at the time, for a little over a year and then replaced Craig Roeder at Syska & Hennessy. I succeeded both Jim Nuckolls and Jeffrey Milham as head of the lighting department and then left to work for Roger Morgan Studio, a theater consulting firm, where I continued to use my skills in architectural lighting. Shortly thereafter, my husband—whom I had met while both of us were employed by Syska & Hennessy—and I decided to start our own firm.

AL: That must have been challenging, particularly coming from a large firm.

Lindsley: It often was. The main reason we decided to go that route was largely due to the desire to rid ourselves of the politics of a large office—and a belief that running our own firm and making our own decisions would prove productive and profitable. Syska & Hennessy, while it was a wonderful experience, was such a large firm—at the time it employed about 700 people in eight offices—so there were many layers of authority with which to contend. Autonomy did not exist, even at

upper levels of management. We both felt we wanted to operate on a much more involved and direct basis with our clients and projects. So when we made the decision to form our own company, we also made the promise to stay small and to be a part of every project. But challenging it was. There were times I wished for an accounting or public relations division the size of Syska & Hennessy's. But in retrospect, I can say that the plusses far outweighed the negatives.

AL: Name an experience that has significantly impacted your career.

Lindsley: When I was at Syska & Hennessy, I was working on the addition to Procter & Gamble and had the opportunity



to experience the way design teams strategically work in large meetings—meaning not only consulting engineers and architects are present but clients' in-house staff too. I discovered then that: 1) lighting was going to be more exciting than going back into interior design because as lighting designers we get to see small portions of a wide variety of projects and 2) there was much more to design than being a designer.

The business part of those strategic meetings was fascinating and overwhelming at the same time. As an aside on this: I remember sitting in the boardroom in a 30-person meeting and the landscape architect said, "Whenever I'm at a meeting like this I imagine a shiny jaguar sitting in the driveway." I asked why and he responded, "I just evaluate the two, weighing the meeting/the Jaguar, the meeting/the Jaguar and I like to sit here and decide which I

would really rather have." It's so true. Clearly, on the huge, long-term projects where they hold so many front-end meetings and stage numerous mockups, the clients do spend about the same amount it would be to buy the Jag.

Probably the most interesting early project I had was Procter & Gamble. The initial dictate from the client was to replicate the original interior and not to make too many changes from the old environment to the new. The architects were going from a totally closed private office system to an open one. We went through many mockups, everyone was satisfied with the furniture system and all involved parties had approved everything. They then walked the boards past the chairman who commented that he didn't like "those things hanging from the ceiling." So even though all the programming was set, the direct/indirect pendant system was out. During a subsequent meeting to determine what course of action to follow, the architect stated that instead of considering a new approach, we would install the indirect system supplied by the furniture manufacturer. My clients were silent and nodded in agreement, but I knew that approach wouldn't prove the best solution. It was during this time I came to a decision—you know, one of those career defining moments: My job is not to agree with my clients (the architect) or my ultimate clients (the firm) if I know it isn't in their best interests. This experience taught me to stand firm in my beliefs. I persuaded them to give me two weeks to come up with something and wound up working with Peter Ngai at Peerless to design a spread lens to optimize the indirect portion.

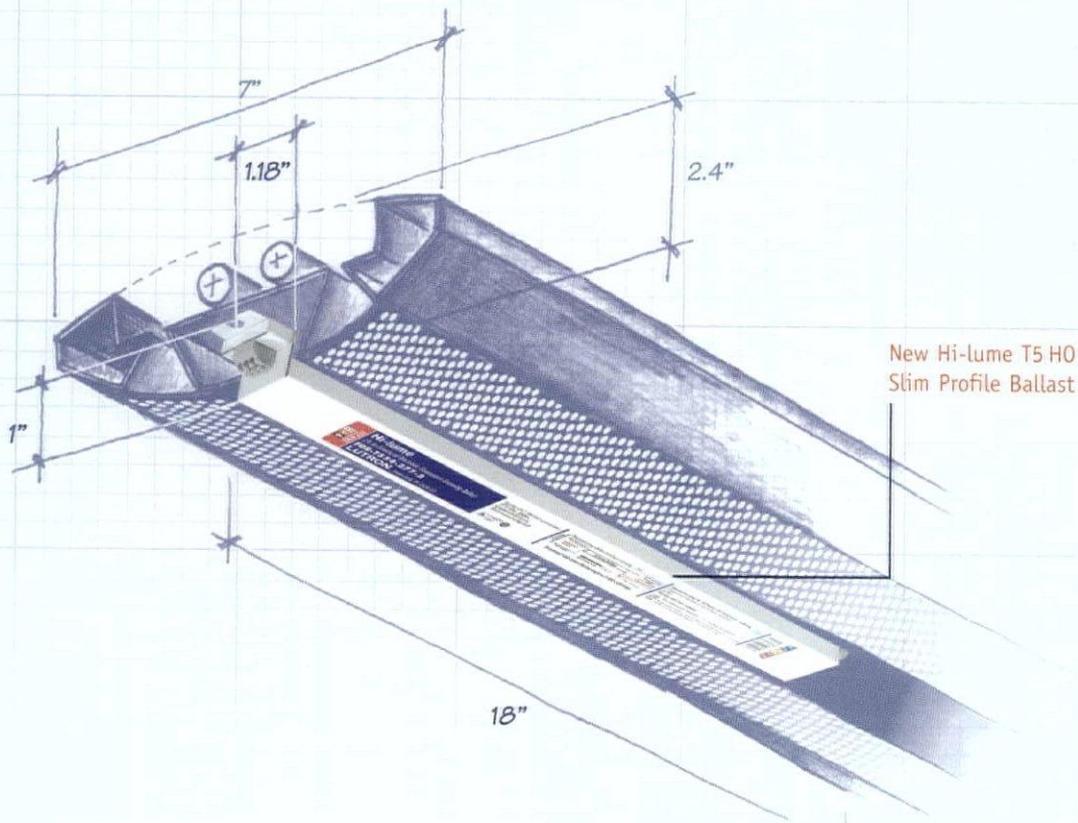
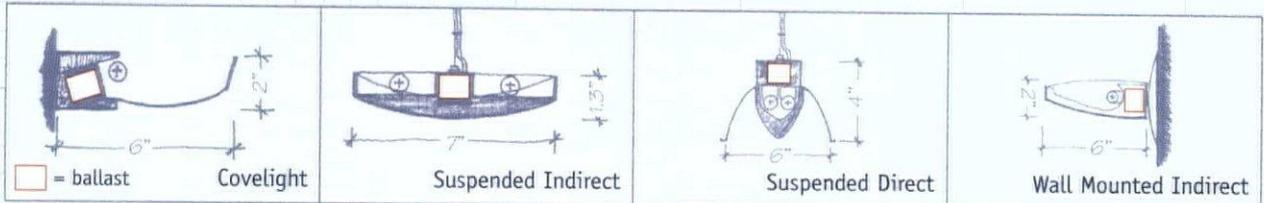
It was an exciting project for me and defined my role as a lighting designer. We need to be aware of the psychological impact of our presence on a team and be aware that while the architect is the ultimate designer, we are being hired for our expertise and insight. So speak up.

AL: What is your design philosophy?

Lindsley: For a consultant or lighting designer, the most important thing is to be absolutely aware not only of the overall

(Continued on page 48)

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(Continued from page 46)

design tenets but also to be aware of the needs of the people who are going to be in the space. To that end, the lighting designer is often the “watch dog” or advocate for the occupant of a space. Often, architects are caught up in image and style and if you’re not really careful, the ultimate use of the space can be second to the look of it. I always make sure that what we wind up with is workable not only for the people who are going to use the space but for the owner’s budget—because we are not only the designer but the budget manager.

AL: *Obstacles to advancing the field?*

Lindsley: Most designers don’t get a great deal of business training. They’re designers first. If we’re going to advance the profession, we need to look at it as a business. It’s evolving, but we’re not there yet. Principals are still working 60 to 80 hours/week, which is something they can’t ask their employees to do, so they take on the burden of the workload. And I don’t see that changing. We need more business training, better contracts and better relationships with our clients. Many people are moving towards working directly for owners rather than working for other design professionals as a better route to better business. Eliminating some of the layers may be a road to consider in formulating our business practices and in becoming more profitable.

Furthermore, the design profession is losing some really exceptional designers to the industry, and in my estimation the motivation to join the manufacturer isn’t really that they lose their interest in design but that the money is there. We need to get better at business to make everybody comfortable. Otherwise it will be a detriment to the lighting design profession.

AL: *Where would you like to see technology and product development heading?*

Lindsley: I’m excited about the advancement of LED technology and its ability to integrate color. The idea of advanced controls becoming more affordable is also interesting. And, of course, we’re all excited about more stable metal halide sources with the development of the ceramic arc tube—but so far they have not been able to put that into larger metal halide sources.

On the downside of what’s happening, I’m concerned there’s been so much consolidation among the equipment manufacturers. I find that as smaller firms

and family-owned business are purchased by the large companies, the ability to work closely with manufacturers in developing new designs in equipment is lost. It becomes more bottom-line and commodity-level thinking. I’m looking forward to better and new light sources. Whether we still have the innovative designs within that environment to do new and different kinds of equipment will remain to be seen.

AL: *How can the relationship between manufacturers and specifiers be improved?*

Lindsley: Where it really works is in instances where manufacturers do market research and invite designers’ opinions before they launch new products. It creates a positive synergy. In fact, the reason the

THE LIGHTING
DESIGNER IS OFTEN
THE “WATCH DOG”
OR ADVOCATE FOR
THE OCCUPANT
OF A SPACE.

IALD started the Lighting Industry Resource Council (LIRC) was to find ways to create dialogue at that level, to discuss innovative product development and how the two parts of a design team can move forward to better the industry. Manufacturers who value the ideas of lighting designers can meet with them to talk about issues affecting both sides of the industry.

Where the business of lighting design needs improvement is in the distribution market and the move toward packaging and larger distributors actually doing designs and substituting entire specs. The manufacturer is often closer to the ultimate client and if the client hasn’t been well educated about the specific design needs, it’s easy to persuade them with “this is equal to that—and it’s 20 percent less.” The LIRC, in conjunction with members of the IALD, recently wrote a document on specification integrity; it is hoped that this “treatise” will not only get the manufacturers but

also rep agencies to buy into that way of doing business. (Editor’s note: *Architectural Lighting* will print the document in the upcoming May Market issue.)

AL: *As the new chair, what is the direction of the IALD?*

Lindsley: I have been a member of the IALD for 23 of the association’s 30-year history, and I can definitely say, it is evolving. For a long time it was a small organization of just east coast designers; then people started moving to other parts of the country and there started to be a stronger contingent of designers on the west coast. In about the last six years, it has really become a global organization. At 650 members—which is almost double what it was four years ago—we’re attempting in every way to meet that need for expansion. But with any type of growth, there’s always the growing pains and the IALD is no exception. We’re talking seriously with the European lighting designers to have one voice. It’s been a long discussion. Everyone is in agreement that it’s a good idea, but how it’s going to get done is still being discussed.

Because we’ve grown so rapidly, our lines of communication have not been as good as they could be and one of my personal goals is to strengthen that and grow that through the IALD website—not only posting what’s happening association-wise, but strengthening the image of the individual designers and their businesses. The IALD is widespread but they aren’t in touch with all their members. What I hope will ultimately evolve is regionalization within globalization, meaning that we do recognize the need for intimate and interactive regionalized meetings where members can meet and discuss topics pertinent to our profession.

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

Lindsley: Carroll Cline embodied a truly admirable approach to life and design and it is the reason his work was so special. He believed one should approach each problem with a fresh mind. It is easy, when we are so busy, to fall back on successful solutions or familiar equipment and pretty soon we can become “dots for dollars” specifiers—turning plans out by rote. The essence of being a designer, however, is creative problem solving that suits the specific task. ■

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UNDER THE BRIDGE

Light transforms this bridge into an overscale light fixture

BY CHRISTINA TRAUTHWEIN, EDITOR-IN-CHIEF

CHALLENGE AMC Nakama is a 16-screen, 2,800-seat multiplex theater located on the 4th, 5th and 6th floors of an enclosed retail/entertainment building in Nakama, Japan. The primary goal of this project was to set a new design standard for AMC's Asian projects while working within the confines of a restrictive shell building. A particular design challenge was to energize an enclosed narrow public atrium, tightly inserted in the center of the project. "We conceived plays of light, glows and reflections in the atrium space to create a dynamic effect," said project designer Hraztan Zeitlian. "To accomplish this, we designed an illuminated glass block bridge with an attached metal wing, suspended in the middle of the atrium space."

Through its lighting, the entire bridge becomes a sculptural light fixture of architectural scale. The light bridge with its wing produces an effect similar to watching a movie image glow in a darkened theater. "The structure functions simultaneously as an oversized light fixture, a functional architectural element and a dramatic theatrical prop."



THIS HIGHLY ARTICULATED, THOUGH SEEMINGLY WEIGHTLESS, METAL BRIDGE, SUSPENDED THROUGH THE HIGH-VOLUME ATRIUM, IS FLOORED WITH GLASS BLOCK TO ALLOW LIGHT TO TRANSMIT INTO THE SPACE BELOW, ADDING TO THE EXCITEMENT OF THE SPACE.

ence." But while the design certainly captures the essence of theater, it is in a simple and streamlined manner, respectful of the architecture.

Probably the most visually interesting, yet amazingly understated element of the lobby is the 55-ft.-long pedestrian bridge that connects the opposite corners of the atrium on the fifth level—which enables the lobby to retain its open, spacious feeling, while adding visual impact and scale within the public atrium. "The idea of placing a bridge in the middle of the 'grotto' allowed us to create a theatrical interplay of light and structure," said Zeitlian, "and to create a dialogue between the two."

The underside of the bridge is lit in blue with a continuous custom light fixture. The indirect lighting is integrated with the architectural fins of the structure supporting a "symbolic screen element" attached to bridge, according to Zeitlian. The blue-tinted glass block flooring on the bridge is more vibrant in hue and glows as a result of this indirect lighting. Structural beams spanning the short dimension of the atrium space are clad in metal with integrated continuous fluorescent lighting, providing downlighting to the architectural form. "It is in this manner that we were able to turn the structural elements into oversized light fixtures," said Zeitlian.

To contrast the cool, ethereal feeling of the "floating" bridge, Gensler chose to illuminate the ticketing booth on the lower floor, which is visible from the "skywalk," with a combination of incandescent downlighting and continuous fluorescent light fixtures to add punch to the eye-catching curved and slanted orange walls framing the ticketing booth—and ultimately to draw viewers' attention to it. ■

METHOD The designers at Gensler, charged with creating an open, exciting space within two limited-height levels in an existing structure, accomplished the mission by cutting away the floor between the two levels and creating a central atrium, or as Zeitlian described, a "crystalline grotto." The connective atrium opens up the entire space, from the ticketing lobby through the auditorium and projection levels, to the roof.

Upon entering the space, one can immediately notice the different qualities of light—natural light from a shaped skylight above the atrium, blue indirect lighting of the bridge and incandescent lighting of the ticketing booth. These various lighting elements work in concert to cast playful, luminous patterns of light on the reflective atrium wall and multicolor refractions of light on diachromatic laminate panels on the atrium walls. "Wherever we could, we used lighting and reflections to visually expand the space and to add elements of sparkle," said Zeitlian. "After all, when people come to a theater, they do expect to have a magical experi-

DETAILS

PROJECT
AMC Nakama

LOCATION
Nakama, Kyushu, Japan

CLIENT
AMC, Inc.

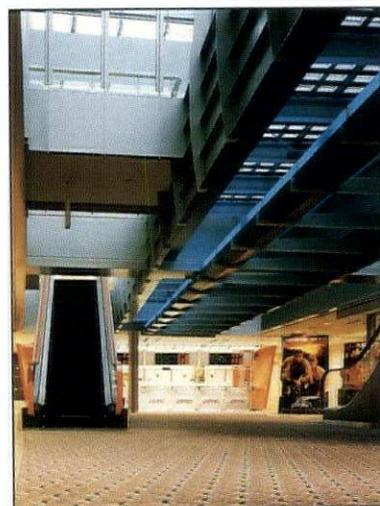
LOCATION
Nakama, Kyushu, Japan

**DESIGN ARCHITECT/
LIGHTING DESIGNER**
Gensler, Santa Monica—
project team: Andy
Cohen; Tony Micu;
Warwick Wicksman;
Hraztan Zeitlian; Bob
Anderson, Haruo
Fukawa; Jeffrey
Halverson; Steve
McCartt

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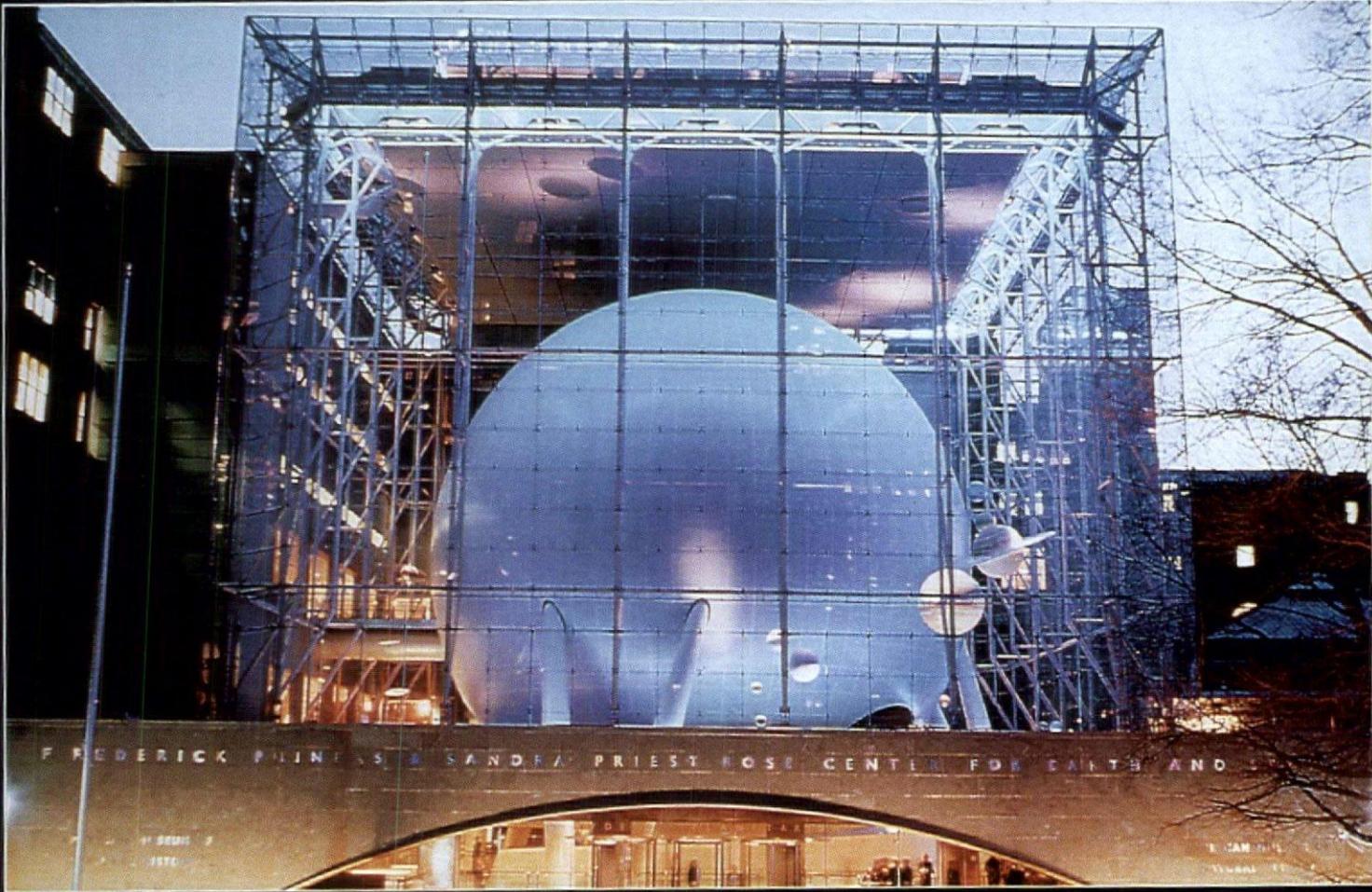
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UNDERNEATH THE HAYDEN SPHERE (LEFT), THE HALL OF THE UNIVERSE IS ILLUMINATED BY TRACKLIGHTING MOUNTED ON THE UNDERSIDE OF THE COSMIC PATHWAY. A COMBINATION OF FLUORESCENT AND FIBER-OPTIC LIGHTING ILLUMINATES THE INTERACTIVE DISPLAYS.

"Hayden Planetarium was part of my childhood, but over the years, I saw it become a tired space that was taken for granted," said lighting designer Hank Forrest, a senior associate at Fisher Marantz Stone. "Being a New Yorker, it was especially meaningful to work on what has to be one of the city's rare, but grand public spaces."

Effecting this transformation from disused laser palace to modern monument to the cosmos, architectural firm Polshek Partnership Architects devised a structural system of tubular steel wall trusses braced by high-strength stainless-steel tension trusses and "spider" fittings to secure the 36,000-sq.-ft. glass curtain wall that hangs from the roof. The curtain wall is constructed of 769 panels of Pilkington water white glass, chosen for its low iron content, and consequently, extreme clarity. Inside the diaphanous cube, three pairs of tilted columns support the Hayden Sphere to create an illusion of floating. "From early on, the concept of having a sphere inside a glass container was essentially linked to the mission and the idea that the museum is now embarking on a focus on science education," said Polshek Partnership Architects design principal Todd Schliemann. "The transparent skin serves as a metaphor for being able to easily access the science."

SCIENTIFIC APPROACH

Measuring 87-ft. in diameter and clad in fabricated aluminum panels perforated for enhanced acoustics, the sphere is split into two levels to house the "Big Bang," a three-minute laser show in its lower half and the Space Theater in its upper half. Lighting the sphere became the major challenge for the design team at Fisher Marantz Stone. "Our interpretation of the problem is that the sphere is magically suspended in the glass cube and it's spinning and sitting in the ether," said Charles G. Stone II, design principal of the firm. "So what color is the ether? We decided that it was blue, but spent a lot of time discussing which blue, why blue and how will it be blue."

Adding complexity to the challenge were concerns about brightness and the building's impact on the surrounding neighborhood. In response,

the design team prepared a preliminary environmental impact study, which involved recording the lighting levels of the old planetarium. "We wanted to look at how much presence the building had at night from a lighting point of view and took light readings of the old dome, existing facades and other parts of the building," said Forrest, who recorded levels between 1 and 1½ footlamberts. "We found that while the original planetarium was dimly lit, the lighting system had some glaring points of light created in some cases by floodlights aimed the wrong way." The goal was not to exceed the light levels of the original planetarium. "We've since gone back and checked ourselves," said Stone. "The new building is less bright in its static mode of blue than the old planetarium."

A further consideration in the illumination of the sphere was the stipulation that the lighting preserve the transparent design of the cube. "Our first scheme located lights on the trusswork vertically around the sphere, so that the light could chase around and create the illusion of it rotating," said Forrest, "but this required mounting fixtures on the curtain wall, which would compete with the transparency." To arrive at an appropriate solution, the design team explored a number of approaches and conducted informal tests with an office-size model of the Hayden Sphere built from cardboard by the architects. "In the evening, we'd drag lights in cabs down to Polshek's office and play with color and various light sources," said Stone. "We did a lot of hands-on experimentation. They also had a couple of the panels from the outside of the sphere and we played with that too. We had ten completely different approaches."

In the end, the designers returned to an early design that mounts a series of floodlights in shielded locations above and below the sphere. Louvered to minimize brightness, the floodlights are lamped with T12 fluorescents for easy maintenance. "If one bulb blows out, nobody will notice; it's forgiving in terms of maintenance and it's a 20,000-hour long-life source," explained Stone. "It's crude in that way, but very appealing. We think there's an elegance in the simplicity of it." The lights are circuited in sequence to create a rolling fade and produce the illusion of a slowly turning sphere. Because its outer surface is made of the same metal panelized system found in its interior, "the sphere is also a natural projection screen," said Stone. "We could project images or do laser projections in the future." Providing contrast to the soft blue glow theatrical narrow beam spotlights recessed in a ceiling slot highlight from above the planets suspended around the sphere. From below, the

Out of This World

MANHATTAN'S LATEST TRIBUTE TO THE STARS BRINGS GALACTIC IMAGES DOWN TO EARTH TO MAKE IT A TRULY COSMOPOLITAN EXPERIENCE

BY ALICE LIAO, ASSISTANT EDITOR

Some of us less passionate stargazers may remember the Hayden Planetarium as a place where simple laser shows cued to the strains of Pink Floyd's *The Wall* would transport one to other worlds and other mind-spaces. Now, six years and \$210 million later, the Hayden Planetarium, a part of the Rose Center for Earth and Space has grown up and become a high-tech sophisticate. While its architecture recalls Wallace K. Harrison's 1939 Perisphere and 18th-century architect Etienne Louis Boullée's Cenotaph—a monument for Sir Isaac Newton, the Planetarium speaks to the future with its interactive exhibitry, state-of-the-art projectors and massive databases; at night, glowing blue and ethereal among the darkened trees, it speaks perhaps to the stars and distant galaxies it reveres.

SITORS TO THE NEW ROSE CENTER FOR EARTH AND SPACE ARE IMMEDI-
ELY STUNNED BY THE ETHEREAL ATMOSPHERE AND SCOPE OF THE STRUC-
URE. THE HAYDEN SPHERE RESEMBLES A PEARL IN A GLOWING JEWEL BOX.

planet exhibits are uplighted by shielded filament low-voltage narrow beam spotlights located with the fluorescent floodlights on the lower edge of a balcony.

Spiraling around the underside of the sphere, a 360-ft. ramp forming the Harriet and Robert Heibrunn Cosmic Pathway is delineated by runs of blue and red cold cathode tucked under the curving walls. The exhibit and interactive panels recount the 13-billion year history of the cosmos and relate one's progress down the pathway to the passage of time. The tiny display niches and backlit graphics are lighted by a combination of fluorescent lamps for the graphics and fiber optics for the niches. The illuminators are concealed on the underside of the ramp. Forrest commented, "The space was so tight that we weren't able to fit in a conventional source."

UNIVERSAL DESIGN

A combination of edge-emitting fiber optics and fluorescent sources illuminates the artifacts and cutout texts displayed in the Hall of the Universe situated underneath the sphere. Equipped with kinetic models, three-dimensional visualizations and computer interactives, the Hall illustrates the formation of stars, planets, galaxies and the universe and is the creation of Ralph Appelbaum Associates, who designed all of the the Center's exhibits. Additional illumination is provided by track lighting mounted on the underside of the Cosmic Pathway.

"There are a lot of very tight shots, narrow windows, subtended angles that required some precision lighting," said Stone of the demands placed by the transparent nature of the architecture and its simple geometric forms. "The tracklighting arrangement is fascinating." Low-voltage and line-voltage PAR38 and AR111 track fixtures are used throughout the Center to illuminate exhibit walls—some still bare—while recessed downlights guide visitors through corridors and passageways. "Once you take away the sphere, what you essentially have is an exhibit space," commented Forrest. "We attempted to use fixtures that were consistent with the Hall of Planet Earth, which was the proving ground to some extent. A lot of the problems related to track fixtures were dealt with in the Hall of Planet Earth, because it was more of a track-intensive display."

Other lighting details enhance the architecture of interior spaces while reinforcing general themes. Immediately inside the glass doors on 81st street, three circular cutouts, luminous with blue and white cold cathode lighting, echo the

sphere and suspended planets. The circular theme continues in the group assembly room where more cutouts are etched in a fluorescent glow. The edge of the room's ceiling is accentuated by cove lighting. Lighted coves also warm a bay of glass-fronted elevators leading to the Space Theater and the entrance to the "Big Bang."

While much of the lighting is used to enhance the museum's bold geometric forms, the building contains a second lighting system for special events. With power and data available in locations throughout the museum, a remote dimming pack can be plugged into a DMX5-12 control station to provide special events lighting without running wires on the floor. Stone said, "This was the first time we integrated a system of that kind into a building from day one."

Although work is still being done on the terrace and fountain, which according to Forrest, will incorporate "some interesting lighting effects," for now, the completed museum is in itself a building on exhibit. "The whole experience is like theater," said Stone. "The exhibit starts before you enter and inside, there is an ascending, descending story about scale, where everything is related back to the sphere." Beholding its otherworldly glow in the evening, one can not help but agree. As its awesome scale and subtle resemblance to a pearl inside a protective enclosure hint at beings greater than ourselves, one is suddenly conscious of our small existence in the cosmos. ■

DETAILS

- **PROJECT** Rose Center for Earth and Space
- **LOCATION** New York, NY
- **OWNER** American Museum of Natural History
- **ARCHITECT** Polshek Partnership Architects; Ralph Appelbaum Associates
- **LIGHTING DESIGNER** Fisher Marantz Stone—Charles G. Stone II; Hank Forrest; Matt Toomajian; Randy Fisher; Tara Christy; Alicia Kapheim; Breck Armstrong; Javier Ten
- **PHOTOGRAPHER** American Museum of Natural History—D. Finnin
- **LIGHTING MANUFACTURER** Lighting Services Inc; Edison Price; Forum; Elliptipar; ETC; Rosco; Lutron



BLUE AND RED COLD CATHODE LIGHTING OUTLINES THE CURVING 360-FT. COSMIC PATHWAY (RIGHT). ILLUMINATED BY FIBER OPTICS, THE EXHIBITS TRACE 13 BILLION YEARS OF COSMIC HISTORY.

Company Policy

COMBINING HIGHLY INTEGRATED AND MODULAR LIGHTING PROVIDES AN INSURANCE PLAN FOR FLEXIBILITY AND FUNCTIONALITY

BY WANDA JANKOWSKI, CONTRIBUTING EDITOR

The stacked structure that forms the new headquarters of Blue Cross Blue Shield is a modern beacon in two ways: It literally contributes a striking corporate presence to the Chicago nighttime skyline and figuratively serves as a shining example of how to blend and maximize flexibility, functionality and aesthetics in a carefully planned lighting system.

The lighting design for the 1.2-million-sq.-ft. project posed several challenges for Stephen Margulies and Fernando Soler of New York City-based Cosentini Lighting Design. High on the list was creating a plan that unified the exterior and interior design and architectural concepts for the building. Those concepts, in turn, were contributed by two different collaborators. The building architect, Lohan Associates, designed the structure itself as well as the surrounding exterior features and the lobby and cafeteria. Interior design firm VOA Associates

created designs for the office and conference room floors.

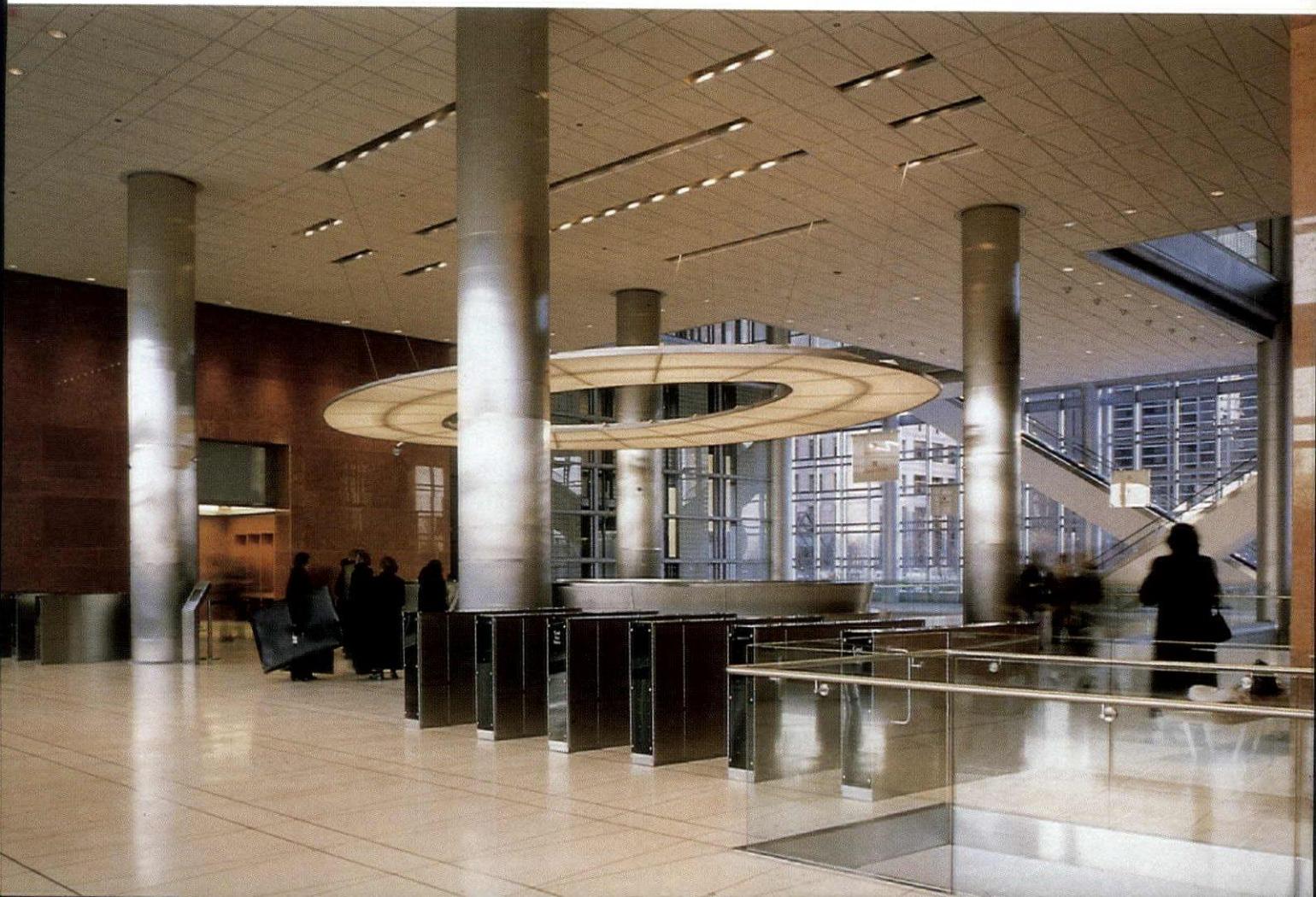
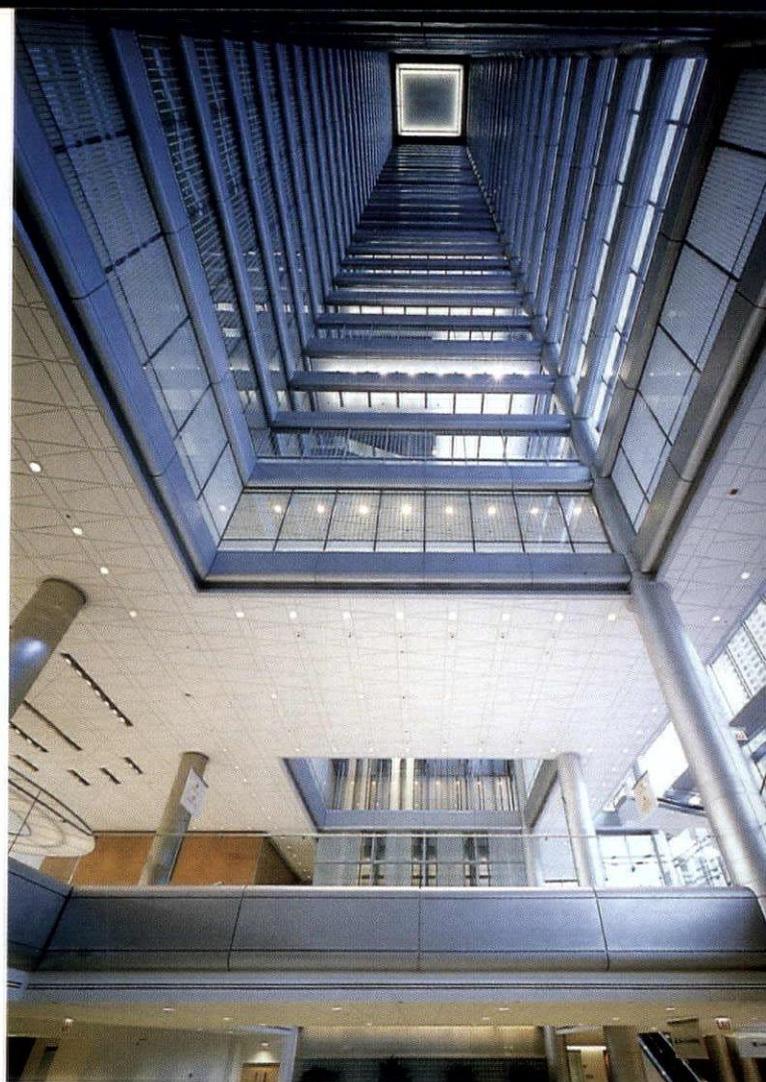
"Often today, the client doesn't hire the same firm to design everything and it's a challenge working with more than one collaborator," said Margulies. "As the lighting consultant, you are caught in the middle between the professionals handling the interiors and those commissioned to create the exterior. Usually, the building architect wins." In this case, the client was the ultimate winner, benefiting from a variety of integrated systems that suits a myriad of tasks.

While respecting a strong east-west orientation, the lighting design for the exterior had to create an image that maintains consistency from the outside plaza to the office interiors. "The exterior is treated like a lantern," said Margulies. "The stacked atrium is visible from downtown Chicago and we wanted to enhance that form without using a flood-lighting approach."

PHOTOGRAPHY: © STEINKAMP/BALLOGG



A UNIFIED ILLUMINATION PATTERN THAT CARRIES THROUGH FROM THE PLAZA TO THE OFFICE INTERIORS IS THE HALLMARK OF THIS MAJOR INSURANCE COMPANY'S HEADQUARTERS. FROM THE PUBLIC SPACES TO THE WORKPLACE, THE LIGHTING DESIGNERS WERE ABLE TO CARRY LIGHTING CONCEPTS THAT EXTENDED FROM THE BUILDING ARCHITECTURE THROUGH TO THE INTERIORS. CONCEPTS OF ORIENTATION, TEXTURE AND VISUAL QUALITY ARE THREADED THROUGH EVERY ASPECT OF THE PROJECT. THE LOBBY HAS UNIQUE FEATURES, SUCH AS THE "RING" (OPPOSITE) AND THE CORRUGATED MARBLE WALL. THE STACKED ATRIA SERVE AS A BEACON AT NIGHT TO THE CITY OF CHICAGO.



LIGHTING IS CAREFULLY INTEGRATED IN THE CAFETERIA TO CREATE AN INTERESTING VISUAL EXPERIENCE THAT ALSO SATISFIES FUNCTIONAL REQUIREMENTS. THE SERVERY FEATURES BACKLIGHTED GLASS PANELS, WHILE THE FOOD IS ILLUMINATED WITH A COMBINATION OF FLUORESCENT AND TUNGSTEN SOURCES.



Light cast from vertical slots that top slender cylindrical metal downlights provides a necklace of lights around the building perimeter and reinforces its modularity. Low-voltage accent lights are integrated into the entry canopy. All of the lighting systems are designed to vary the look based on time of day and to extend lamp life. There are even color-change fixtures incorporated into the exterior lighting that can be used to create holiday effects.

CENTER RING

“The lobby and atrium are the focal points of the facility,” explained Margulies. “The large Saturn ring hovers over the lobby desk, which is surrounded by corrugated marble walls. We wanted the ceiling to be lighted, so when occupants view the lobby at night, the ring will appear to be floating.”

He added, “We came up with the idea of using a series of concealed

PHOTOGRAPHY: © HEDRICH BLESSING



LEFT: THE WORKPLACE LIGHTING FOR THIS HEAD-QUARTERS PROJECT HAD TO BE FLEXIBLE TO ALLOW FOR A VARIETY OF PLANNING PERMUTATIONS. THE 5-FT. MODULAR OFFICES COULD ONLY BE CONSTRUCTED ON THE EAST AND WEST SIDES OF THE FLOOR AND IN ONE SPECIFIC INTERIOR AREA. A 30-IN. MODULAR CEILING SYSTEM WITH A RECESSED DIRECT TROFFER WAS DEVELOPED TO INCREASE APPARENT BRIGHTNESS WITHIN THE SPACE. THE EXECUTIVE FLOOR, DESIGNED WITH A SHAKER-STYLE THEME (OPPOSITE), REQUIRED A LIGHTING SOLUTION TO FIT WITHIN THIS SPECIFIC ENVIRONMENT. THE CONFERENCE-LEVEL LIGHTING DESIGN HAD TO BE VISUALLY DYNAMIC AND SATISFY ALL OF THE A/V RELATED FUNCTIONS.

fixtures that illuminate the near-white floor and reflect light back up onto the ceiling, which maintains a clean, serene look.”

The ring is illuminated with tungsten fixtures concealed in a slot in the ceiling. Tungsten wall washers emphasize the dimension of the lobby’s corrugated marble walls. Compact fluorescent fixtures are recessed into the floor to dramatically uplift the lobby desk.

The atrium achieves its lantern effect illuminated with a combination of pendant-mounted, indirect fluorescent fixtures and metal halide downlights.

The workplace lighting had to furnish adequate task lighting but be modular in nature and flexible enough to accommodate future space planning changes without the need for fixture relocations. “The ability to change interiors easily is increasingly important in corporate environments,” explained Margulies. The typical office floor allowed for the construction of 5-ft. modular offices on the east and west sides and within one specific interior area.

“The offices are lighted with a flexible system that we developed in mock-ups and tested to make certain it could accommodate varied environments,” Margulies explained. “The spaces can be changed from enclosed offices to open-plan cubicles without rewiring.”

Each 30-in. module ceiling system, designed to increase apparent brightness, includes a custom 5-ft.-long, 1-ft.-wide recessed fluorescent troffer for direct illumination. The hybrid-finish louver assembly consists of white rails and diffuse aluminum cross blades. In the circulation areas, lighting is supplemented with indirect cove lights integrated into the millwork.

MOVERS AND SHAKER

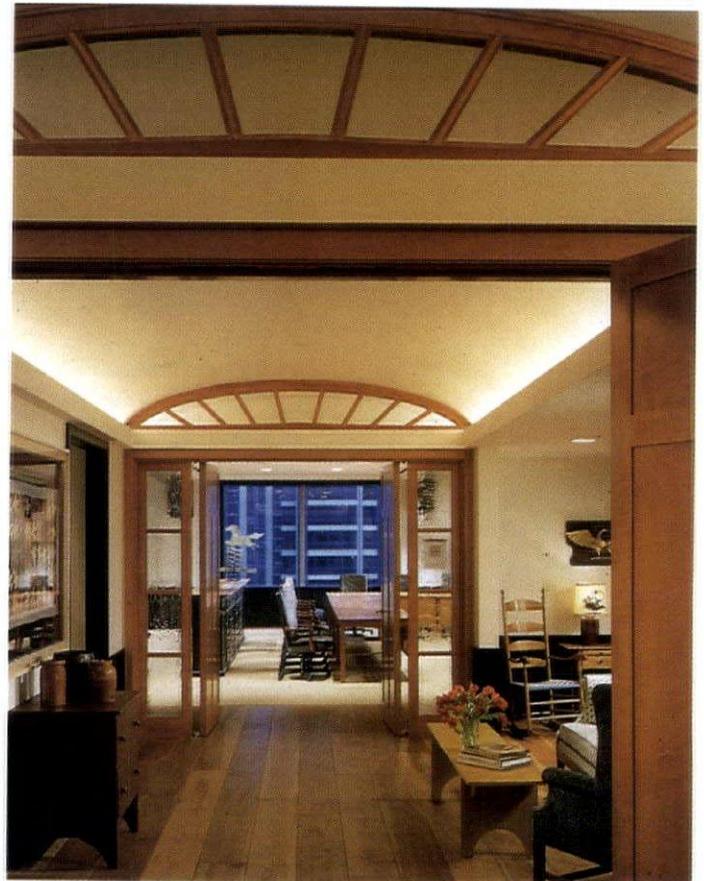
The furnishings and style of the executive floor contrast with the contemporary look of the other office floors and consequently required a very different lighting solution.

“On the executive floor, the client wanted the furnishings to embody the Shaker style, complete with a boardroom constructed to resemble an old stone barn. But Shaker style also means creating a lighting effect reminiscent of windows and candles,” said Margulies. “So we incorporated subtle miniature light sources in this traditional-style space, which is adjacent to very modern-styled spaces.”

Concealed light sources also are carefully positioned to unobtrusively illuminate the extensive Shaker art collection exhibited throughout the floor. Cove lights and 1-ft. x 1-ft. recessed direct fixtures provide general office lighting.

It’s back to a contemporary style in the cafeteria and food serving areas. The serving islands, topped with glistening stainless steel counters, incorporate glowing backlighting glass panels. Food is lighted from overhead via a combination of fluorescent and tungsten sources. The public spaces within the building’s below-grade conference center are illuminated with cove lighting and wall washing, which reinforce the architecture. Decorative lighting elements add a welcoming effect within coffee-stand spaces.

The training rooms are comfortably lighted with indirect fluorescent fixtures. These are fitted with dimmable compact fluorescent wall washers and downlights to offer flexibility in suiting varied functions from audiovisual presentations to distance learning and video conferencing.



“The conference center involved meeting the high-tech challenges of integrating lighting with audiovisual equipment,” Margulies said.

The facility is energy efficient, using only 1W/sq. ft. “Our firm has received EPRI awards for energy conservation for four consecutive years,” Margulies noted. “That was never our goal. We just believe that it should be incorporated into a good design.” ■

DETAILS

- **PROJECT/CLIENT** Blue Cross Blue Shield Headquarters Base Building
- **LOCATION** Chicago, IL
- **ARCHITECT** Lohan Associates
- **INTERIOR DESIGNER** VOA Associates
- **LIGHTING DESIGNER/ELECTRICAL ENGINEER** Cosentini Lighting Design—Stephen Margulies, IALD and Fernando Soler
- **GENERAL CONTRACTOR** Walsh of Illinois
- **PHOTOGRAPHER** Hedrich Blessing; Steinkamp/Ballogg—Jim Steinkamp
- **LIGHTING MANUFACTURERS** Lightolier; Belfer Lighting; Elliptipar; Legion Lighting; Irideon; Bega; Michaels’ Lighting



Sea Worthy

EXTERIOR LIGHTING ENCOURAGES VISITORS TO NAVIGATE,
EXPLORE AND DIVE INTO THE MYSTERIES OF AQUATIC ENVIRONMENTS

BY CHRISTINA TRAUTHWEIN, EDITOR-IN-CHIEF

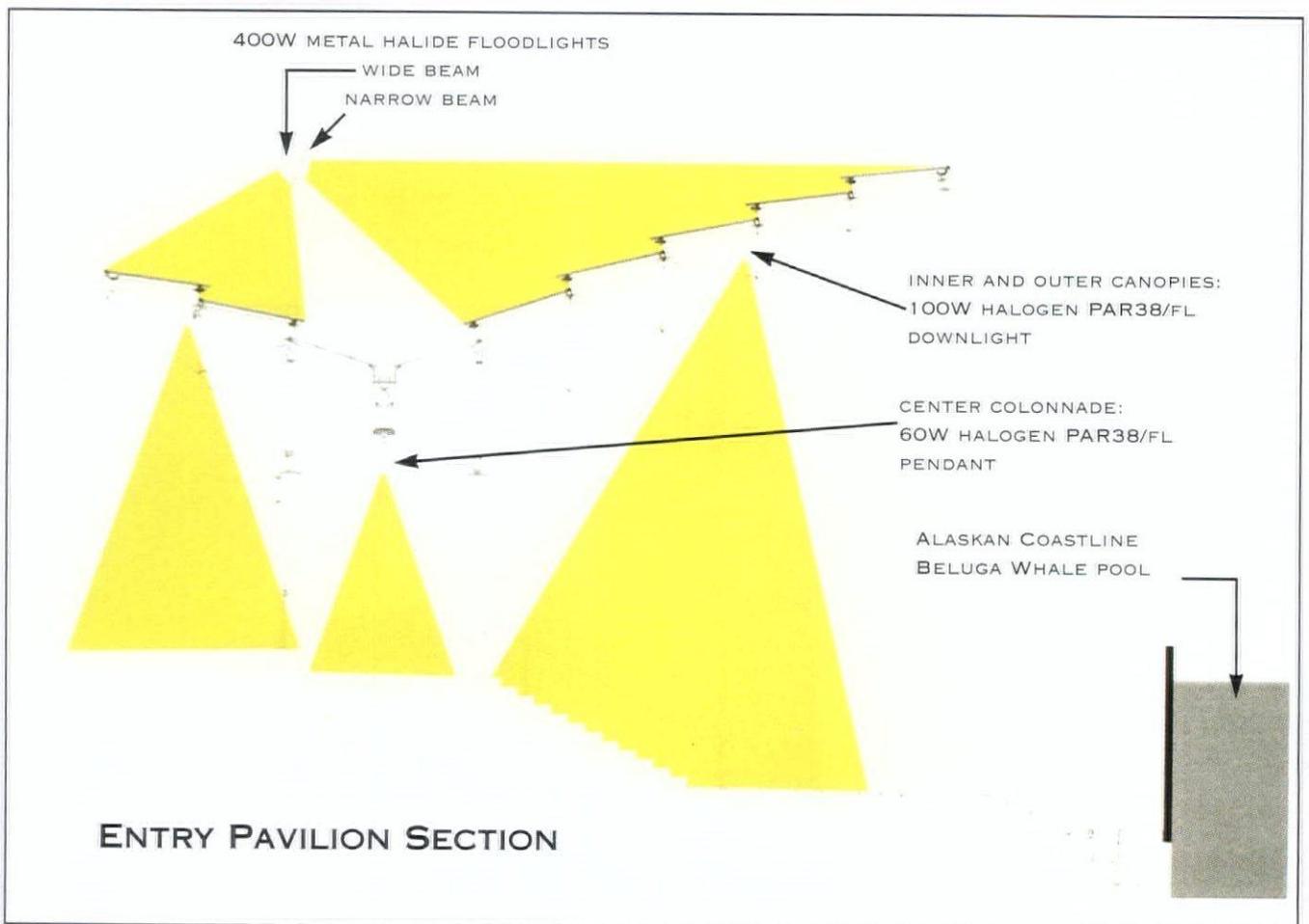
Since its founding in 1973, the Mystic Marine Life Aquarium, a marine education and research facility, has been dedicated to promoting a greater understanding and appreciation of the aquatic world through its living collection and its many outreach programs. The recent renovation and expansion of the current facility reinforce the facility's mission—exploration, interpretation and presentation of the oceans and conservation of the earth's natural environment—and enhance and expand the visitor's experience through a more coherent and comprehensive facility. The expansion of the aquarium includes 75,000 sq. ft. of new construction, 30,000 sq. ft. of new interior and exterior exhibits and the renovation of 40,000 sq. ft.

Architectural additions to the facility include a new 13,000-sq.-ft. entry pavilion, covered walkway and the Institute for Exploration, which takes visitors on a journey into the deep ocean. According to Francesca Bettridge, IALD, the lighting designer's challenge was to create iconic nighttime images out of the new structures to reveal their purpose and materials. "In addition, it was important that the lighting assists visitor orientation by reinforcing the organization of the complex," said Bettridge. A limited budget required that standard fixtures be used in an imaginative way to maximize the effects demanded by the complex architecture. "Though the lighting design was often challenging, this really was a case of wonderful architecture and a cooperative architectural team—the lighting just enhances what they do," said Bettridge.

THE EXPANSION AND RENOVATION OF THE AQUARIUM ENHANCES VISITORS' EXPERIENCES THROUGH A COMPREHENSIVE DESIGN OF NEW EXHIBITS. THE AQUARIUM IS AN ASSEMBLAGE OF DISTINCT FORMS AND SHAPES, FORMING AN ARTISTIC COMPOSITION. THE DRAMATIC NEW CIRCULAR ENTRY PAVILION AND PUBLIC CONCOURSE LINK ALL PRIMARY COMPONENTS OF THE FACILITY AND GUIDE THE VISITOR FROM ONE AREA TO THE NEXT. THE LIGHTING ARTICULATES AND EMPHASIZES THE BUILDING'S PURPOSE AND MATERIALS.



THE ENTRY'S GRACIOUS, UMBRELLA-LIKE FORM (ABOVE & OPPOSITE) INVITES AND ORIENTS THE VISITOR. IT IS AN OPEN AND WELCOMING MULTIFUNCTION SPACE WHERE PEOPLE MEET, PURCHASE TICKETS OR ATTEND SOCIAL EVENTS. THE CHALLENGE WAS TO ILLUMINATE THE GLASS ROOF TO CREATE A NIGHTTIME ICON FOR THE AQUARIUM. "DURING THE DAY, LIGHT COMES THROUGH THE GLASS CANOPY," SAID BETTRIDGE, "AND WE WANTED THE NIGHTTIME EXPERIENCE TO BE JUST AS MAGICAL AND LUMINOUS." EXPLAINED BETTRIDGE, "WE HAD MANY DISCUSSIONS AND CONDUCTED NUMEROUS STUDIES TO DETERMINE WHAT MATERIAL TO USE FOR THE CANOPY AND THEN TO DETERMINE HOW TO BEST ILLUMINATE THE MATERIAL." THE LIGHTING DESIGNERS SUGGESTED LAMINATED GLASS, WHICH LACKS THE OPACITY THAT WOULD PREVENT THE



FINIAL CROWN
@ TOP OF INNER CONE
(SEE DETAIL)

BLUE CORRUGATED
METAL FACADE

CONTINUOUS BRACKET
MOUNTED 4100K T8
FLUORESCENT WALL WASHER

OUTER CONE

FINIAL

METAL HALIDE PAR
ACCENT BETWEEN EACH
PAIR OF FINIALS

BALLAST BOX
(BEYOND)

EXPLODED FINIAL CROWN SECTION

WALL SECTION—DEEP DIVE THEATER

TRANSMISSION OF LIGHT, BUT DISSIPATES IT ENOUGH AS TO CREATE A GLOW. "RATHER THAN UPLIGHTING, WHICH WOULD CAUSE REFLECTION OF THE LIGHT SOURCES, WE CHOSE TO LIGHT FROM ABOVE THROUGH THE GLASS, SIMILAR TO THE DIFFUSE LIGHT PROJECTING THROUGH THE CANOPY DURING THE DAY," SAID BETTRIDGE, "AND ADDED LAYERS OF LIGHT TO ACHIEVE THE OVERALL EFFECT. THE LIGHT FEATHERS OUT TOWARDS THE END OF THE CANOPY SO AT THE VERY TIPS IT BECOMES MORE TRANSPARENT. THE ENTIRE FORM BECOMES AN ILLUMINATED SKY."

THE TRANSLUCENT INTER-LAYER OF THE LAMINATED GLASS ROOF DIFFUSES THE FLOODLIGHTS MOUNTED ABOVE IT; THE GLOW TRANSFORMS THE PAVILION INTO A LANTERN. HIR/PAR DOWNLIGHTS ARE INTEGRATED INTO THE FRAMEWORK OF THE STRUCTURE TO PROVIDE POOLS OF LIGHT ON THE GROUND. SAID BETTRIDGE, "THE INCANDESCENT SOURCE ALLOWS FOR VARIABLE LIGHT LEVELS FOR NIGHTTIME EVENTS AND ACCOMPLISHES A DUAL PURPOSE—ILLUMINATING SIGNAGE AND GRAPHICS."

PHOTO: © ROBERT BENSON





CONCEALING THE EIGHT SOURCES FROM VIEW ACHIEVES THE DRAMATIC EFFECT OF THE ENTRY PAVILION: POLE-MOUNTED METAL HALIDE FLOODLIGHTS ARE AIMED AT BOTH SLOPES OF THE ROOF (THE LAMPING IS CONSISTENT BUT THE DISTRIBUTION AND ANGLE OF THE FIXTURE VARIES) AND DOWNLIGHTS ARE MOUNTED TO THE INNER AND OUTER PERIMETERS.

THE DEEP DIVE THEATER, ALSO KNOWN AS THE INSTITUTE FOR EXPLORATION (ABOVE & OPPOSITE), WHICH, ACCORDING TO BETTRIDGE IS A "WONDERFUL, ORGANIC FORM, BUT COMPLICATED TO LIGHT," RISES LIKE A SCULPTURE AGAINST THE SKY, AND TURNS INWARD ANTICIPATING THE EXCITING SHOW WITHIN. THE SPIRALING STRUCTURE IS MYSTERIOUS IN NATURE, WITH ITS FORMS REVEALED BY CONCEALED LIGHTING. CREATED OUT OF TWO TRUNCATED CONES—ONE WITHIN ANOTHER—AND SHEATHED IN PAINTED CORRUGATED METAL, ITS FORM REMAINS JUXTAPOSED TO THE OPEN ENTRY PAVILION. THE INNER CONE IS ORIENTED FIVE DEGREES FROM THE VERTICAL TO ACCENTUATE ITS PERCEIVED HEIGHT. "BOTH THE COLOR AND THE FORM METAPHORICALLY TAKE VISITORS UNDER THE BOTTOM OF THE OCEAN'S DEPTH BY CREATING THE ILLUSION OF DESCENT," EXPLAINED BETTRIDGE.

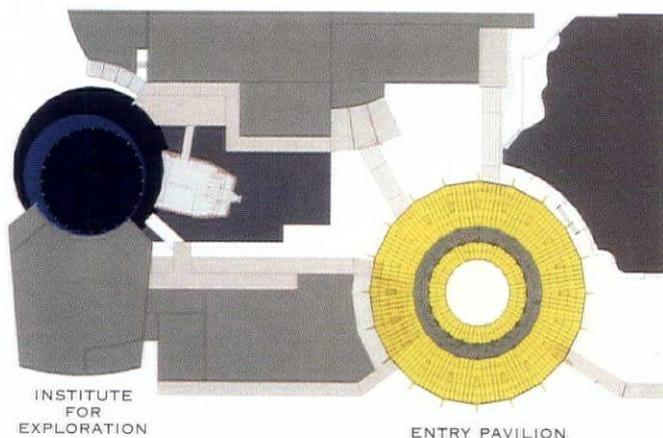
CONTINUOUS, BRACKET-MOUNTED FLUORESCENTS BATHE THE SIDES OF THE BUILDING IN LIGHT, EMPHASIZING THE COLOR AND FORM. IN CONTRAST TO THE LIGHTED WALL SURFACE, CONCEALED PAR20 METAL HALIDE LAMPS LOCATED BETWEEN THE METAL FINNS AT THE TOP OF THE STRUCTURE UPLIGHT THE FINNS, CREATING THE EFFECT OF A LIGHTED CROWN.

NIGHT VISION

In the absence of a clearly defined building typology for aquariums, it was important to establish a concept that reflects the philosophy of the Mystic Aquarium. The design of the aquarium is based on assembling distinct forms into a single, cohesive package to highlight the unique nature of each exhibit element and to increase visitor anticipation upon arrival at the aquarium. "Celebrating the individual character of each form in a unified manner also helps to blend the existing buildings with the new," said Bettridge. And the forms are exciting—in particular, the entry pavilion and the Institute for Exploration, which both architecturally communicate their intended purposes, according to Bettridge.

The shape of the Institute for Exploration is counterpoint to the entry pavilion form—whose sweeping, umbrella-like presence is both inviting and reminiscent of early 20th-century garden pavilions. The sculptural form of the Institute building is focused inward, invoking the sense of mystery to be discovered in the depths of the ocean below.

Once visitors pass through the entry pavilion, they encounter a waterfront environment. The built and natural environments blend with the Alaskan Coast experience to the visitors' right and with the Main Aquarium, Institute for Exploration and visitor services to the left. The materials and colors heighten the sense of excitement of the "explorer's" experience. ■

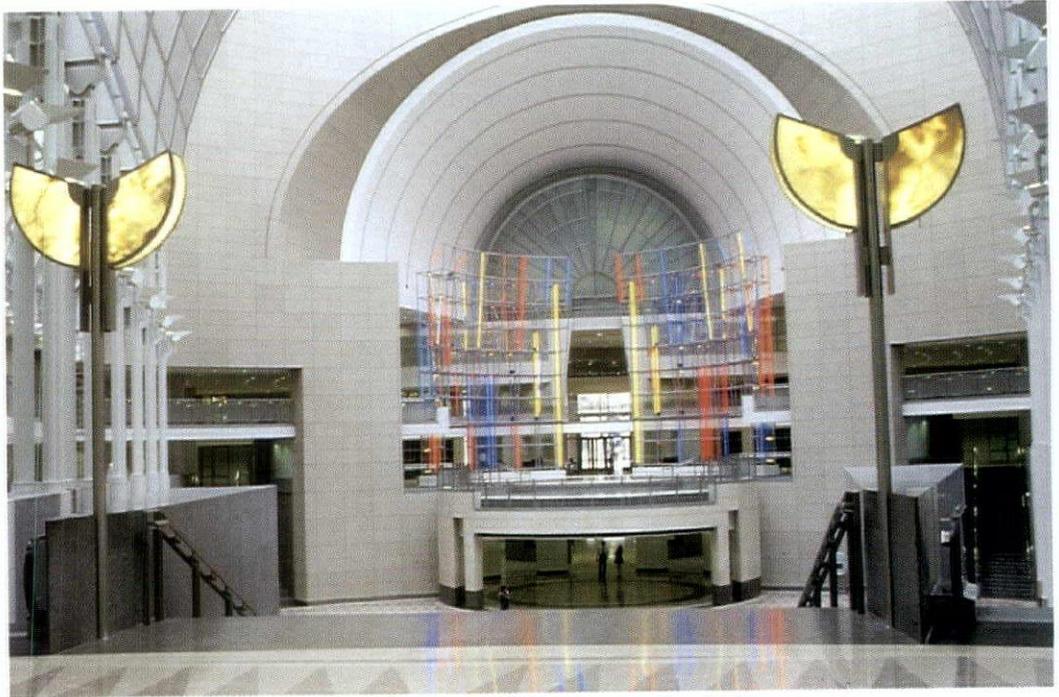


MYSTIC AQUARIUM SITE PLAN

DETAILS

- PROJECT Mystic Aquarium Exterior
- LOCATION Mystic, CT
- ARCHITECT Cesar Pelli and Associates
- LIGHTING DESIGNER Cline Bettridge Bernstein Lighting Design—Francesca Bettridge, IALD and Dan Rogers
- PHOTOGRAPHER Robert Benson Photography
- LIGHTING MANUFACTURERS Louis Poulsen; Nu-Art; Greenlee; McPhilben; Widelite; Philips Lighting; GE; Venture Lighting

RIGHT: TWO 13-FT.-TALL TORCHIERES TOPPED WITH WING-LIKE ONYX DIFFUSERS, EACH FITTED WITH TWO BIAx FLUORESCENTS, STAND SENTINEL AT THE TOP OF THE STAIRCASE IN THE ATRIUM. AMBIENT LIGHT COMES FROM PAIRS OF 400W METAL HALIDE UPLIGHTS IN ASYMMETRICAL REFLECTOR FIXTURES MOUNTED ATOP COLUMNS RUNNING THE LENGTH OF THE CONCOURSE AND 100W YOKE-MOUNTED ADJUSTABLE METAL HALIDE DOWNLIGHTS MOUNTED ALONG THE CENTRAL SPINE OF THE ARCHED VAULT.



Capital Gain

WHILE THE ADDITION OF THIS STRUCTURE TO D.C.'S FEDERAL TRIANGLE MAY BE MASSIVE IN SCOPE, IT'S CERTAINLY INTRICATE IN DETAIL



LEFT: OUTSIDE THE RONALD REAGAN BUILDING, A CRESCENT-SHAPED SKYLIGHT WITH A SUN-SCREEN MADE OF METAL TUBES SPACED 1 IN. ON CENTER INTIMATES THE MODERN GEOMETRIC FORMS THAT CHARACTERIZE THE INTERIOR. THE SUNSCREENS ARE UPLIGHTED WITH CUSTOM WALL-BRACKET-MOUNTED FLUORESCENT FIXTURES, WHICH PROVIDE AMBIENT LIGHT FOR THE CAFETERIA BELOW. DUAL SCONCES MADE OF STAINLESS STEEL AND GLASS AND FITTED WITH FLUORESCENT LAMPS MARK THE MAIN ENTRANCE AND COMPLEMENT THE NEO-CLASSICAL-STYLE ARCHITECTURE.

RIGHT: CUSTOM FIXTURES INCORPORATE VARIOUS GEOMETRIC SHAPES THAT ACCENTUATE THE VOLUMES OF THE MODERN INTERIOR AND AID IN ORIENTATION BY SERVING AS ARCHITECTURAL LANDMARKS. GROUPINGS OF EIGHT DISK-SHAPED DIFFUSERS INCORPORATED INTO MASSIVE SCONCES FLANK THE INTERIOR ENTRY OF THE ATRIUM. EACH DIFFUSER CONTAINS FOUR 26W T4 COMPACT FLUORESCENT LAMPS.

BY JEAN GORMAN, CONTRIBUTING EDITOR

Given the inherent hurdles involved in the construction of new public buildings—layers of bureaucracy, budget constraints and rigorous building requirements, to name but a few—one wonders how they ever get built at all, particularly the Ronald Reagan Building and International Trade Center in Washington, D.C., which was completed after 10 years in the making. Not only does this new multi-use structure fill a void that stood empty for more than 70 years in what is known as the Federal Triangle development, it is literally mind-boggling in size and scope. Encompassing more than 3.1 million sq. ft. on an 11-acre site and costing about \$730 million, it stands as the largest building constructed in the nation's capital since the Pentagon was completed in 1943.

Designed by Pei Cobb Freed & Partners, with Ellerbe Becket as the architect/engineer of record, its freshly interpreted neoclassical-style exterior adheres to the strict design criteria mandated in government guidelines and complements the style of the other buildings in the Federal Triangle enclave, most of which were built in the 1920s and '30s to house federal departments and agencies. But the interior spaces—modern geometric volumes defined by stainless steel, polished stone and glass—are firmly rooted in the present. Among the most notable architectural elements that lend character and function to these spaces—and further distinguish the building as an exceptional public structure—is an extensive collection of custom light fixtures designed by the New York-based lighting design firm Fisher Marantz Renfro Stone (now Fisher Marantz Stone).

NAVIGATION POINTS

In all, 217 custom fixtures in eight different styles were installed in several prominent public spaces inside the building and out. While the fixtures contribute significantly to the overall illumination of various spaces, a more essential role that several of them play is to help occupants of both the public and private sectors navigate through the massive spaces by serving as landmarks of sorts at key



circulation points. “Sconces and chandeliers were used to create visual processions to reinforce orientation,” noted Barry Citrin, an associate principal at FMS who worked on the project.

The custom fixtures, which account for just a small percentage of the 21,000 total fixtures employed throughout the building, were also designed to meet strict energy-efficiency requirements and to incorporate state-of-the-art sources. With the current rapid-fire rate of change in technological development, however, the notion of “state-of-the-art” loses its meaning in a project that takes 10 years to complete. “When we started in 1987, the twin-tube compact fluorescent fixtures we specified were new, but by the time we finished, the technology had advanced so much that the fixtures we had called for were outdated by triple-tube compact fluorescents and electronic ballasts,” recalled Citrin.

Nevertheless, these 3500K compact fluorescent sources, along with the new family of metal halides lamps with their improved color of 3200K, were the lighting designers' sources of choice for virtually all of



LEFT: ANOTHER EXAMPLE OF THE VARIOUS GEOMETRIC SHAPES THAT ARE CRUCIAL TO THE LIGHTING DESIGN OF THIS PROJECT. SUSPENDED BY STAINLESS-STEEL RODS IN AN ELEVATOR BAY, A 22-FT.-LONG LINEAR FIXTURE IS ILLUMINATED WITH F40T8 AND F32T8 FLUORESCENTS. INSET: A SERIES OF CUSTOM-DESIGNED CONED-SHAPED CHANDELIERS, EACH CONTAINING TWELVE 39W T5 TWIN-TUBE COMPACT FLUORESCENT LAMPS, MARKS THE DECISION-MAKING POINTS ALONG CIRCULATION ROUTES.

In the glass-vaulted atrium, two massive tulip-shaped torchieres, each composed of 13-ft.-tall stainless-steel poles topped with three wing-like onyx diffusers fitted with biax fluorescent lamps, flank the top of a grand staircase. A two-story backlit sloped glass wall behind a neon-and-glass sculpture by artist Keith Sonnier draws the eye toward the opposite end of the atrium.

the custom fixtures employed throughout the public spaces. Not only do they meet the energy requirements stipulated by government guidelines, they were also utilized in fixtures that enhance architectural surfaces and materials and reinforce the spatial volumes by providing depth to the spaces.

SIGNIFICANT OTHERS

The most significant aspects of the lighting strategy can be seen in the exterior plaza, in the nine-acre atrium concourse and in a 620-seat auditorium. The limestone facade of the exterior is washed in the warm light of 100W metal halide fixtures mounted on the rooftops of adjacent buildings and street lighting standards. The long plaza is illuminated by the bounce light reflected from the floodlighted facade of the Ronald Reagan Building and the nearby Ariel Rios Building. The exterior entries of the Reagan Building were highlighted with pairs of custom lanterns, scaled to match or indicate the significance of the entry. A procession of the same family of lanterns is suspended along an exterior arcade, while the opposite edge of the plaza, defined by rows of trees, is illuminated with metal halide bollards, which uplight the trees and downlight the perimeter of the plaza.

VARIATIONS ON A THEME

An enormous, octagon-shaped skylight over a reception area is rimmed at its lower perimeter with a bracelet of light emitted by custom fixtures composed of glass disk diffusers mounted in alcoves containing a series of incandescent lamps. Variations of these disk-like fixtures appear as wall-mounted sconces near the main entry or as downlights along the concourse, while the funnel-shaped skylight is echoed in cone-shaped glass and stainless-steel chandeliers suspended at key points of orientation. Linear pendants also figure into the custom fixture mix: A wedge-shaped pendant highlights the atrium entrance, a rectangular pendant hangs over an elevator bay and a massive suspended spine of light bisects and runs the length of the ceiling in the auditorium.

Like smaller versions of the geometric volumes of the building's dominant interior spaces, the forms and scale of the custom fixtures accentuate and relate to the materials and clean lines of the building's modern interior architecture. They also lend an appropriate level of monumentality to this substantial civic structure with architectural elements that subtly recall those of the grand spaces of government buildings of the past. ■

Sidelights

Of the 21,000 total fixtures in the Ronald Reagan Building and International Trade Center, 217 are custom fixtures of eight different styles designed by lighting designers Fisher Marantz Renfro Stone. They were fabricated by Cornelius+, a Forms+Surfaces company known for custom architectural metal work. LightForm+, a newly formed Forms and Surfaces company, now markets Cornelius+ custom lighting capability and is tooling a selection of these fixtures to add to its standard line. The following list includes a brief description of each:

- *Exterior pendant lanterns and complementary wall-mounted sconces.* Measuring 63 in. high x 19½ in. in diameter, the lanterns are composed of formed and laminated opal glass diffusers in a formed and welded stainless-steel frame with a finish that has been shot-peened with glass beads. The sconces are variations on this theme in different sizes. All utilize fluorescent lamps.
- *Indoor wall-mounted lanterns.* These are also variations of the exterior sconces described above, measuring 41 in. high.
- *Torchieres.* These 13-ft.-high fixtures feature three 61-in.-high wedge-shaped, white onyx shades mounted on stainless steel poles. They are illuminated with compact fluorescent lamps.

- *Wall-mounted dome sconces.* Clustered in groups of eight at the entry, the domes are made of formed and laminated ¾-in.-thick opal glass disks, measuring 36 in. in diameter and illuminated by compact fluorescent lamps. The decorative metal work is welded and painted aluminum.

- *Conical pendant.* Composed of formed and laminated opal glass diffusers framed in stainless steel with a brushed satin finish, these fixtures measure 84 in. in diameter x 28 ft. high. They are lighted with fluorescent lamps.

- *Alcove-suspended disks.* Composed of two laminated ¾-in.-thick glass disks each mounted on four radiating stainless steel stainless steel spokes, these fixtures are suspended in wall alcoves and illuminated with A19 clear incandescent lamps.

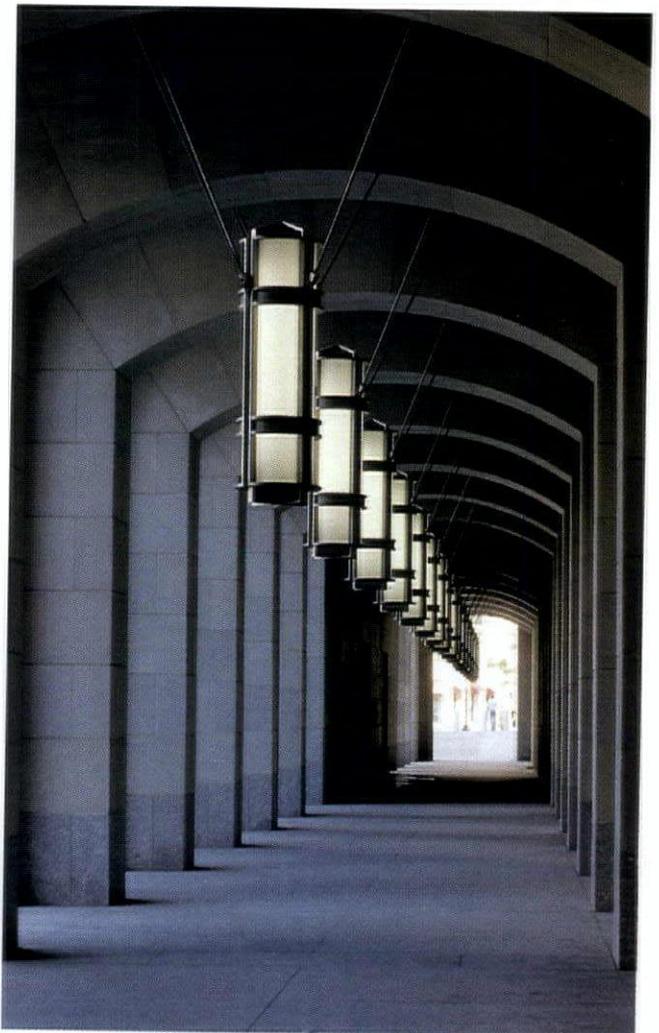
- *Rectangular linear suspended fixture.* This 15-in.-square x 22-ft.-long fixture is composed of formed and welded stainless-steel frames with formed and laminated opal glass diffusers and is illuminated with fluorescent lamps.

- *Wedge-shaped linear pendant.* Similar in construction to the fixture described above, this fixture is 13¼ in. high x 41 in. wide x 15½ ft. long and is also illuminated with fluorescent lamps.

RIGHT: MEASURING 63 IN. HIGH X 19½ IN. IN DIAMETER, EXTERIOR LANTERNS COMPOSED OF STAINLESS STEEL FRAMES WITH LAMINATED OPAL GLASS DIFFUSERS ARE SUSPENDED IN AN EXTERIOR ARCADE FROM STAINLESS STEEL TUBES. EACH INCORPORATES TWO LINEAR F48T12HO FLUORESCENT LAMPS. OTHER EXTERIOR SCONCES ARE VARIATIONS ON THE LANTERN THEME AND RANGE IN SIZE DEPENDING ON THE IMPORTANCE OF THE ENTRY.

DETAILS

- PROJECT Ronald Reagan Building and International Trade Center
- LOCATION Washington, D.C.
- CLIENT General Services Administration
- DEVELOPER Federal Triangle Corp.
- DESIGN ARCHITECT Pei Cobb Freed & Partners
- ARCHITECT/ENGINEER OF RECORD Ellerbe Becket
- LIGHTING DESIGNER Fisher Marantz Renfro Stone
- STRUCTURAL ENGINEER Weiskopf & Pickworth
- MECHANICAL AND ELECTRICAL ENGINEER Ellerbe Becket
- ELECTRICAL CONTRACTOR Fischbach & Moore
- CONSTRUCTION MANAGER Perini Corporation
- PHOTOGRAPHER Ken Balsler
- LIGHTING MANUFACTURERS Lightolier; Edison Price; Sterner; Cornelius+ (now LightForm+)



Lightfair 2000, to be held May 9-11, anticipates more than 17,000 architects, engineers and design professionals to gather under one roof at the Javits Convention Center to celebrate lighting in the 21st century. A comprehensive architectural and commercial lighting conference presented in five seminar tracks—"Design in the Built Environment," "Urban Lighting: City Lights," "Entertainment Architecture," "Energy & Technology," and "Business Practices"—will be offered (see page 82 for schedule). In addition, more than

400 exhibitors in more than 1,100 booths in four exhibit halls will showcase the newest products and latest technology in the lighting industry.

Architectural Lighting highlights some of the scheduled events and previews some of the special features planned for this year's show. For more information on any of the following events, visit Lightfair's website at www.lightfair.com. Information about attending, exhibiting, conference programs, workshops and seminars, travel, current exhibitors, special events, registration and more is included.

IALD Awards Presentation and Celebration

A special event of note is the 17th Annual IALD Lighting Awards Dinner and Education Trust Benefit. The awards presentation, cosponsored by the International Association of Lighting Designers (IALD) and *Architectural Lighting*, honors this year's winners—among more than 140 entries—on Wednesday, May 10 from 7:00 pm-midnight at the Puck Building.

Judging for the IALD awards was held February 10-11 in New York City. Respected professionals from the architecture and lighting design communities judged the entries on their aesthetic and technical merits. Complete coverage of the winning submissions will be featured in the July issue of *Architectural Lighting*.

Tickets may be purchased through Lightfair registration or the IALD office. For more information about the event, contact the IALD at (312) 527-3677.

New for 2000

The **Howard Brandston Student Tour & Luncheon** will be held 12:15-1:45 pm on Tuesday, May 9 at the Javits Convention Center. This program, which includes a complimentary pass to the New Product Showcase & Awards Presentation, will feature a presentation by Howard Brandston focusing on careers in lighting design for today's students as well as sponsor information tables. Industry professionals from the IESNY Section and the IALD will walk students through the exhibit hall to view the latest in product information.

Join Lightfair International for the **Celebration Cocktail Reception**, including the Best Booth Awards and Image Awards presentation, in Exhibit Hall D at Javits from 4:00-6:00 pm on Tuesday, May 9. (Cocktail reception to be held again from 4:00-6:00 pm on Wednesday, May 10.) The event welcomes both attendees and exhibitors and celebrates the expansion of the trade show to include more exhibiting companies than ever before.

"**The Twentieth Century: Light Runs Through It**" Seminar Luncheon will be held from 12:15-1:45 pm on Wednesday, May 10 at the Javits Center. The speakers—Daniel Blitzer, IESNA, Pamela Horner, IESNA, ASTD, Robert Horner, LC, IESNA and Mark Rea, Ph.D., LC, IESNA—address 20th-century lighting in context with the fashion and politics of the times. The presentation combines multimedia with onsite commentary and begins the process of documenting a history of lighting.

We'll Take

Special Events

Tuesday, May 9

Kick off Lightfair from 8:00-9:30 am at the multimedia **New Product Showcase & Awards Presentation**, sponsored by *Architectural Lighting* and *inter.Light*. This much-anticipated presentation highlights new products introduced commercially within the last year and offers an exciting preview of what will be exhibited on the show floor. Find out which manufacturer submits the Best New Product of the Year, in addition to award winners in technical innovation, energy management and savings and design excellence. Judges for 2000 include John Bos, IALD, Mary Ann Hay, IESNA, Stephen Margulies, IESNA and Maurizio Rossi, IALD.

The Nuckolls Fund for Lighting Education Luncheon/Seminar: "Lighting Quality: How Does it Affect Your Corner of the Lighting Industry?" will be held at the Javits Convention Center from 12:15-1:45 pm. Jeffrey Milham, president of The Nuckolls Fund for Lighting Education, will announce the recipient of the annual \$20,000 Nuckolls Fund Grant to support the expansion of an existing lighting program and the recipient of the annual \$7,500 Edison Price Fellowship grant. He will also announce the recipient of a new \$20,000 grant being given to support an introductory lighting program at a college or university that currently has minimal or no lighting design offerings, as well as present the status of the fund's endowment and plans for the future. Subsequently, Naomi Miller will speak to attendees on the topic of lighting quality and how it is applied.

Mark your calendars for Lightfair 2001!

May 30 - June 1, Las Vegas

Convention Center, Las Vegas, NV

Wednesday, May 10

Join Belfer Lighting and your peers from 7:00-8:00 am for **The City Walk in Memory of Craig A. Roeder**, which benefits the Nuckolls Fund for Lighting Education. The walk, which starts at the Sheraton New York Hotel & Towers on W. 52nd & 7th, travels through historic Central Park to Bethesda Fountain and back to the Sheraton for a light breakfast. For more information, visit www.belfer.com.

Join Don Newquist and Jim Zastovnik for the **IESNA International Illumination Design Awards (IIDA) Roundtable Breakfast** from 7:30-8:30 am at the Javits Convention Center. This Q&A session provides information on how to prepare a design entry, judging criteria, photography and much more. New for this year, attendees will be able to address the committee about individual issues or concerns.

Thursday, May 11

Join NCQLP president Norm Grimshaw, PE, LC and NCQLP board members in recognizing the 2000 LC class during the **National Council on Qualifications for the Lighting Professions (NCQLP) Lighting Certified Luncheon** at the Javits Convention Center, 12:15-1:45 pm. Examination Committee Chair James Benya, PE, LC, IALD, FIES will provide a progress report on the LC program. Mark Rea, Ph.D., LC, IESNA will discuss the program's value.

The **Lighting Industry Resource Council (LIRC) Lunch and Game Show** will be held from 12:15-1:45 pm at the Javits Convention Center. The event, pitting manufacturers against designers in wit and wisdom, includes an LIRC business update and remarks from JoAnne Lindsley, IALD chair.

Manhattan

Take a bite out of the Big Apple by taking some time to see what New York has to offer. Join us on our six-page "tour" to find out what's up in Manhattan—all of the projects featured on the following pages have interesting and innovative lighting designs. After all, this is "the city that never sleeps," so why should you ...?

Theatrical Debut

Radio City Music Hall

Brainchild of theatrical impresario S.L. "Roxy" Rothafel, Radio City Music Hall opened its doors on December 27, 1932. The first building in the Rockefeller Center complex and the largest indoor theater in the world in 1932, the Music Hall cost approximately \$8 million dollars to build and featured cutting-edge lighting and control technology for its time. "Radio City had the first Thyratron tube dimming system, which was really 20 years ahead of its time," noted lighting designer Scott J. Hershman of Fisher Marantz Stone, who was involved in the recent renovation of the historical venue. Other notable lighting details include the world-famous marquee that spans the length of a block and consists of more than six miles of red and blue neon powered by 599 transformers, 50,000 lbs of steel and 40,000 lbs of aluminum.

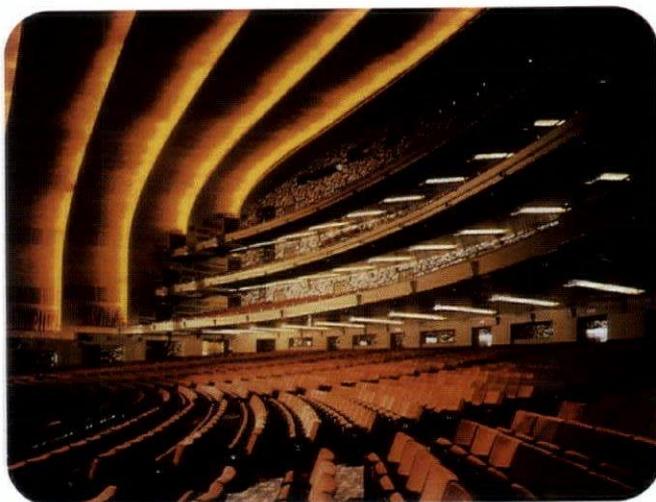
In 1999, Radio City Music Hall received its first major facelift in 67 years. The eight-month project returns the historical venue to its former splendor by restoring all public areas. FMS restored fixtures and raised lighting levels so that modern-day theater-goers can enjoy the magic of this rejuvenated landmark. "By today's standards, the public spaces were dreadfully underlit, with light levels in some areas falling below 1 fc," said Hershman. Once populated by torchieres and table lamps that supplemented the Deco lighting but were later removed to accommodate larger crowds, the theater promenades and lounges are now illuminated by well-shielded and discreetly integrated 35W MR16 downlights. Additional downlights are concealed in the centers of parallelogram-shaped uplights, which together create the grid pattern in the ceiling.

To restore the Hall's 733 fixtures, the lighting design team employed two different approaches. Hershman said, "A number of smaller fixtures were sent out to be repaired, stripped and replated." In many cases, new glass was made to replace broken originals. The fixtures were then rewired and equipped with new sockets. The second approach enabled the lighting designers to stay within budget. Large ceiling-mounted fixtures that only required cleaning or field-refinishing were refurbished in place. "By restoring the fixtures in field, we were able to avoid disturbing the infrastructure wiring, which was 60-years old and very brittle," commented Hershman.

A series of arches and lighted coves shapes the walls and ceiling of the auditorium, creating a stylized representation of a sunrise/sunset. As the coves are lighted by over 2,500 lamps, relamping and maintenance were key issues in the selection of new light source. The solution replaces the PAR lamps, which produced a harsh light, with energy-efficient halogens and uses custom socket extenders to accommodate the discrepancy in lamp neck. "We wanted a light source that would give us a longer lamp life and a soft beam," commented Hershman. "We also replaced all the lenses for consistent color."

Revealing the beauty of Ezra Winter's mural, "Fountain of Youth," in the Grand Foyer, wall washers fitted with 250W PAR38 lamps and wall-washer optics illuminate the mural wall via apertures in the ceiling. "We enlarged the apertures slightly to get some usable light," said Hershman. "The result was that we did a really nice job of lighting that wall from top to bottom, which is something that hadn't happened before." A dimming system was installed to control the light on the mural as well as in the foyer. Commented Hershman, "Because the space has different uses, the dimming system not only extends lamp life but adapts the Grand Foyer to its different functions."

Lighting designer Fisher Marantz Stone, Inc.—Paul Marantz, FIALD, and Scott J. Hershman; **Photographer** T. Whitney Cox; **Lighting manufacturers** Winona Studio of Lighting; Iris Lighting Systems; ETC; Edison Price; Altman Stage Lighting



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Center Piece

50 Rockefeller Plaza

Rockefeller Center has been a favorite spot for both New Yorkers and tourists alike as many associate it with the magic of the Christmas Tree lighting, the romance of the ice skating rink and the beauty of the arcade, when in springtime it's transformed to a garden-like atmosphere amid the streets of midtown Manhattan. But did you know this surprisingly intimate urbanscape, whose public spaces are just as impressive as its architecture, consists of about 20 commercial buildings—most notably 30 Rockefeller Center, originally the RCA Building and now home to NBC, where General Electric's initials brighten the rooftop? And while number 30 may just be the most public of the buildings and the focal point of Rock Center with its widely visible 850-ft.-high monument characterized by stepped setbacks, all the structures that make up this 11-acre commercial district, named after multimillionaire John D. Rockefeller, are rich in history.

According to newspaper reports from the early 1930s, architect Raymond Hood, one of the architects credited with the success of Rockefeller Center, maintained a firm philosophy on his designs:

"The first consideration is utility. The problems of elevators, light and air and the other engineering questions which enter into the construction of any great project should be first to be solved. After that comes the work of making the exterior as good as possible. A building today is built from the inside, not the outside. Genuine, vigorous beauty, the sort of beauty which is found in our skyscrapers, must go hand in hand with function."

And the interiors of the buildings are not only functional, but alive with detail. Artwork is abundant both inside and out. In addition to the Center's well-known *Atlas* and *Prometheus*, Isamu Noguchi, who has been called one of the most influential and prolific sculptors of modern times, designed the stainless steel plaque *News* to mark the entrance to the 1938 Associated Press Building at 50 Rockefeller Plaza.

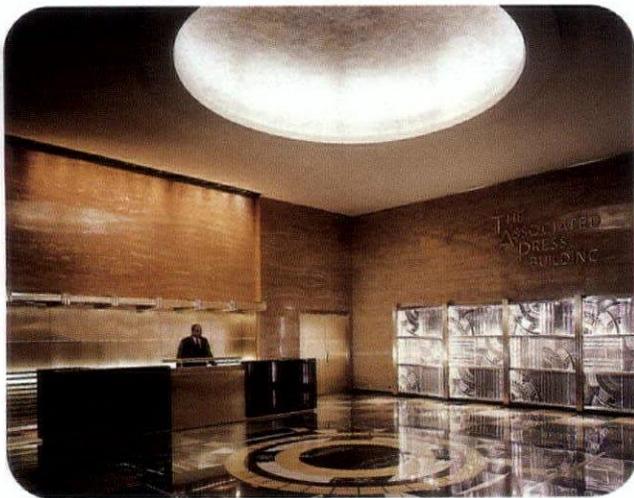
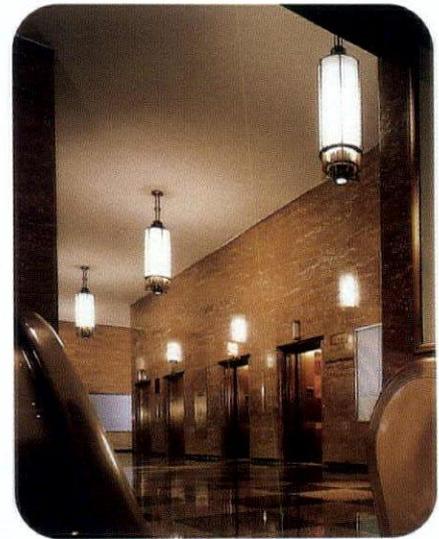
Upon entering this building, one is immediately struck by the lobby. "The renovation of this space sought not only to upgrade it but to restore and modernize it and give it a certain decorative quality that is more compatible with the architecture of the Center as a whole," said lighting designer Stephen Bernstein. "The lighting in the existing space was all indirect and used HPS sources resulting in a flat, lifeless space. Lighting was considered a key element in transforming the lobby." The lighting designers used a variety of technologies—including fiber optics—and techniques to remodel the space creating emphasis, sparkle and visual interest where none had existed.

- The back wall of the lobby is dominated by an art glass mural. Channels with endless fiber-optic bundles are detailed into the mullions that support the glass panels. Additional lighting, on the back of the glass, comes from a track outfitted with 75W MR16 narrow flood lamps.

- In the elevator lobby, custom-designed lantern-like pendants, designed to harmonize with the existing architecture, glow from compact fluorescent sources. Prohibited from adding downlights to the ceiling, well-shielded long-life HIR PAR lamps were hidden in the bottom of the pendants providing a desired punch light for the floor.

- Wall washers were hidden in the canopy added over the desk to make the wall glow. The dome is lighted with compact fluorescents outfitted with color correcting filters. Together with the mysteriously glowing back wall, richness, texture and sparkle are added, which had been missing from the space.

Lighting designer: Cline Bettridge Bernstein Lighting Design—Stephen D. Bernstein, IALD; **Photographer:** Nick Merrick; **Lighting manufacturers:** Optical Display Lighting; Edison Price; Lightolier; Specialty Lighting Industries



Got the Blues?



Photo by Ken Rice

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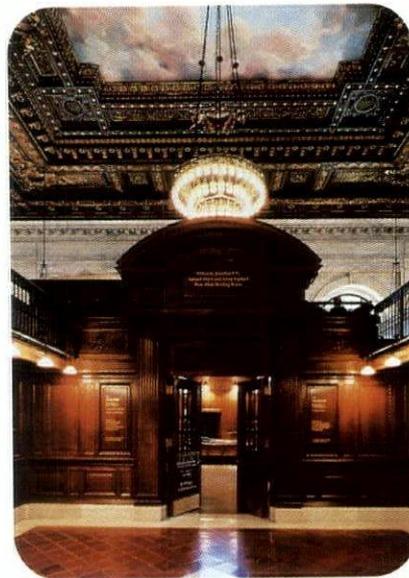
A Timeless Classic

New York Library's Rose Main Reading Room

"A good booke is the precious life-blood of a master spirit, imbalm'd and treasur'd up on purpose to a life beyond life." So author John Milton says in an inscription over the doorway of the New York Library's Rose Main Reading Room. Although Milton may have been referring to the timelessness of books, the words seem relevant to the recent renovation. Coming after nearly nine decades of wear mitigated only by temporary alterations, the \$15-million project revives the Beaux Arts grandeur of this Carrere and Hastings room, while updating its services and equipment to modern day usage—thus giving the historical room a "life beyond life." Fisher Marantz Renfro Stone (now Fisher Marantz Stone), the lighting design firm involved with the project, was similarly charged. Employing a strategy of "conceal and reveal"—conceal new lighting fixtures and reveal the historic qualities—and responding to the library's insistence on using lamps that were already a part of the building, their solution restores the original splendor of the space and adapts the light levels to the Library's needs.

In keeping with the theme of concealing and revealing, Q25W PAR38 floodlights mounted atop the balcony bookcases are hidden in a new cornice to illuminate the newly restored ceiling murals. The cornice also conceals similar uplight fixtures that accent the stone arches at the windows and contains louvered fluorescent striplights, which light the balcony book stacks. "Generally, the reading room was a gloomy space," said lighting designer Citrin, an associate principal of FMS. "But just by uplighting the refurbished ceiling murals and the stone arches made the room appear visually brighter."

Contributing to the gloominess of the room, a number of the arched windows had been blackened during World War II to protect against air raids. Although the renovation replaces the painted windowpanes with UV-protective glass, allowing natural daylight to flood the space, light levels for reading and general tasking remained insufficient at certain times of the day and during late hours. "Our target light level for the reading tables was 40 fc average maintained," said Citrin. "Uniformity was another issue."



"To provide a more even light distribution on the refinished oak reading tables, we raised the original brass table lamps slightly and painted the interior of the metal shade white," said Citrin. The metal table lamps were refinished and refitted with 52W long-life, energy-saving incandescent lamps.

Custom-designed T5 twin-tube 3000K compact fluorescent fixtures replace the bare fluorescent striplights that once lighted the stacks and produced excessive glare. Equipped with an elliptical reflector and lens system, the fixtures are discreetly mounted to the underside of the balconies. "We wanted to put more light on the table-tops adjacent to the stacks, so we bent the light with a spread lens," said Citrin. "It really worked out nicely, because the reflector/lens system provided both vertical illumination on the stacks as well as backlight onto the table tops without any glare." The stack lights are also fitted with UV filters to minimize deterioration.

Other highlights include a pair of new linear bar fixtures chain-mounted to side balcony railings. Providing the electric light that was previously lacking and echoing chandeliers used in other areas of the library, each of the fixtures is lamped with six glass-shaded incandescent sources. The room's 18 chandeliers were also cleaned and relighted.

Lighting designer: Fisher Marantz Renfro Stone, Inc.—Barry Citrin and Richard Renfro, IALD; **Photographer:** Peter Aaron; **Lighting manufacturers:** Elliptipar; Edison Price; Excalibur

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Mars Bar

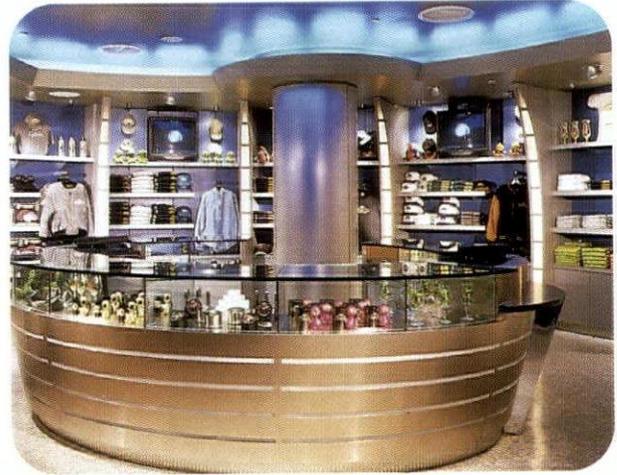
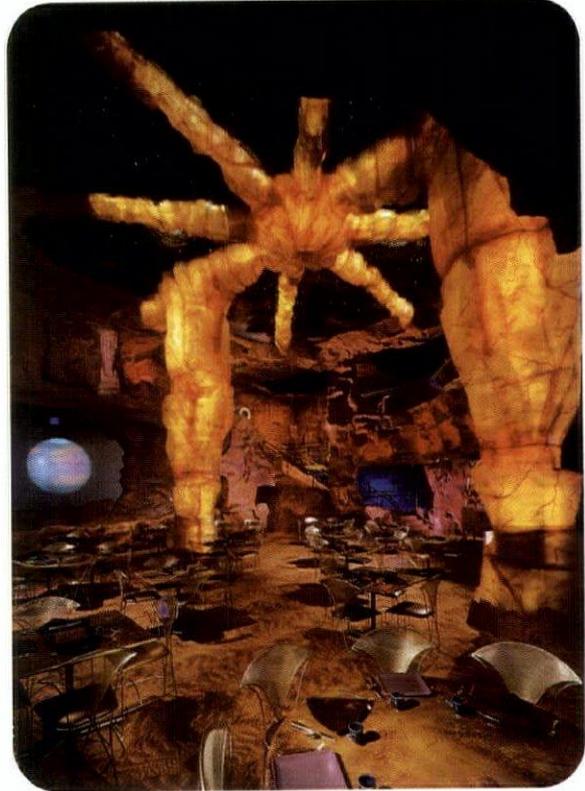
Mars 2112 Restaurant

Often, visitors to New York City feel like they're on another planet entirely. Well, a visit to Mars 2112 certainly confirms that notion. This new 30,000-sq.-ft. themed restaurant on Broadway offers diners a fantastic voyage via a simulated trip to Mars. The out-of-this-world eating adventure is complete with action rides, arcade games and an in-house brew pub. Space-traveling guests enter a futuristic spaceport terminal—the portal to the Mars bar where visitors can sip space-age looking cocktails and then head into the dining room, designed to resemble a crater. In the terminal there is a retail shop for the purchase of Mars memorabilia. The lighting design reinforces the illusion of a cosmic environment. Carefully concealed lighting equipment is used to create dynamic effects.

"The most challenging part of the project was trying to work with the entire design team in theming and defining a Mars-like environment," said lighting designer Stephen Margulies. "Since, obviously, none of us has ever been to Mars, we spent most of our time trying to conceptualize and theme the process and create the experience rather than the specific design elements." He added, "The idea of creating a storyline led to creating the imagery we wanted people to visualize as they traveled through the restaurant. It's really like putting on a show rather than designing a restaurant." Mystery and theatricality are created:

- Concealed blue cove lighting, combined with tungsten accent lighting, creates an introduction to the forthcoming adventure.
- After a simulated ride on a spaceship to Mars, visitors enter into caves of red rock, completed with flowing red and blue lava; the red lava is illuminated with black light, beneath a rear-illuminated floor. Crevices in the rock structures are accented with simple red tungsten lamps, providing ambient light throughout the space.
- The bar has a fiber-optic illuminated bar front. Windows that look out to the planet are illuminated utilizing filtered fluorescent concealed cove lights.
- In the center of the restaurant, a fiber-optic sky with shooting stars and comets hovers over a crater. The crystalline column structures appear to be alive with animated color-changing fiber-optic panels, simulating a meteor shower. The tables are illuminated utilizing space-age looking fiber-optic snake lights.

Lighting designer: Cosentini Lighting Design—Stephen Margulies, Fernando Soler, Stephen Szynal; **Photographer:** Peter Paige; **Lighting manufacturers:** Legion Lighting; Lightolier; Lucifer; Targetti; Stonco; Leucos; Holophane; Strand; Lazarus Lighting





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Crowning Achievement

MetLife Tower

To avoid the label of "tourist," people often walk the streets of Manhattan faces down or at least staring dead ahead. Try something different. Take a look skyward. You might notice that the Big Apple skyline is truly amazing.

Although undergoing extensive renovation, the MetLife Tower at One Madison Avenue, a national historic landmark, can currently be seen sporting a temporary lighting scheme that studs its pyramidal facades with pearls of light and crowns it with glowing gold. Even in its present incarnation, the tower cuts an elegant nocturnal presence in the New York City skyline.

"Our primary goal was to maintain MetLife's presence on the skyline during the construction period," said lighting designer Stephen Lees, FIALD, LC of Horton•Lees Lighting Design, the firm responsible for both the temporary and permanent lighting of the building. "Obviously, because the lighting is temporary, a subset of goals was to create a solution that is both compelling and cost-effective."

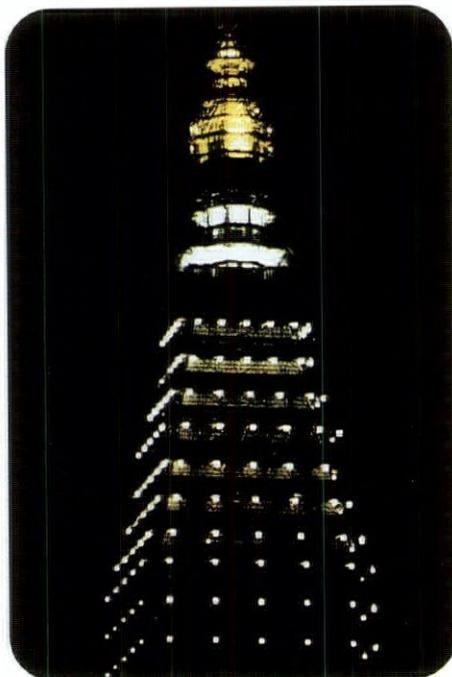
Unveiled last October, the current lighting system anchors 200 rugged, compact fluorescent, 26W "jelly jar" fixtures to the scaffolding in a lattice pattern that outlines the building. The decision to attach lighting to the scaffolding presented a host of technical considerations including temperature, vibration and weight. To minimize the burden on the scaffolding, the "jelly jar" fixtures are constructed of special plastic and weigh roughly 2½ lbs., considerably less than metal fixtures. Lees commented, "When you multiply that difference by 200, that's a significant weight reduction." The fixtures are mounted on the outer edges of the scaffolding so as not to impede construction during the day.

The original design was planned around a schematic scaffolding drawing, which in the end, differed from the actual construction. Last-minute redesign and customization adapted the solution to the incongruities. "Where the scaffolding tapers in, it is all custom and was ultimately designed as it was erected," said Lees. "The fixtures ended up being much closer and tighter to the building than the plans had shown. Instead of 10 or 12 ft., they were literally 4 ft. away from the building. We had to implement a few modifications in the field in order to accommodate the change."

According to Lees, the lattice of diamond-like lights serves as a source of visual interest and brightness, while the lighting of the bell tower and rounded crown above "give a sense of the building inside the scaffolding." The bell tower is illuminated by 350W metal halide floodlights, which accent its forms in cool, bluish light. To contrast, 250W HPS floodlights warm the golden dome. At the tower's pinnacle, a lantern radiates the continuous white glow dubbed years ago as "the light that never fails." Sequenced with the clock, the lantern emits red flashes every 15 minutes and white flashes every hour. Lees said, "We had to make sure that the light was still visible with all the lighting and ensure its continuous glow during construction."

The MetLife Tower also features one of the world's four largest dial clocks. Installed in 1909, the clock has been shut down for the two-year renovation, which will ultimately relight the clock and its numerals in fiber optics and equip the exterior with a system of automated color-changing floodlights. The automated lighting system will allow MetLife to create and change a variety of dynamic color shows for special occasions. Construction on the tower will be completed by the end of 2001. In the meantime, the team at Horton•Lees is happy with their temporary creation. Lees said, "Many people have commented, 'You're not going to take that down, are you?'"

Lighting designer: Horton•Lees Lighting Design—Stephen Lees, FIALD, LC;
Photographer: S. Lees; **Lighting manufacturers:** Sterner Lighting Systems; Canlet





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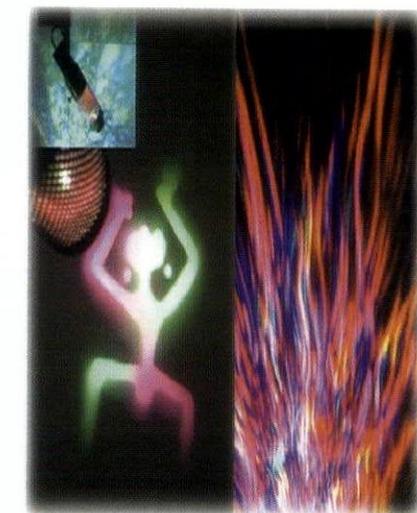


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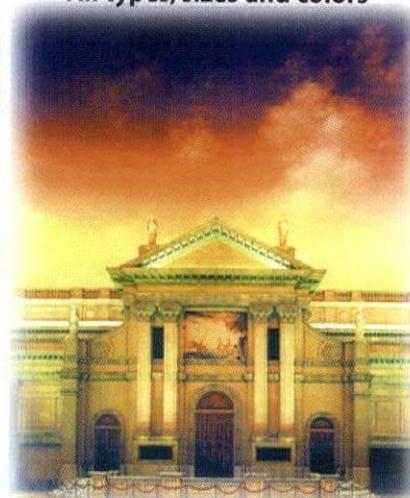
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Sign of the Times

The Loews Blade Sign

If you find yourself blinded by the cacophony of lights in the Times Square area, why not seek visual relief by visiting the new 60-ft.-high x 8-ft.-wide blade sign for the Loews 42nd Street E Walk Theatre. Lighted by a combination of LEDs and neon, the sign is capable of a range of colors and effects, which are coordinated with the exterior lighting of the theater via a theatrical controller. "The unification of the design was really important in enabling the sign and theater to stand out amongst all the clutter on 42nd Street," said lighting designer and project designer Brett Andersen of Focus Lighting. "The client's request was that when you pan down 42nd Street and see all the work that's being built in the 42nd Street development, your eyes are suddenly drawn to Loews' classy and classically influenced architecture. The unified design of the theater and blade sign brings some organization to that classical look."

In answering the challenge of creating a stunning and distinct marker for Loews, the design team experimented with several approaches, including chasing neon, light pipes and PAR lamps. "But Loews said they wanted more," said Andersen. "I was doing some research on LEDs and found them to be a fairly bright source." Within a few weeks, the design team in collaboration with a manufacturer was able to produce mockups that were then tested in the offices of the Rockwell Group, the architectural firm involved with the project. "We put the letter in their seventh-floor window in Union Square and looked at it from outside," said Andersen. "We were confident that it would be spectacular at night, but would it be vibrant during the day? We were amazed at how bright the LED technology was at that point and now, two and half years later, it's even brighter."

Modular circuit boards each populated with three "pixel" groupings of 150 LEDs were cut, shaped, sealed and waterproofed to form the letters L-O-E-W-S visible on the two faces of the sign. Set against a deep blue background, the letters are edged in white neon lighting for added definition and backed by lengths of blue neon, which create a halo effect. Double rows of yellow neon outline the perimeter of the sign and enhance its painted gold border. Because the control system can control the color outputted by each LED pixel, the combinations of colors and effects are extensive. "With red, blue and green primary LEDs, one would be hard-pressed to think of a color that the sign can't produce," said Andersen. "We can create any number of patterns and colors. We can turn the whole sign red, make each letter a different color or wrap a band of white around a red letter in motion. It's very flexible."

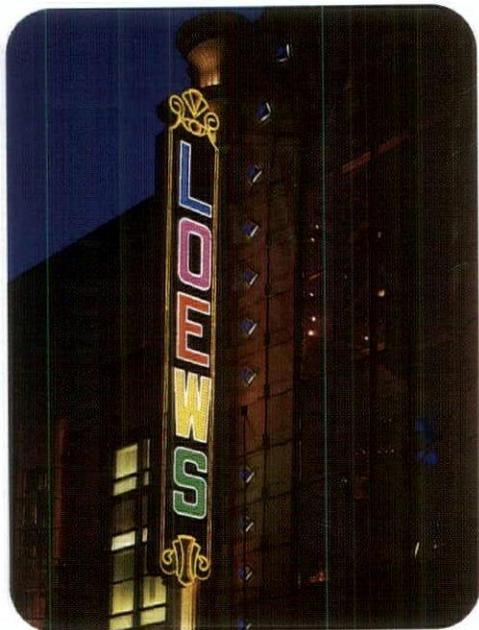
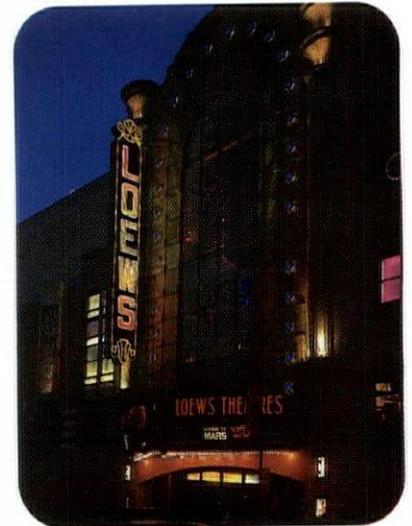
A single computer orchestrates and blends the LED wizardry of the blade sign with the marquee lighting, 10 moving lights and an assortment of metal halide fixtures to produce a harmonized expression for the building's exterior, which according to Andersen, is rare in Times Square signage.

On Loews' response to the sign, Andersen said, "They were pretty much blown away."

Additional facts:

- In total, the blade sign contains nearly a quarter of a million red, green and blue LEDs, each of which can run continuously for over 11 years without burning out.
- The solid-state sign also contains 592 microprocessors.
- The amount of electricity required to operate the six-story-high sign is equivalent to what is needed to power 20 hand-held hairdryers.
- The coordination of color changes and lighting effects is controlled by a theatrical control system via 2.1 miles of control cable within the sign.

Lighting designer: Focus Lighting—Paul Gregory, principal; Brett Andersen, project designer; Sepp Spenlinhuer, control system layout; Jaie Bosse, Will O'Halloran, control system programming; **Photographer:** Andrew French; **Lighting manufacturers:** Color Kinetics; Strand Lighting; Elektralite; AMX Controls; Clay Paky; Tempest Lighting



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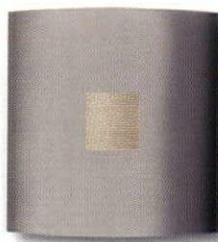
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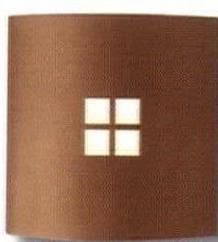
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overlay panel in brushed stainless steel with a perforated center



add backlit acrylic ribs and a gel filter



overlay panel with four squares in natural copper



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CONFERENCE PROGRAM

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Tuesday, May 9

8:00 - 9:30 am

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

10:30 - 12:00 pm

- "Master of the House: Home Alone"; speaker: Michael John Smith, LC, AIA, IESNA, IALD
- "The Top Ten Ways to Appreciate Government Affairs"; speakers: Peter A. Bleasby, IESNA; Cheryl English, IESNA
- "Rockwell & Gregory: A Collaboration of Architecture and Lighting Design"; speakers: Paul Gregory, IESNA; David Rockwell

2:00 - 3:30 pm

- "Kitchen and Bath"; speaker: Jeffrey L. Brown, IALD, IESNA
- "Alternative Light Sources"; speaker: Dr. N. Narendran, Ph.D., IESNA
- "Effective Spec Salesmanship: A Professional Process"; speaker: Li Huang, IESNA

4:00 - 5:30 pm

- "New Trends in Office Lighting"; speaker: D.W. Schweppe, Jr., LC, IALD, IESNA
- "Fiber-Optic Lighting Photometry & Performance Prediction: Using the New Data"; speakers: Art Hatley, IESNA; Ian Lewin, Ph.D, LC, FIES; Paul Morgan, IESNA, IALD
- "Advanced Lighting Technology Outdoors: Union Square Park"; speaker: Peter Jacobson, IESNA

Wednesday, May 10

8:30 - 10:00 am

- "Lighting Tensile Structures"; speaker: Nicholas Goldsmith
- "Annual Lamp & Ballast Update"; speakers: Robert Horner, LC, IESNA; Howard Wolfman, PE, IESNA
- "Lighting and Emotions: Think About Lighting and Make Money"; speaker: Walter Amort

10:30 am - 12:00 pm

- "It's a Color Thing Baby"; speaker: Fred Oberkircher, LC, IESNA
- "Vision 2020: The Lighting Technology Roadmap"; speaker: Dennis W. Clough
- "Internet Marketing Solutions"; speaker: Nancy T. Snyder

2:00 - 3:00 pm

- "Lighting for Healthcare Facilities"; speaker: Mary Ann Hay, PE, IESNA, IALD
- "Energy Efficiency vs. Energy-Effective Lighting"; speaker: James Benya, PE, LC, IALD, IALD, FIES
- "Through the Lens: A Primer in Specifying Color Media"; speaker: Ted Ferreira

Pre-Show Conference

Monday, May 8

- "Daylighting—Integrated Automated Lighting Control"—Barbara Erwine, IESNA; Roger van der Heide, IALD
- "Business Management: The How-To's of a Small Design Firm"—Pamela Beck Danner, Esq.
- "Marketing & Publicity 101"—Randall Whitehead, IALD; Elana Frankel
- "Lighting Certification: An LC Review Workshop"—James Benya, PE, LC, IALD, FIES; William Daiber, LC, IESNA; Fred Oberkircher, LC, IESNA
- "Essential Photometrics"—Kevin Houser, IESNA
- "Preservation Aspects of Lighting for Museums, Libraries and Archives"—William P. Lull, IESNA
- "Sustainability: Illuminating the Big Picture Through Design"—Susan Szenasy; Nancy Clanton, IALD; Robert Fox; Jean Gardner; Phil Vos

4:00 - 5:30 pm

- "Lighting for the Learning Environment"; speakers: Alfred R. Borden, IV, IALD, IESNA; Helen Diemer, IALD, IESNA
- "Glare!"; speaker: Naomi Miller, LC, FIES, IALD
- "Airports of the Future"; speakers: Mark W. Harris, IALD; Stephen W. Lees, LC, FIALD, IESNA

Thursday, May 11

8:30 - 10:00 am

- "Lighting for Communication"; speaker: Renee Cooley, IESNA, IALD
- "Hold on to Your Specs"; speakers: Randy Burkett, IALD, IESNA; Sylvan Shemitz, LC, FIES
- "Transportation System Lighting: Beam Me Up"; speaker: Charles G. Stone

10:30 am - 12:00 pm

- "Light in Different Cultures: From Symbolism to Projects"; speaker: Akari-Lisa Ishii
- "Schools and Industrial Facilities are Tested for the Vision, Psychological and Economic Benefits of Scotopically Enhanced Lighting"; speaker: Dr. Sam M. Berman
- "Lighting an Urban Landscape"; speaker: Rogier van der Heide, IALD

2:00 - 3:30 pm

- "Lighting the Machine—The Art of Lighting 'Industrial' Architecture"; speakers: Mark Major, IALD, ELDA, RIBA; Jonathan Speirs, IALD, ELDA, RIBA, RIAS, FRSA
- "How to Work with a Lighting Designer"; speaker: Robert Prouse, IESNA, IALD
- "Themed Environments"; speaker: Imero Fiorentino

Exhibit hours

Tuesday, May 9: 10:00 am-6:00 pm

Wednesday, May 10: 10:00 am-6:00 pm

Thursday, May 11: 9:00 am-3:00 pm

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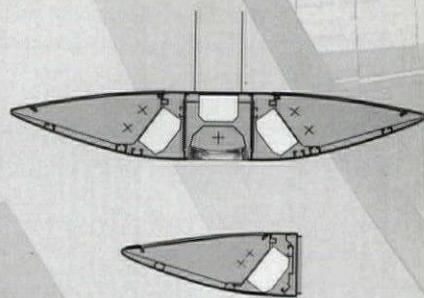
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Exploring Lighting Education Facilities

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COOPER LIGHTING—SOURCE

(847) 956-8400

Opened in 1991 and ensconced within Cooper Lighting's corporate headquarters in Elk Grove Village, IL, the Source is a 20,000-sq.-ft. laboratory equipped with eight lighting application environments. The environments supplement a course schedule ranging from lighting design workshops and one-day sessions on Cooper Lighting product developments to Lighting Bootcamp, a two-day program designed to answer the needs of distributors. Source manager, Nat Drucker, said, "Source provides broad-base training, lighting education and technology exchange as they impact Cooper Lighting's products and their application."

Replicating real-life settings, the application vignettes employ a variety of lighting solutions that emphasize task, ambient, mood, general and accent lighting. The solutions also incorporate an array of lamp sources. The environments include a high-end kitchen and bathroom, an open-plan office setting and executive office, a clothing boutique, a grocery store and a sporting arena space.

In addition to the application spaces, specially designed classrooms allow workshop attendees the opportunity to learn about and handle track, recessed, fluorescent and HID fixtures. Said Drucker, "The rooms are designed for a hands-on

experience. They're set up with a lot of samples, and visitors can literally take the fixtures apart."

Students are introduced to lamp basics, ballast information, control strategies and issues of light, color and vision in the Fundamentals Room. "The Fundamentals Room is devoted to the study of new technologies and issues that drive Cooper Lighting as a company in the marketplace," commented Drucker.

This year, the facility's course schedule will include a three-day workshop on landscape lighting design to be taught by Jan Moyer and a seminar pairing interior design with a special one-day workshop on residential lighting to be given by Glenn Johnson of Spectrum Lighting. According to Drucker, interested professionals can either participate in the three-day class "and cover a lot of design issues" or attend the one-day workshop on residential lighting.



LUTRON—THE LIGHTING CONTROL INSTITUTE

(610) 282-6280

Situated in Alburty, PA just 15 minutes away from Lutron Electronics' Coopersburg headquarters, the Lutron Lighting Control Institute has been educating lighting and design professionals on the possibilities of lighting control for over 15 years. Said Nancy Mikkelsen, training manager at the Institute, "We're committed to being on the forefront of the latest technologies for lighting and lighting control, but we also want to make sure that we educate the market on the benefits of control." Courses offered range from fundamentals of lighting controls within a residential or commercial setting to specification seminars and special training sessions for facility managers. Product displays and lighting vignettes complement

instruction to create a "hands-on" experience.

The facility's lighting application vignettes include a dining room, a high-end conference room and a computer area. The computer vignette allows students the opportunity to learn about lighting control on two levels. In addition to showing appropriate lighting solutions for a VDT space, the vignette also enables class attendees to operate software offered by Lutron to help architects and lighting designers in the layout of a control system. A fourth vignette combines conference room properties with fluorescent lights on occupancy sensors, dimmers and other control products. Added Mikkelsen, "We do a lot with product displays that we move and in and out of classrooms when needed."

In addition to providing instruction at its Alburty location, Lutron's educational efforts have included a partnership with Texas Christian University's Center for Lighting Education and the opening of a smaller facility in London, which began offering classes in 2000.

PHILIPS LIGHTING—THE LIGHTING TECHNOLOGY CENTER

(732) 563-3600

"While we offer courses throughout the year, that's a very small part of what we do," said Tony Lucido, marketing leader for the Lighting Technology Center. Formerly known as the Lighting Center, the Lighting Technology Center was re-christened in January of 2000 to reflect its emphasis on the advancement of lighting technologies. With over 20,000 sq. ft. relegated to full-size application environments displaying office, industrial, retail, hospitality and residential lighting, the Center offers courses ranging from lighting fundamentals, application and design to the EPA's Universal Waste Rule, but perhaps more importantly, hosts one- and two-day programs tailored to address individual requests or concerns.

"We will design a very specific, customized program to meet individual needs—that's probably 80 percent of what we do at the Center," said Lucido. "Less than 20 percent is spent on the courses we offer." Examples include creating product/application problem-solving sessions and conducting annual trips for industrial, commercial and/or institutional clients to update them on the latest



product technologies. "The most common request is within the office segment," said Lucido. "People want to look at innovative strategies for lighting their offices that also speak to energy savings, color rendering and light output."

Be it in a scheduled class or special program, instruction and information are supported by an array of lighting vignettes and displays. Comparisons between different lighting techniques and light sources are often facilitated by environments that are furnished identically and placed side-by-side. In the office setting, shifts in color rendering, fluorescent sources and lighting approach are engineered via touch-pad control. Lucido, commented, "All of the application areas have an integrated lighting design that is driven off a software program and controlled by a touch pad." Discussion about different light sources is continued in the hospitality area as well as in the residential setting. The newly renovated retail application provides lighting options for mass merchandisers, grocery stores, mid-range retailers and high-end boutiques.

While tailored programs may involve guest speakers, courses are taught by Philips' faculty and may differ each year to meet the existing needs of the marketplace. This year, for example, the Center is offering a retail application workshop in response to requests from retail merchandisers and lighting specifiers.

LIGHTOLIER—THE TECHCENTER

(508) 679-8131

Located within its corporate headquarters and manufacturing facility in Fall River, MA, Lightolier's TechCenter offers 5,000 sq. ft. of interactive, hands-on exhibits that support a curriculum of educational and training programs available to design professionals, contractors and distributors.

The TechCenter's diversity of displays and application environments allows for a full exploration of the nature of light, lighting techniques and technological developments. "Lighting is as essential to a space as concrete and steel," said TechCenter manager, Sheryl Breze. "Our mission is to provide a comprehensive and progressive facility to architects, interior designers, electrical contractors and lighting designers. The TechCenter is designed to effectively demonstrate optic systems, design principles and lighting applications in all environments."

In the Effects Hall, the qualities and functions of light are investigated through the manipulation of intensity, distribution, color and change. With the scale and feel of an actual store, the Retail Environment encompasses areas resembling a storefront, specialty boutique, department store and warehouse mart. In the Hospitality Environment, an examination of lighting techniques for restaurants, hotel corridors and lobby spaces incorporates the use of lighting controls. The Residential Environment demonstrates how lighting in layers and utilizing controls can impact the dynamics and mood of living environments.

Other resources include a multimedia experience that outlines

the history of product developments from pre-World War II to the present, interactive product areas and TechExpress, an interactive lighting resource that provides access to fixture information.

On October 9-11, 2000, the TechCenter will host a two-and-a-half-day seminar, "Luminaire System Technologies for Commercial Applications." Aimed at design professionals, the seminar will draw on the expertise of Lighting Research Center faculty and Lightolier's lighting education and product management staff and focus on using energy-efficient fixture systems to create a positive effect on both people and space.

In addition to classes at the TechCenter, Lightolier will offer the Lightolier Online Training Program, which will allow Lightolier customers to take courses online after completing a review and testing process. Subjects covered range from lighting basics to lamps and ballasts to lighting applications. Also available online is a preparatory course to assist in earning NCQLP certification.

Breze said, "We are constantly evolving to facilitate advances in technology, such as new products, fiber optics and electronics."



LITHONIA LIGHTING— LITHONIA LIGHTING CENTER

(770) 922-9000

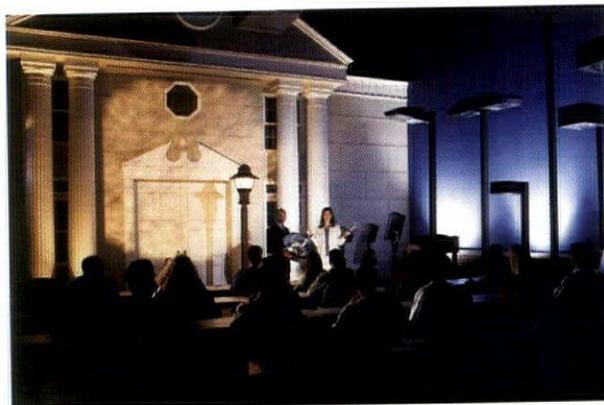
Lithonia, through its Lighting Education Center, presents educational opportunities not only to its customers, but to channel partners, employees and the community. Approximately 8,000 people were educated in 1999.

About two years ago, the company expanded its Lighting Education Center, bringing the center's total size to 32,000 sq. ft. to accommodate growing educational needs. The expanded facility allows for in-depth training on the company's new and existing product lines. The center now features seven classrooms, outfitted to demonstrate product in vignette or display style, such as outdoor lighting, office lighting, high-performance downlighting, industrial lighting, emergency lighting and residential lighting. Other display areas demonstrate color rendering under various light sources, lighting controls operation, accent lighting, industrial lighting, pathway lighting, sports lighting and Lithonia's electronic tools.

The outdoor room features a building facade illuminated by floodlights and in-grade product. A series of pole-mounted area lighters is displayed against a nightscape. In the residential

lighting room, visitors can examine the use of lighting techniques in kitchen, living and dining spaces. Another popular feature of the center is the smoke booth, where visitors can see firsthand which exit signs, light sources and colors perform best in the presence of heavy smoke.

The Lithonia Lighting Center, now in operation for over a decade, offers many courses for specifiers, contractors, distributors and employees.



GE LIGHTING—THE GE LIGHTING INSTITUTE

(800) 255-1200

Housed in a Georgian-style structure in Nela Park, OH for the past 70 years, the nearly 30,000-sq.-ft. GE Lighting Institute offers lighting professionals a newly designed curriculum taught by staff instructors and guest speakers as well as expanded business and educational facilities. The Institute's conferences are open to all members of the lighting industry and cover topics as diverse as lighting retrofits, museum lighting and trends and developments for lighting educators. "Our job is to stay current with all the latest light source technology," said Mary Beth Gotti, manager of the GE Lighting Institute, "but also to understand trends and the various lighting application areas."

Many of the conferences begin in Edison Hall, a ballroom-like space that functions as a multimedia presentation center. Here, conference attendees can witness firsthand the integration of state-of-the-art technology within a more traditional space. Smaller conference rooms—the Rockwell, the Nela the Vanguard—employ different lighting solutions, including direct/indirect systems and a balance of natural and electric lighting, to create distinct environments. Lighting for the conference rooms and the other expanded spaces was designed by lighting designers Raymond Grenald, Howard M. Brandston, Lesley Wheel, David A. Mintz and Gary Steffy.

Interactive demonstration areas and simulated environments supplement instruction in different applications. "We have a staff of professionals who specialize in various lighting application areas—from retail to office to outdoor to industrial lighting," said Gotti. In the Merchandising Center, flexible, full-scale displays and interactive experiences illustrate retail lighting techniques as well as merchandising methods for lighting products. In the

Commercial/Industrial Center, an office setting equipped with actual workstations facilitates explorations of general and task lighting, glare control and VDT illumination. On the industrial side, conference attendees can examine issues such as HID floodlighting and safety and security applications. Outdoor lighting techniques, such as facade lighting are visible in the Institute's surrounding landscape. Gotti commented, "Although demonstrations of outdoor lighting are limited, you can sit in the Institute's dining room and look across the grounds at the effects of different light sources on the opposing building."

Other highlights of the Lighting Institute include the Product Center, Fixture Gallery and Lighting Studio, where lighting problems can be resolved by constructing full-size situations in detail. Courses at the Business Training Center, a tiered classroom-style space central to the Institute's new focus, are often taught by guest lecturers and relate to the business of lighting.

"The Lighting Institute provides a venue where professionals can mingle with peers and be exposed to some of the experts in the industry for various lighting applications," said Gotti. "We offer flexible spaces where participants can play with light and try their hand at coming up with lighting solutions for certain types of merchandise or creating environments. It's a facility where technology can come alive."

(Continued on page 88)



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The joints are die cast aluminum.

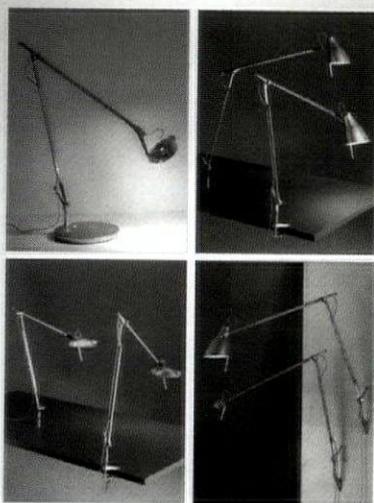
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GRUPPO CASSINA

JUNO LIGHTING—THE LIGHTING EDUCATION CENTER

(847) 827-9880

"The space that we have now is really focused on the application of lighting," said Scott Roos, VP of product management and development for Juno Lighting. "We will probably call the two rooms together the Lighting Education Center." Located at corporate headquarters in Des Plaines, IL, Juno Lighting's recently completed Lighting Concept Center is but the first half of a planned 5,000-sq.-ft. educational facility that will offer courses to members of the lighting industry and design customized programs to answer specific needs.

The new facility comes two years after Juno's move into a larger corporate headquarters. "In our old building, we had a lighting lab, but really didn't offer a formal educational program like the one we're rolling out now," said Roos. "We also held sales training and hosted specifiers and local chapters of the AIA or the ASID."

Visitors to the completed 2,500-sq.-ft. portion of the Lighting Education Center are welcomed into the facility through an oval-shaped room in which they can view a multimedia presentation on the impact of lighting on perception. From there, they enter the actual space of the Lighting Concept Center, which is equipped with three retail vignettes and three residential/hospitality vignettes. The retail scenes include a high-end and mid-range retail environment

as well as a gourmet grocery. A great room, kitchen and bathroom make up the residential environments. Each vignette is programmed with seven scenes to demonstrate the impact of various lamps and luminaires. By switching on/off layers of light, dimming, adding or deleting individual fixtures in a preset scene, students can experience the shifts in effects on their perception of a room.

At the front of the Center, three full-size light boxes compare the color and light distribution of different light sources and examine wallwashing, accentlighting and grazing as techniques for lighting vertical surfaces. The boxes also explore reflectances in relation to perceived and actual footcandle levels.

Downlights and cove lighting illuminate the central area while a display window in the back demonstrates display lighting techniques such as key and fill lighting. Small color boxes illustrate the rendering capabilities of different light sources on color and texture.

Though still under construction, the other half of the Lighting Education Center will address questions such as "what makes a well-designed fixture?" and "what principles are used in the selection of a fixture?" "It's more nuts-and-bolts-type information," said Roos. "We'll also have a section dedicated to installation, so that people using or selling our products can learn how to actually install them." As to other opportunities offered by the Center, Roos said, "I'd like to make our facility available to the allied professions. They could hold their meetings at the Center and we could present and discuss a topic that interests them."

OSRAM SYLVANIA— LIGHTPOINT INSTITUTE

(978) 750-2464

Visitors to Osram Sylvania's LightPoint Institute in Danvers, MA are immediately greeted by an animated light show using photo-optic lamps and projectors normally seen at concerts and discos. The show, Paint with Light, demonstrates how red, blue and green combine to create white light and serves as an appropriate introduction to the Institute's offerings. Bob Smith, manager of the LightPoint Institute General Lighting Education Operations said, "We want people to think about light when they first enter."

Opened in January of 1995, the LightPoint Institute is a 6,400-sq.-ft. facility equipped with application spaces and product displays that complement a schedule of three-day programs. Topics covered by the programs include lamp and ballast technology, lighting design and application, lighting fundamentals and developments in energy-saving lighting technology.

Through a series of showrooms and application vignettes, visitors to LightPoint can explore basic lighting concepts, lighting techniques and technology and compare the different capabilities of various lighting systems. Smith commented, "This is really a hands-on place to experience lighting, try out different lighting concepts and see the results." In the Visual Performance Room, students can learn about office or classroom lighting by experimenting with six separately controlled fluorescent systems and combining the effects of indirect and direct lighting, downlighting and wallwashing. In the Multi-Purpose Room, various displays including demonstrations on the functions of the human eye, the inverse square law and photometrics help provide an understanding of lighting fundamentals. The impact of lighting on texture, color and form is explored in the Furniture Showroom



PHOTO: PAUL KEVIN PICONE

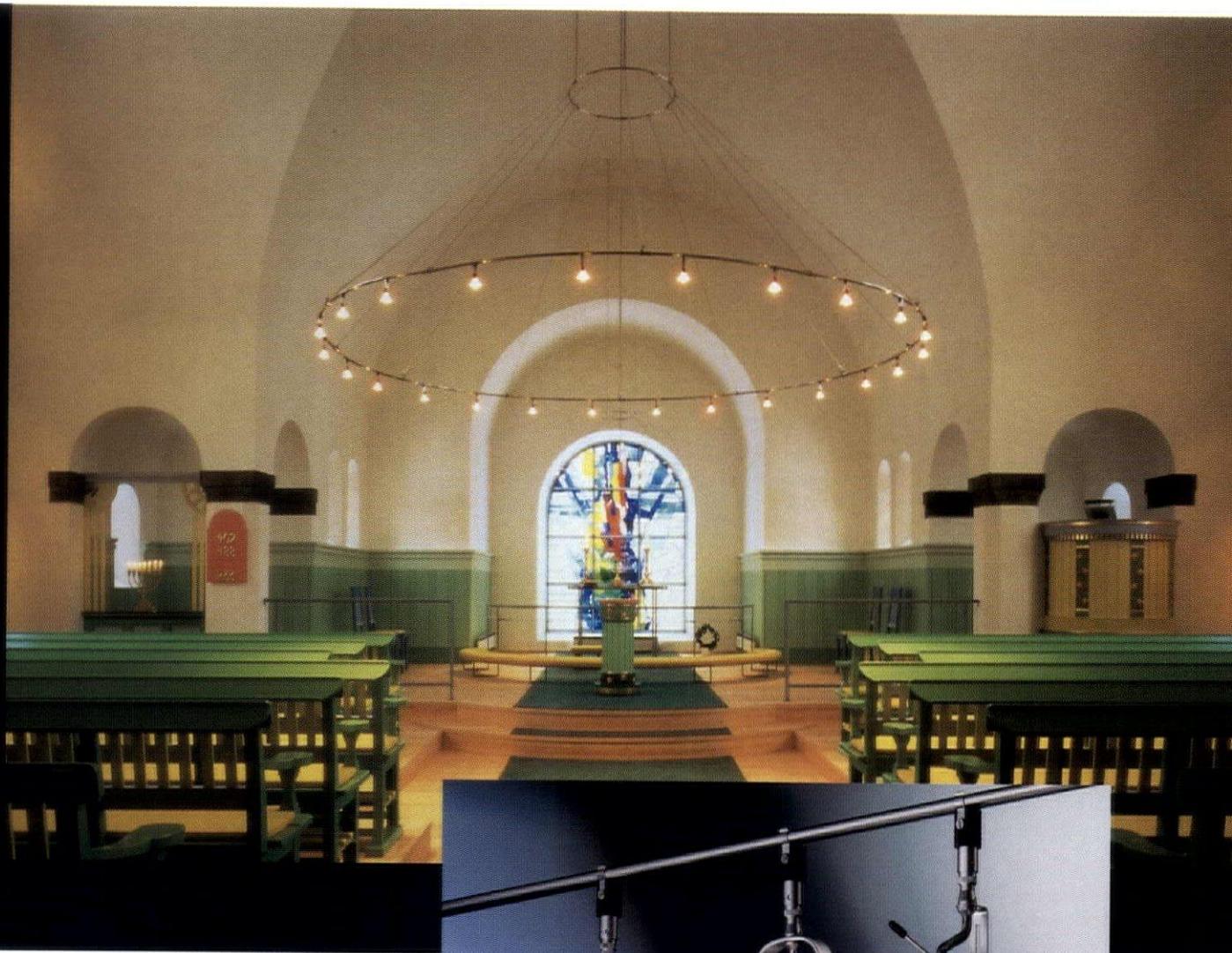
while lighting techniques are further investigated in kitchen restaurant settings. Mobile product displays, "trilons," explain the company's major product categories and a Featured Product Wall contains a sampling of new products.

The Applied Technology Wall, awarded the IESNA Edwin F. Guth Memorial Special Citation, examines fluorescent lighting systems in relation to light output, wattage and power quality. Via five display windows, the wall shows the effects of proper lighting maintenance and lamp replacement and compares the capabilities of different lamp and ballast combinations. "We call this our lab area," said Smith. "It allows people who are interested in numbers to measure ballast factors, wattage and light output and ultimately help them to decide what is the best solution for their needs."

"Lighting is such a visual medium," said Smith. "In order to understand it, you can't learn it from a textbook or brochure—you really have to experience it." ■

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SITE SPECIFICS—DOCUMENTS FOR LANDSCAPE LIGHTING

BY JANET LENNOX MOYER AND MICHAEL STEWART HOOKER

Two motivations drive landscape documentation. First, the documents will define the contractual relationship and responsibilities between the owner and the installing contractor. Second, they communicate information to minimize the amount of time the lighting designer needs to spend on site directing the installation. Because each element in a landscape is unique, this communication can be difficult.

Landscape lighting is affected by changes in architecture, hardscape and planting that occur during design, documentation and construction. For example, the lamp type, fixture quantity and exact fixture locations for uplighting a specific tree cannot be finalized until the tree has been planted. Because of this and the owner's needs and project variations, there is no definitive way to prepare plans for a landscape lighting project.

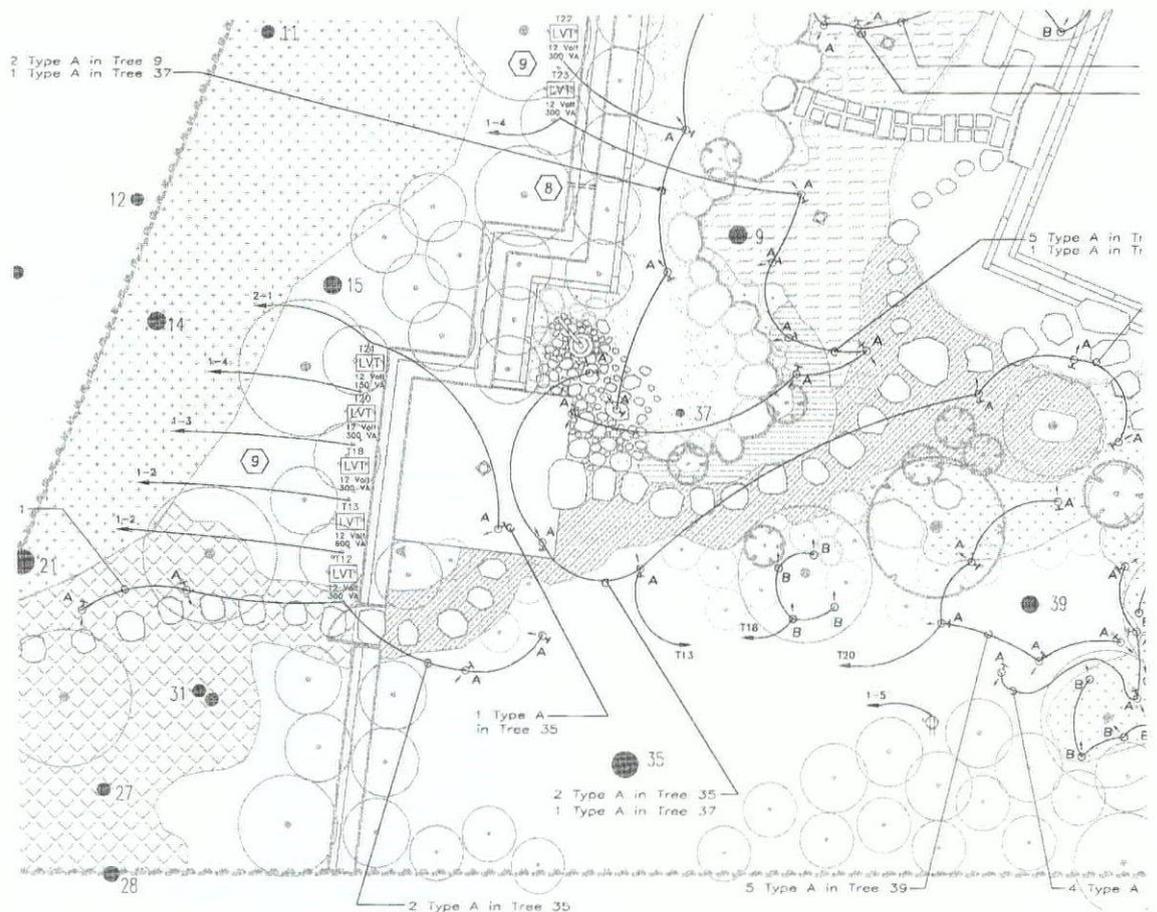
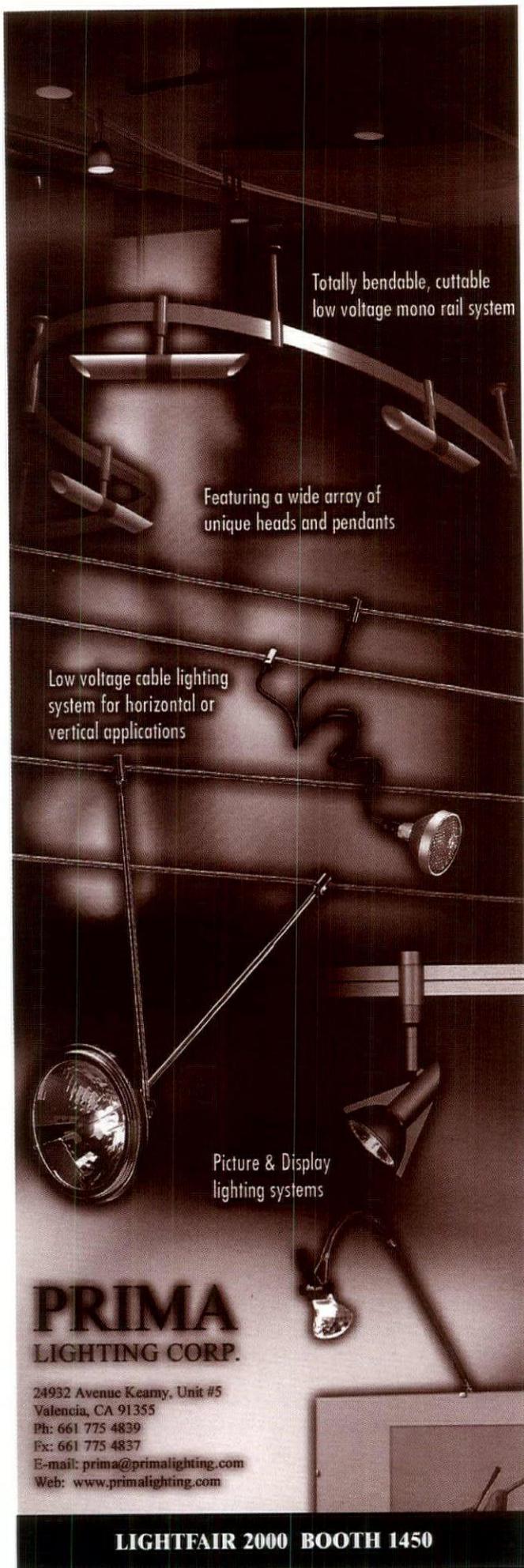


FIGURE 1—INITIAL LIGHTING PLAN. KOUVAS PROJECT, WARREN, OH. THIS PLAN SHOWS FIXTURE LOCATIONS, CONTROLS LOOPING, LOAD IDENTIFICATIONS, TRANSFORMER IDENTIFICATION AND LOCATIONS, AND TREE NUMBERS (BY THE TREE TRUNK).



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and provides the initial identification hierarchy for the lighting plans, details, schedules and wiring documentation. Within the designated areas, all major trees should be numbered for easy reference (see Figures 1 and 2). Transformer groups and electrical groups throughout the site need to be developed and shown in a consistent and logical manner that provides the flexibility for change ad infinitum.

FIXTURE DETAILS

On any plan some fixture information can be scaled and shown. When the designer chooses to show each fixture on the plan, the scale of the plan will need to be at least $\frac{1}{8}$ in. equals 1 ft.; but preferably $\frac{1}{4}$ in. equals 1 ft. or larger. Most landscape drawings are shown at $\frac{1}{8}$ in. equals 1 ft./1:10 scale/1:50 metric scale, or smaller. Using a scale smaller than these will increase the difficulty in showing the fixture, its wiring and controls information clearly.

Pathway fixtures can be located on a large enough scale drawing ($\frac{1}{4}$ -in. minimum) with dimensions from paving edges and with typical paving pattern indicated. Fixtures mounted on structures such as walls, eaves and trellises can be dimensioned on the plan. However, each installation type requires at least one detail to express the actual location. For wall-mounted fixtures, an elevation is required to show the height to the center of the junction box and the coordinating horizontal distance from some architectural reference.

For eave- and trellis-mounted fixtures, details of their mounting conditions and location need to be included. The lighting documents must state and everyone needs to understand that after all the hardscape has been laid out, but not installed, and after all the major planting has been located and installed, then fixtures and transformers can be actually located and marked on site at the direction of the lighting consultant prior to any installation.

ALTERNATIVE APPROACHES

Another way of preparing the initial lighting plan is to use notes that list the number and type of fixture. A note could be placed on the plan next to a numbered tree, for example. Another way is to use numbered notes that include the quantity and type of fixtures and any notes about installation or aiming that will be helpful to the installing contractor.

For tree-mounted fixtures, providing a note of the quantity and type of fixtures is all that can be shown unless someone is willing to draw a plan and one or multiple sections showing the trunk and branching structure of the tree. During the field layout session, a tree-climber can actually climb the tree to mark each fixture location; the lighting consultant can use a Polaroid or digital camera (if an appropriate printer is available either on site or locally) to photograph and mark the fixture locations, lamping, controls designation and preliminary aiming notes; or the lighting consultant can be on site during the installation of fixtures and wiring.

Some projects can be handled with very little or no initial documents from the lighting consultant. For a small site with no existing site plans, the lighting consultant may walk the gardens with the owner, landscape designer and installing contractor and

make all the lighting decisions. The lighting consultant might then simply write a project description that documents all the information that is necessary for contracting, purchasing and installing the lighting system.

Another documentation approach has the contractor take the responsibility to note the design as decisions are made through-out a site walk-through; provide the correct number and type of fixture in the approximate location with the discussed controls; and supply the record documents. The lighting consultant must have extreme confidence in and experience with the contractor's understanding of landscape lighting, their capability to install the project properly and their ability to provide documents that will serve as record plans.

I N C L U D I N G C O N T R O L S

Control of the lighting needs to be included in the documents. For most landscape lighting projects, both residential and commercial, controls should be simple. The owner flips a switch for the front yard. The lighting turns on at dusk or at a designated time after with a photocell and/or timer and turns off at a designated time. Documentation forms for illustrating the controls strategy will vary with the project. The more complex the function and use of the space and the physically larger a project, controls become more complicated and computer-driven. This translates to more than switch symbols and switch looping. Now load designations need to be determined, identified on the plans and shown in all necessary schedules—load, zone, circuiting and/or scene schedules.

D R A W I N G M E D I U M

Regarding the medium for the plan, AutoCAD is preferable to hand drawing. Electronic documents are easily translated from the foot/inch-scaling to metric; the drawings are easily transported between team members; plans can build on other layers; layers with information not relevant in a document from another team member can be turned off; more information can be included in a clean, readable manner; and the "original" becomes everlasting and easily updated or revised.

When the project is being hand-drawn by the landscape architect, the lighting consultant should receive a reverse-reading, half-tone, erasable original with hardscape and planting layouts from the landscape architect. This provides physical separation between the landscape and lighting information, allowing either to be easily updated without affecting the other. Getting the plan half-tone allows the lighting information to be most easily seen by the electrical contractor (the party for whom they are being produced).

Another issue to remember about landscape plan scale is the physical size of the drawing. These plans spend an enormous amount of time outdoors at the site. It will nearly invariably be moist, which deteriorates the quality of the drawings. Typically there is not a good "work surface" for laying out large drawings to reference on the site. So, consider preparing a set of drawings in 11 in. x 17 in. or 8½ in. x 11 in. This allows areas to be planned individually and handed out to a contractor assigned to that area. This size plan is easy to work with on site and can be easily laminated. Other-sized plans can be laminated at printers or use clear contact paper, but will still be awkward.

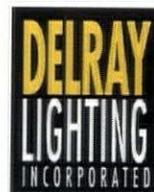
(Continued on page 96)



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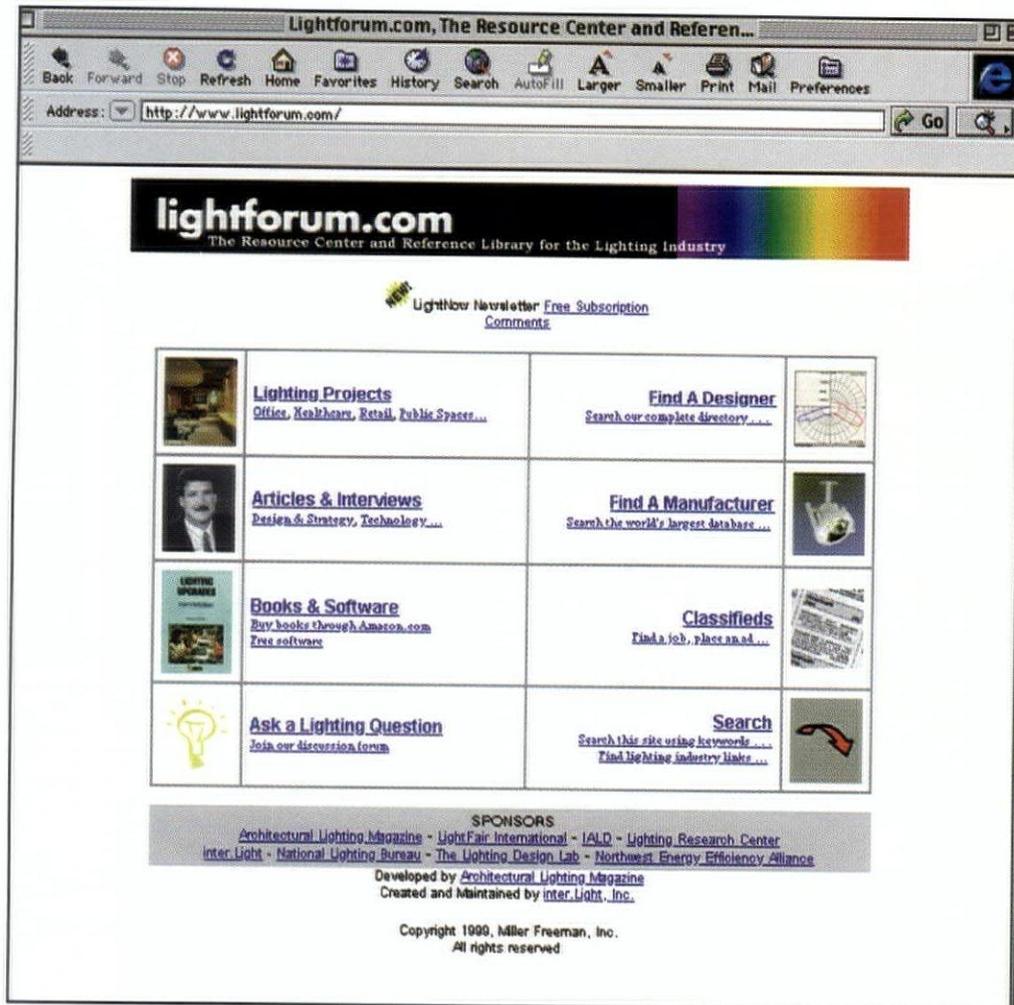
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(Continued from page 93)

STAYING IN THE LOOP

This brings up the point that in addition to the landscape designer, landscape lighting intersects with several designers on the project team, including the architect and interior designer. The lighting designer needs to be informed by all these designers of changes that they are making that will potentially affect the lighting: Structural changes from the architect, window changes from the interior designer, planting and pathway changes from the landscape architect.

Documentation for landscape lighting needs to communicate to the installation contractors—which could include a general, electrical and/or landscape contractor—all they need to know to properly purchase and install the lighting system. The plans can be formal or informal depending on the project size, style and contractual requirements. Consistency and thoroughness are most important, but how documentation is done, how many drawing sheets are needed and how many schedules are prepared depend on what will be the appropriate format to communicate well and to best control the clients' expenditure. If no other drawing is produced, a record plan must be provided to the owner and all team members for future maintenance. ■

Janet Lennox Moyer and Michael Stewart Hooker are both principals of MSH Visual Planners in Oakland, CA.

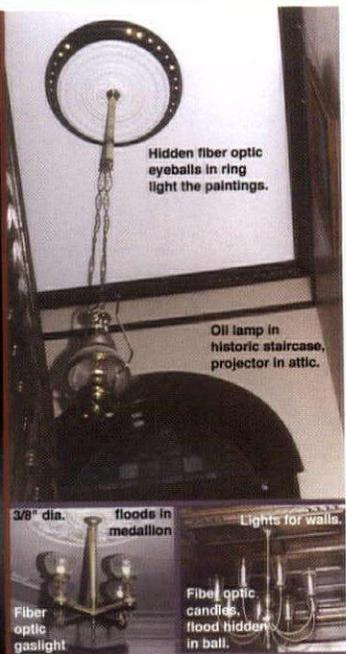
Architectural Lighting Magazine frequently provides recertification opportunities for LCs as part of our Recertification Articles and Quizzes, in conjunction with the NCQLP. LCs may earn 0.5 Lighting Education Units (LEUs) by reading specially marked articles and correctly answering the accompanying quiz. After scoring, Architectural Lighting will send official notification of the LEUs earned to LCs. Remember to look for NCQLP-approved Recertification Articles and Quizzes in future issues of Architectural Lighting. In addition, we welcome any suggestions on topics you think may make an interesting and educational NCQLP article.

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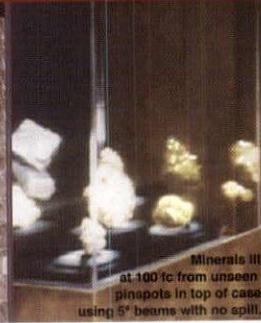
3/8" dia. floods in medallion

Lights for walls

Fiber optic gaslight

Fiber optic candles, flood hidden in ball.

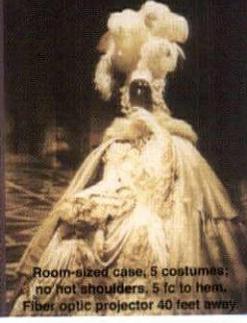
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NCQLP QUIZ

1. Fixtures and transformers can be actually located and marked on site:

- A. After all the hardscape has been laid out and installed.
- B. After all the major planting has been located and installed.
- C. At the direction of the contractor prior to any installation.
- D. All of the above.

2. What is a preferable scale for a landscape lighting plan?

- A. 1:250 Scale
- B. 1/16 in. = 1 ft
- C. 1/4 in. = 1 ft.
- D. 1:40 Scale

3. All of the following are alternative approaches to preparing an initial lighting plan except:

- A. Use notes that state the quantity and type of fixtures.
- B. Conduct a field layout session.
- C. Photograph and document fixture locations, lamping and controls information with a Polaroid or digital camera.
- D. Have the installing contractor conduct an initial walk-through with the owner and landscape designer.

4. The following are true about small sites except:

- A. Small sites can be handled without a site plan.
- B. Controls do not need to be included in the documentation.
- C. After a walkthrough, the lighting consultant can write a project description.
- D. During a walkthrough, a trusted contractor can note the design as decisions are made.

5. Having an area name designation provides the initial identification hierarchy for the:

- A. Lighting plans.
- B. Schedules.
- C. Wiring documentation.
- D. All of the above.

Responses should be addressed to Christina Trauthwein, Architectural Lighting Magazine, One Penn Plaza, New York, NY 10119; faxed to 212-279-3955 or emailed to ctrauthwein@mfi.com. All questions must receive correct responses to obtain 0.5 LEU credit.



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DAYLIGHT: HEALTHY, WEALTHY & WISE

NEW RESEARCH CORRELATES DAYLIGHT WITH INCREASED SALES AND TEST SCORES

BY BARBARA ERWINE AND LISA HESCHONG

In the last decade, a new and compelling economic rationale has emerged for daylighting—*increased productivity*. The argument goes like this: Though daylighting provides tremendous opportunities for energy conservation, the total operation and maintenance expenses represent only six percent of a building's costs over its entire life cycle. Justifying daylighting on its long term energy conservation payback leaves designers, engineers and building owners haggling over energy savings projections that represent a small percent of the corporate bottom line. Personnel costs, on the other hand, tip the scale at 92 percent of the overall costs. A building that promises one percent higher productivity is likely to be far more interesting to an owner than a building that is guaranteed to use 20 percent less energy. If good daylighting design improves productivity by even a small increment, the increase in the corporate bottom line will offset the cost of even the most expensive daylighting system.

Anecdotal information supports claims of a link between daylight and productivity. In November of 1995, an article appeared on the front page of *The Wall Street Journal* business section describing Wal-Mart's experiences with adding skylights to their new "Eco-Mart" in Lawrence, KS. The company's VP for real estate claimed "significantly higher" sales in the skylighted portion of the store¹. Similarly, managers at Lockheed's Building 157 touted an increase of 15 percent in productivity and a decrease of 15 percent in absenteeism in this new daylighted office building². And North Carolina schools reported increases of five to 14 percent in student test scores in new daylighted schools compared to the county norm³.

But are these claims of increased performance real? And can they hold up to rigorous statistical analysis?

PROVING THE LINK ...

Intrigued by these questions, the Heschong Mahone Group (HMG), an energy consulting firm in Sacramento, CA, with third-party funding from Pacific Gas and Electric, set out to find the answer. Working within a limited budget and time frame, HMG adopted an innovative approach to data collection. Rather than starting from scratch to generate the voluminous data required to substantiate a link, HMG decided to glean information from existing databases that many commercial enterprises

(Continued on page 100)



DAYLIGHT IS A NATURAL FOR RETAIL CIRCULATION SPACE. PHOTO COURTESY OF KALWALL CORP.

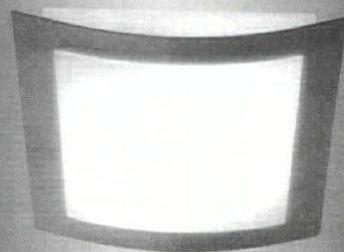
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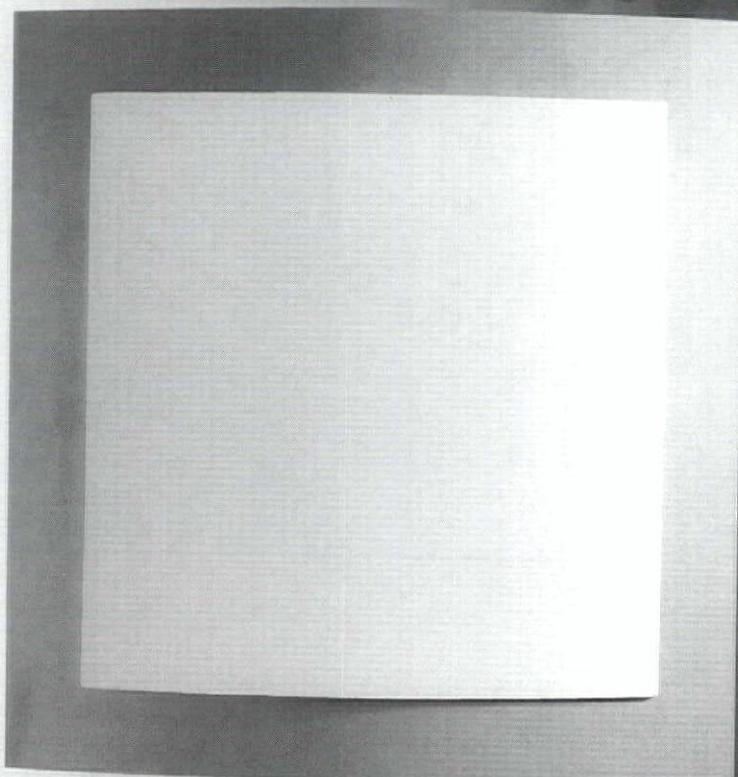
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(Continued from page 98)

already accumulate on a wide range of productivity measures. Tapping into these resources allowed HMG to reap the benefits of a large data set without the time and expense of generating it. After assembling a research team including statisticians and daylighting experts, HMG contacted more than 100 candidate organizations to identify potential study sites. Everyone contacted expressed deep interest in the potential study results; however, most organizations did not have ideal conditions for the study. In the end, two intriguing opportunities emerged—one a major retail chain store and the other a number of public school districts.

RETAIL SKYLIGHTS

The chain store represented an excellent opportunity to evaluate the effects of skylights in a retail environment. The chain provided data on over 100 stores in a relatively sunny, southern location. In most ways, the stores are nearly identical—one story, standardized layout, uniform product line, consistent management and advertising, similar size, age, geographic location and electric lighting. The only major difference among the stores is skylights—two-thirds of the stores have a uniform grid of diffusing skylights, slightly higher ceilings and photo controls. At peak daylight levels, the skylights increase light levels in the store two to three times the standard electric illumination levels. At night, the stores look very similar.

To probe the relationship between the presence of skylights and retail sales, HMG obtained an 18-month average of sales for each store and performed a sophisticated statistical analysis. This analysis allowed them to control the influence of other variables which might also influence sales, including size and age of the store, hours of operation and economic characteristics associated with the store's zip-code location.

CORRELATION TO HIGHER SALES

The magnitude of the results surprised even the research team. Skylights were found to be positively and significantly (99 percent statistical certainty) correlated to higher sales. All other things being equal, an average non-skylighted store in the chain would be likely to have 40 percent (+/- seven percent) higher sales with the addition of skylights. After the number of hours open per week, the presence of skylights was the best predictor of the sales per store of all the variables that were considered.

And what did the shoppers think? Though not scientifically polled, a number of shoppers were interviewed at representative



A RESEARCH STUDY SHOWED THAT SHOPPERS TEND TO VIEW SKYLIGHTED STORES AS "CLEANER" OR "MORE SPACIOUS." PHOTO COURTESY OF KALWALL CORP.

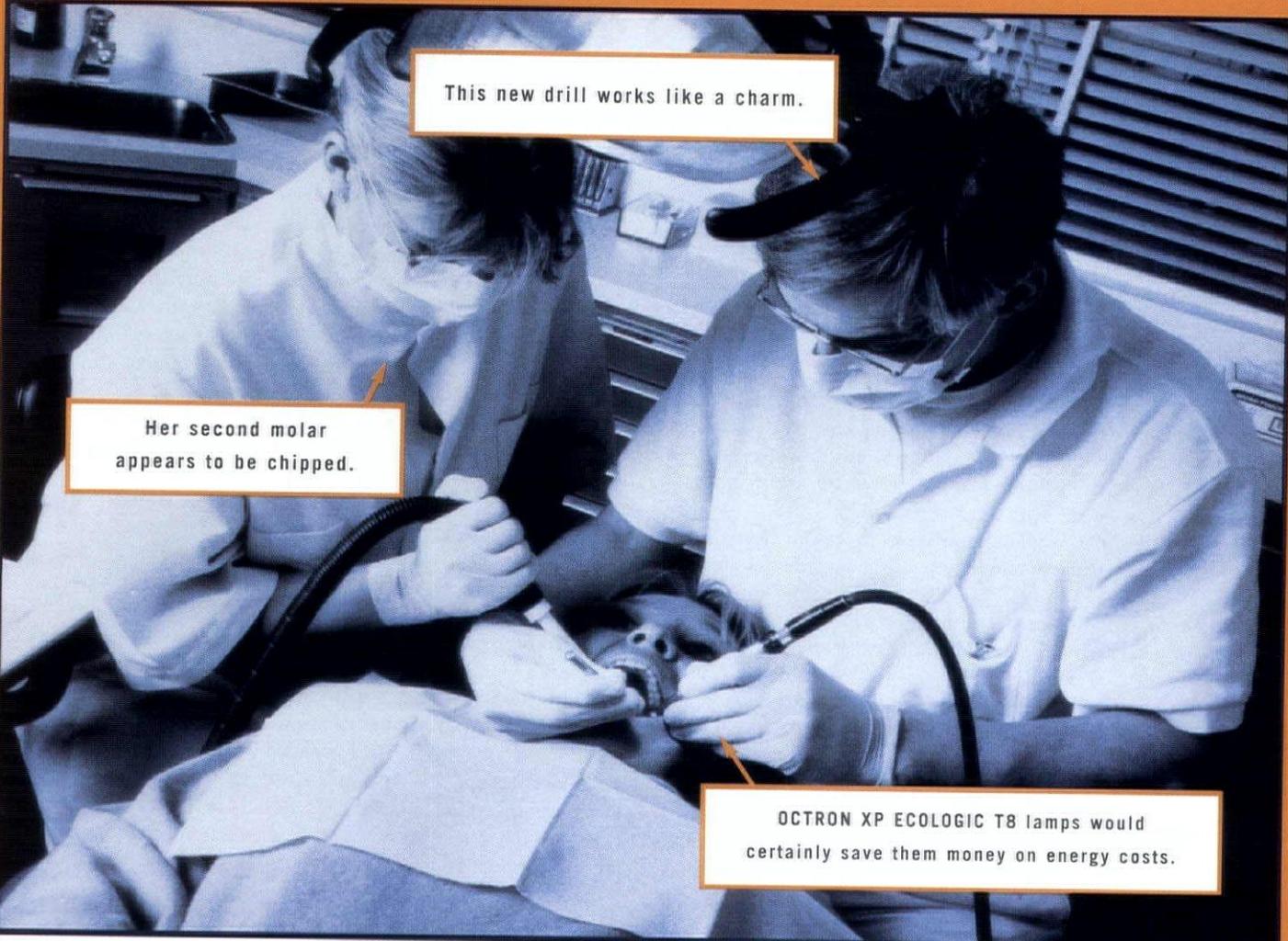
stores. In general, shoppers tended not to be aware of the skylights themselves but commented that the skylighted stores seemed "cleaner" or "more spacious" than other similar stores.

The magnitude of these findings is remarkable to chain stores that work on margins of only a few percentage points. Were the chain to add the skylighting system to the remaining one-third of their stores, their yearly gross sales are predicted to increase by 11 percent.

WHAT ABOUT THE SCHOOLS?

The impact of daylighting on the performance of school children has been a subject of interest for many years. Before

(Continued on page 102)



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(Continued from page 100)

fluorescent lighting became prevalent, it was generally assumed that all schoolrooms would be daylighted as a matter of course. However, starting in the late 1960s, a number of forces came into conflict with the design of daylighted classrooms. Engineers, concerned about energy conservation and air conditioning requirements, argued against the use of large expanses of glass and high ceilings. Facility managers often contended that windows and skylights were a maintenance and security risk. Educational theorists argued for flexible, open classrooms with solid exterior walls that would avoid distracting views. As a result of these various pressures, a vast experimentation in school design was undertaken, creating a range of new classroom forms—many with little or no daylight.

But the case of the windowless classroom was far from proven. As the medical research community published results linking light levels and human health (such as Seasonal Affective Disorder, or SAD), more and more parents argued the necessity of reinstating daylight in our children's schools. HMG went after the scientific data to support their concerns.

Three public school districts agreed to provide test score data to HMG: Seattle, WA (62 schools), Poudre, CO (23 schools), and Capistrano, CA (27 schools), representing a wide range of climates and building types. HMG chose to examine data from second-through fifth-grade students at elementary schools since children at that age spend most of their school time in one physical environment—their assigned classroom. All classrooms in the three districts were ranked on a 0-5 scale for their daylight characteristics,

where 5 is the best daylight and 0 is a classroom with no windows or toplighting. In all, three codes were given to each classroom, one for the windows, one for skylights and one for the combination of windows and skylights. Although the codes were rough, they took into consideration the quality of daylight in the space and its expected distribution across the space. A total of over 2,000 classrooms was coded by reviewing architectural plans, aerial photographs and conducting selective site visits.

The student test score data was obtained from records of highly standardized tests that are administered annually in each district. HMG analyzed test score results for over 21,000 student records from the three districts. The student data sets also included information about student demographic characteristics (like socioeconomic indicators, gender, ethnicity, number of students per class, etc.) and participation in special school programs. All this data was fed into a linear multivariate regression analysis with the classroom daylight codes to probe the correlations and significance of the variables.

The Capistrano analysis proved to be the most robust—daylighting conditions in this district were the most diverse and the data was the most detailed. Capistrano schools are typical California one-story schools with a combination of 50s' daylighted "finger plan" modules and 70s' open plans with no windows. Forty percent of the classrooms are portables. The classrooms have a variety of five types of skylights in seven different schools, and each school has a range of daylighting conditions. Some are naturally ventilated, and some have air conditioning.

(Continued on page 105)

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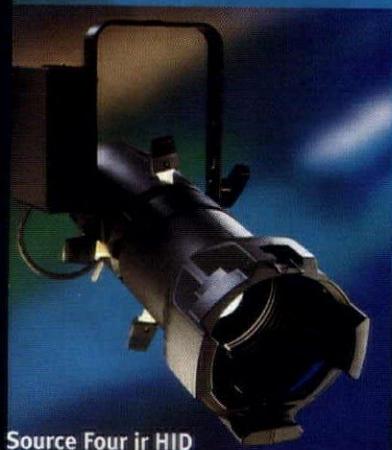
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(Continued from page 102)

Another major advantage at Capistrano is that they conduct the standardized tests twice during the school year—once at the beginning and once near the end. So the noted change in test scores could be clearly associated with the experiences in that year. (Analyses for the other two districts used final test scores at the end of the school year rather than the incremental change from the beginning of the year.)

POSITIVE RESEARCH RESULTS

Controlling all other influences, they found that Capistrano students with the most daylighting in their classrooms progressed 20 percent faster on math tests and 26 percent faster on reading tests in one year than those with the least. The results were similar when windows were evaluated separately. Students with the largest window areas were found to progress 15 percent faster in math and 23 percent faster in reading.

CAPISTRANO: CHANGE IN TEST SCORES

	Reading	Math
Combined Analysis		
Max. Daylight Operable Window	+26%	+20%
	+7%	Not Sig.
Individual Analysis		
Max. Window	+23%	+15%
Skylight A	+19%	+20%
Skylight B	-21%	Not Sig.
Operable Window	+8%	+7%

CONTROLLING ALL OTHER INFLUENCES, RESEARCH CONCLUDED THAT CAPISTRANO STUDENTS WITH THE MOST DAYLIGHTING IN THEIR CLASSROOMS PROGRESSED 20 PERCENT FASTER ON MATH TESTS AND 26 PERCENT FASTER ON READING TESTS IN ONE YEAR THAN THOSE WITH THE LEAST.

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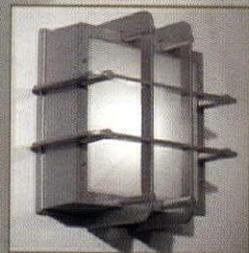


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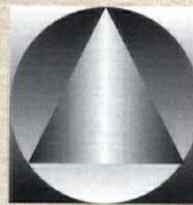
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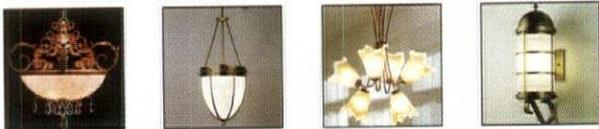
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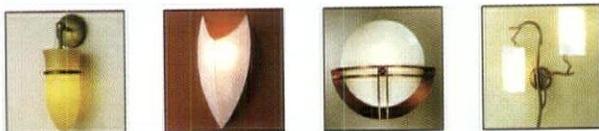
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The skylight results, however, pointed out some interesting design-related differences. Students who had a well-designed skylight in their room (one that diffused daylight throughout the room and allowed teachers to control the amount of available daylight) also improved 19 to 20 percent faster than those students without a skylight. However, skylight systems that allowed uncontrolled direct sun into the classroom showed a decrease in test scores for reading (-21 percent) and no significant change for math. Clearly, lighting quality counts.

The study also identified another window-related effect: Students in classrooms where windows could be opened were found to progress seven to eight percent faster than those with fixed windows, regardless of whether they also had air conditioning. These effects were all observed with 99 percent statistical certainty.

The Seattle and Fort Collins studies corroborated the Capistrano results with positive and highly significant effects for daylighting. High daylight levels in classrooms for these districts were shown to produce seven percent to 18 percent higher scores than those with the least daylight.⁴

FUTURE DETAILED STUDIES

The combined strength of these two studies, showing positive effects in two very different applications—retail sales and schools—makes a persuasive argument that these performance benefits from daylighting can be translated to other building types and human activities.

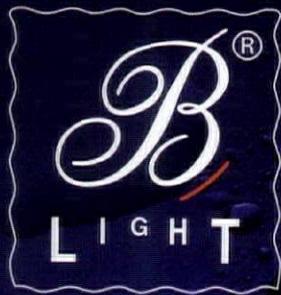
These studies have also shown that much about the impact of the physical environment on human performance can be learned from large population studies, similar to medical epidemiological studies. HMG is funded to continue this work and hopes to be able to pursue an even more detailed study about the effects of lighting quality, both daylight and electric, in future work. ■

See illustrative details of the study on page 108.

Barbara Erwine is sole proprietor of Cascadia Conservation, a daylighting consulting firm based in Seattle, WA. Lisa Hescong is an architect and partner of the Hescong Mahone Group in Sacramento, CA.

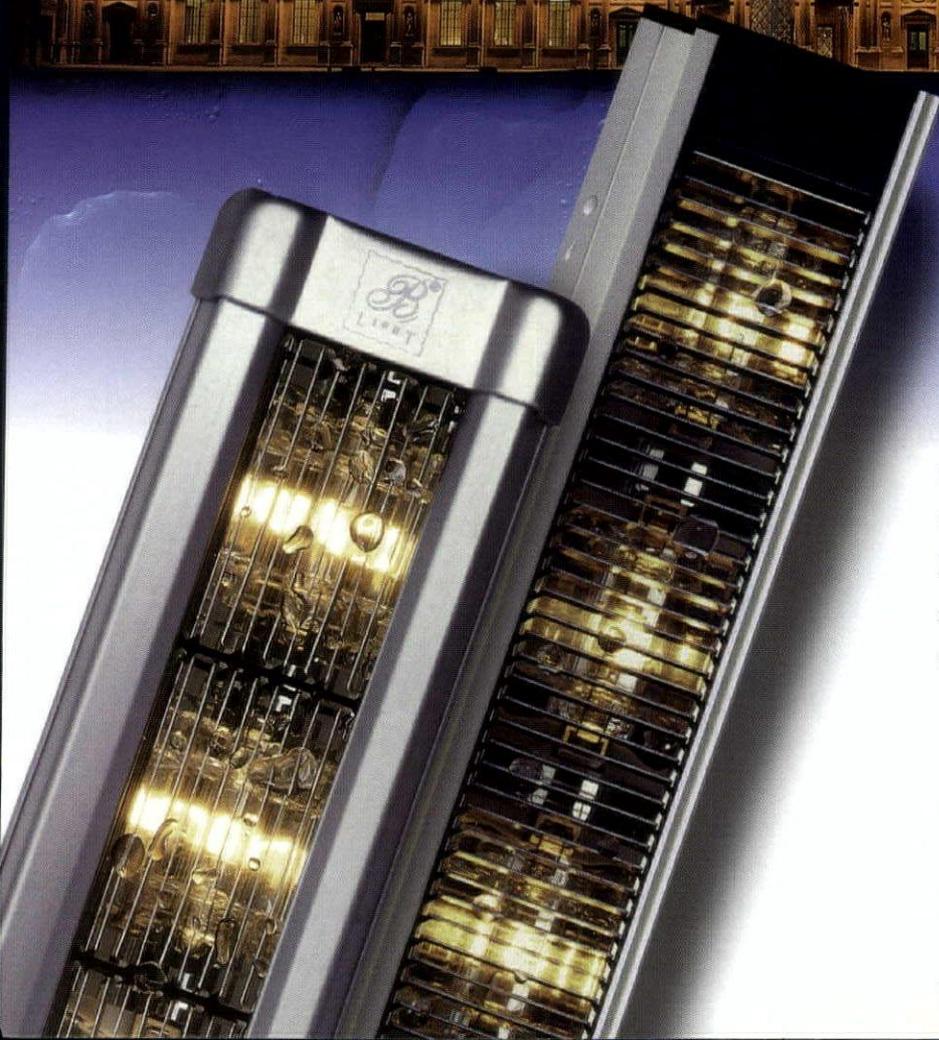
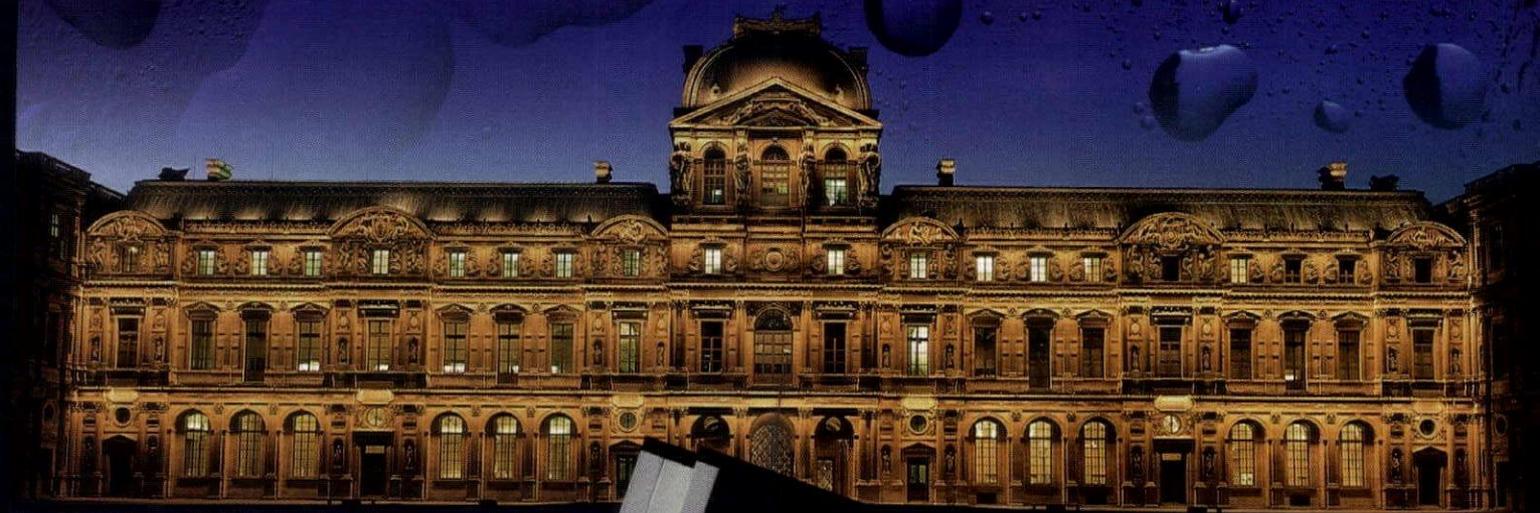
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- 2) *Solar Today*, May/June 1995, pg. 26-29 and *Greening the Building and the Bottom Line*, RMI.
- 3) Nickas and Bailey, "Analysis of the Performance of Students in Daylit Schools," *Proceedings of the American Solar Energy Society* 1997.
- 4) For complete details on these studies, the full research report can be downloaded from the PG&E Daylight Initiative website at www.pge.com/pec/daylight.



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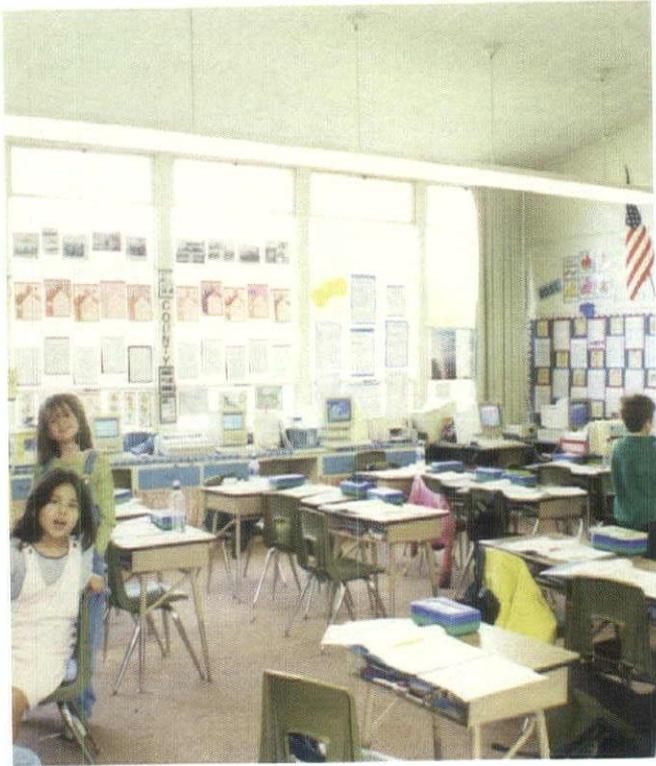
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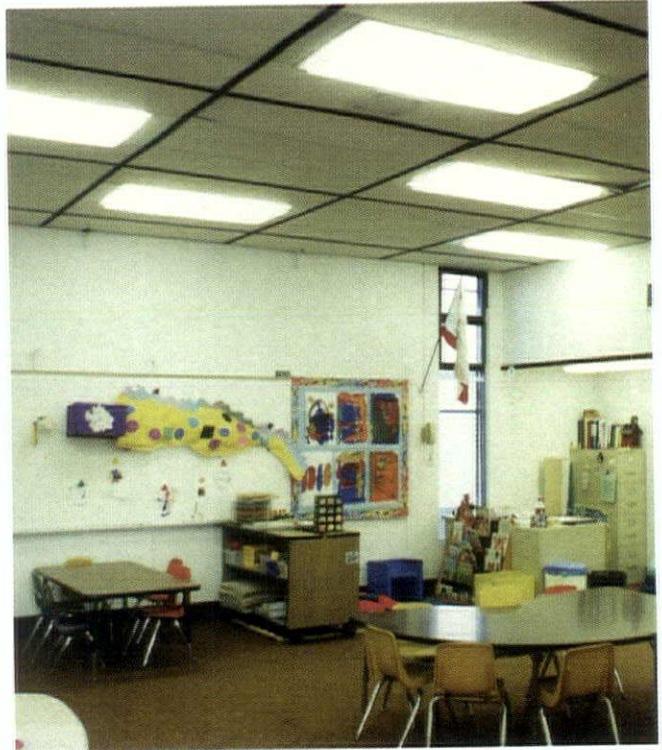
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(Continued from page 106)



BALANCED DAYLIGHT FROM BOTH SIDES GIVE THIS CAPISTRANO CLASSROOM A WINDOW AND DAYLIGHT CODE OF 5.

PHOTO BY LISA HESCHONG



ELECTRIC LIGHTING PREDOMINATES IN THIS CAPISTRANO CLASSROOM WITH A NARROW CORNER WINDOW WITH A WINDOW CODE OF 1.

PHOTO BY LISA HESCHONG



THIS CAPISTRANO CLASSROOM WITH A DIFFUSING SKYLIGHT AND ADJUSTABLE LOUVERS TO CONTROL DAYLIGHT LEVEL CORRELATED WITH HIGHER TEST SCORES.

PHOTO COURTESY OF PJHM ARCHITECTS, INC.

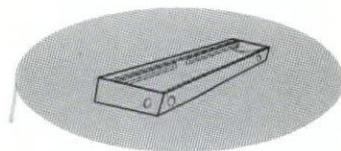


THIS CAPISTRANO CLASSROOM WITH A CLEAR SKYLIGHT ALLOWS DIRECT SUN AND UNCONTROLLED GLARE INTO THE SPACE AND CORRELATED WITH LOWER TEST SCORES.

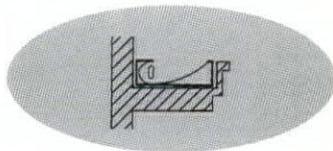
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SLIM PICKS— T5 DIRECT/INDIRECT TECHNOLOGY

BY DAVID HOUGHTON, PE, CONTRIBUTING EDITOR

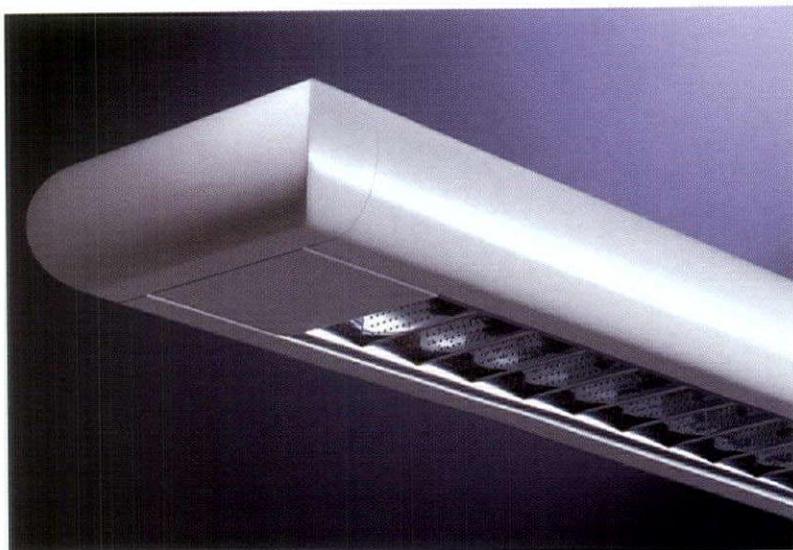
The promise of T5 lamps—high efficiency, optical controllability and just plain coolness—is becoming a reality. While commercial T5 fixtures have been appearing over the last couple of years, designers are creating direct/indirect pendants that exploit the new lamp's advantages while taming the main drawback: high surface brightness.

First, a quick recap on T5 technology. A standard $\frac{5}{8}$ -in.-diameter T5 puts out as many lumens as a 1-in.-diameter T8, while using 10 to 20 percent less input power. The T5 lamp also comes in a high-output (HO) version that delivers an amazing 5,000 lumens from the same slender lamp (nominal 4-ft. length). With lumen maintenance of 95 percent or better over the lamp's 15-20,000-hour lifetime, T5 lamps have the highest maintained system efficacy of any white light source.

Another benefit of T5 technology is the ultra-slim ballast case. While T8 ballasts are just now transitioning to a low-profile case, T5s have always used a standard box measuring a mere 30 mm x 30 mm (1.2 in. x 1.2 in.). These ballasts are much easier to hide in slender fixtures. Ballast features such as end-of-life shutoff circuitry and input voltage control are also more standard than in older, larger fluorescent ballasts. Another nice feature of T5 ballasts is that real ballasts—not just the “reference ballast”—have a ballast factor of 1.0, meaning that catalog lumen ratings are much closer to reality.

Because the T5 puts out the same light as a T8 with 40 percent less lampwall area, its surface brightness is about 60 percent higher than that of the T8. (The T5/HO surface brightness is 175 percent higher than a T8.) This is both an opportunity and a liability. The intense linear source allows very efficient reflector and refractor design, since its slenderness provides an accurate target with little internal shading. However, the T5 lamp is just too bright to look at. This challenge has kept most T5 fixtures as indirect (uplight only) fixtures, where there is no danger of glare from the lamp.

Now fixture designers are coming up with commercial linear pendants that combine uplight and downlight in svelte and optically sophisticated direct/indirect designs. The idea is to harness the T5's ability to kick light out sideways above the fixture, while providing a

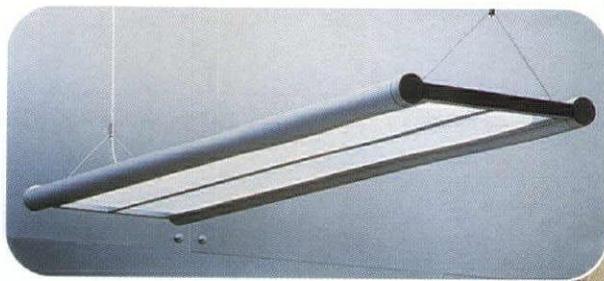


MINUET FROM LEDALITE.
CIRCLE No. 79

carefully controlled downlight component to get some punch on the worksurface. Designers are also embracing the high-output version of the T5 as the preferred driver for many of these fixtures.

Ledalite's Minuet (see photo above) was among the first direct/indirect T5 fixtures—it started shipping in early 1998 using standard T5 lamps in a 2.4-in.-thick fixture. In mid-1999, the fixture was redesigned to use the T5/HO lamp. The Minuet uses a parabolic reflector below the lamp for 55-degree cutoff at all viewing angles. “That’s usually enough for glare control, but if you have specular reflecting materials on the desktop (i.e. glossy magazines, photos, etc.) then you can get veiling-reflection glare,” said Andy Vine, marketing manager with Ledalite. For those situations, the Minuet is available with a translucent lens. “The tradeoff is that you lose some fixture efficiency with the lens,” said Vine.

Another direct/indirect T5 offering is the Zumtobel Staff Aria (see photo opposite). The Aria provides downlight via a waveguide—a high-tech plastic sheet that floats between and soaks light up from two T5/HO lamps. (A waveguide is a material that, when light or other electromagnetic radiation is introduced at one end, sends the light through the material via internal reflection.) A micro-prism sheet laminated to the bottom of the waveguide sends about 20 percent of the fixture's output down to the work surface, while the other 80 percent goes up to provide indirect lighting. The large area of the waveguide keeps the brightness under control. The fixture is also available in a configuration that runs a single T5/HO lamp down the middle, with waveguide sheets on



ARIA FIXTURE (LEFT) AS SEEN IN THE CONFERENCE ROOM OF BUTLER ROGERS BASKETT ARCHITECTS IN NEW YORK CITY (BELOW). PHOTO © DUB ROGERS
CIRCLE No. 80

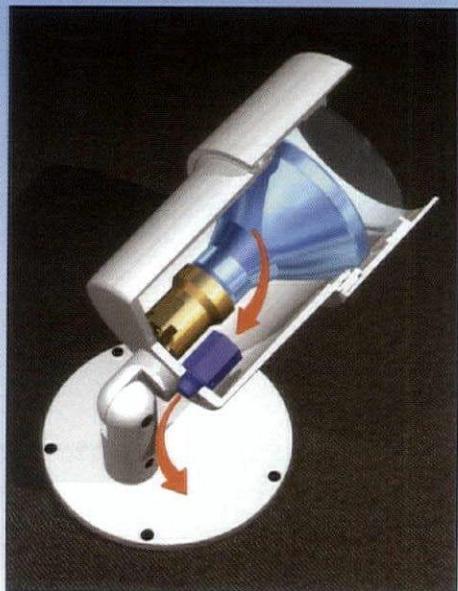
either side. Although the Aria is a high-end fixture intended for use in executive offices and conference rooms, it has also been installed in large open areas such as trading floors.

Zumtobel Staff's Claris fixture harnesses the T5/HO with a more conventional look. The Claris is also an 80-percent indirect/20-percent direct fixture, but uses a parabolic louver and milky acrylic diffuser to control the downlight component. Even with just a single T5 lamp, the fixture can put 70 fc on the work surface. Zumtobel Staff Applications Engineer Erik Svanholm noted that "the direct/indirects can give you high illumination under the fixture and good general illumination between the fixtures, but designers need to know that the uniformity is much less than with purely indirect fixtures." For large areas, the Claris is available in nominal 8-ft. lengths with two lamps end-to-end, but since the metric-length T5s are a bit shorter than U.S.-size lamps, a 7-in. plastic "bridge" is needed to connect the fixtures into a long run. With the single-lamp T5, users can run as many as 70 lamps (280 linear ft.) on a single 277V, 15A circuit.

Svanholm is enthusiastic about the possibilities of the T5/HO. "With the standard T5, we don't really see that much performance difference from T8 lamps. But with the T5/HO, we can make a serious pendant fixture work with a single lamp."



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DIRECT/INDIRECT VISUAL COMFORT STUDY

Conventional wisdom says that to control glare in office lighting, the designer needs to shield fixtures from emitting light at near-horizontal angles. The parabolic louver is the traditional embodiment of this approach, with nearly complete light cutoff at angles above 55 degrees from the vertical (zero being straight down, 90 being straight horizontal).

The arrival of high-brightness T5 lamps has caused designers to think about glare coming not from flat angles, but from high angles. (In this perspective, the viewer is the center of the polar coordinate system rather than the light fixture. Zero degrees refers to looking straight ahead, while 90 degrees is looking straight up.) To better understand high-angle glare, the Illuminating Engineering Society of North America (IESNA) and International Association of Lighting Designers (IALD) recently conducted a study on overhead glare. According to Peter Ngai, Chairman of the IESNA Subcommittee on Overhead Glare, the study consisted of a series of experiments to test the effects of light coming from

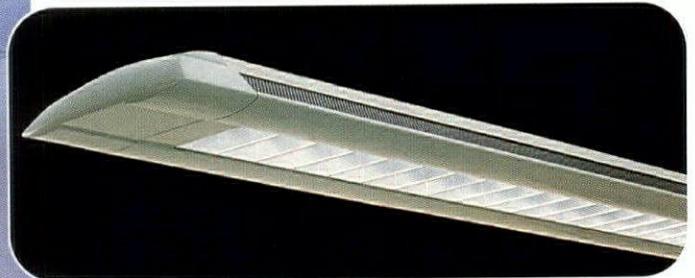
nearly or directly overhead. The basic experiment consisted of a room in which direct/indirect fixtures provided a base level of background lighting. With a test subject looking horizontally at a printed target 20 ft. away, a "glare source"—a 4-ft.-long fixture packed with an array of dimmable lamps—was placed at varying angles (55 to 9 degrees) to the viewer. The conclusions of the study were:

- Overhead glare is indeed an extension of horizontal glare. As the source moves higher, visual discomfort continues until it passes completely out of view.
 - Bright sources are more tolerable with higher ambient light levels.
 - Larger glare sources creates more discomfort.
 - The threshold luminance level for glare tolerance is about 9000 cd/m², approximately the brightness of a T8 lampwall.
- The full results of the study will be published in the *IESNA Journal* this year.

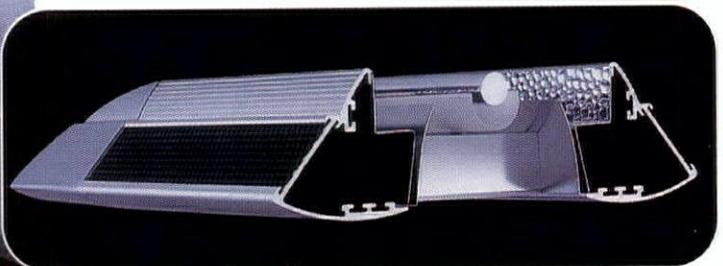
The Peerless Mirage (see photo below) is another example of the new wave in T5 pendants. The Mirage uses a high-temperature acrylic lens (the "VisorOptic") to soften the downlight component in this 2 $\frac{3}{4}$ -in.-deep pendant. "If you look up at the lens from below, its brightness is less than a T8 lamp because of the lens just below the lamp," said Doug Herst, VP with Peerless. The Mirage comes in one- and two-lamp versions using the T5/HO, and has an up/down photometric split of about 80 percent/20 percent.

The Mirage also uses a conventional parabolic baffle to channel the downlight. "Based on a study that we worked on with the

Lighting Research Center (see sidebar) we feel that it's not enough to control glare at high angles," said Herst. "You have to reduce brightness directly overhead—people can feel it when there is a really bright source right above them." One direct benefit of the new T5 pendants is wider spacing. The Mirage, for example, can be spaced 15 ft. apart, with a 9-ft. ceiling and 20-in. suspension. Most T8 pendants need to be spaced 8-12 ft. apart for reasonable uniformity. This means that a large open area can be illuminated with 20 to 40 percent fewer fixtures and correspondingly fewer lamps to replace. ■



THE MIRAGE FIXTURE FROM PEERLESS (ABOVE), SHOWN IN CROSS SECTION (BELOW) AND IN AN OFFICE SETTING (LEFT). **CIRCLE NO. 81**



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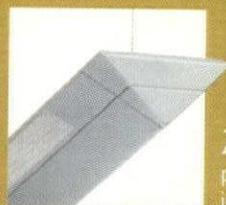
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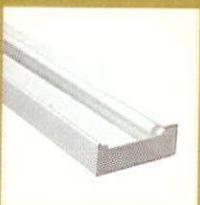
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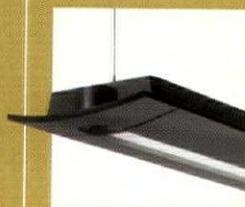
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pendant mounted
indirect



MOD-22
pendant mounted
indirect



Cove-25
concealed cove
indirect



Ciros
pendant mounted
indirect/direct



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MAINTAINING CONTROL— SPECIFIERS DISCUSS THE SYSTEMS

BY ALICE LIAO, ASSISTANT EDITOR

Architectural Lighting interviewed specifiers—lighting designers, architects and engineers—about their experiences with lighting controls and asked them to explain their system preferences, what manufacturers and products they favored and their views on the state of the art in controls today.

Karl Haas
Design Associate—Gallegos Lighting Design

AL: *What types of controls do you favor?*

Haas: A dimming controls system has a number of operational advantages that should be considered. Astronomical and photocell triggers provide a seamless transition from day to nighttime lighting environments. Real-time programs allow for an extensive level of scheduled events that can be programmed years in advance. Show triggers provide lighting responses to support a preprogrammed series of events.

Along with the automation of cycled programming and interface, the increased lamp life for incandescent loads is a direct byproduct of dimming. Lamp life can double or even triple by being dimmed 10 percent. The cost of a dimming controls system is often paid for by the reduction in labor cost for maintenance over a period of time.

AL: *What concerns should the specifier keep in mind when specifying a controls system?*

Haas: When specifying a lighting controls system for any given project, the specifier needs to consider flexibility, reliability, affordability and compatibility. Often, the specific needs of the project dictate which of these concerns is more important, but each aspect requires consideration as the specification is developed.

AL: *Describe your thoughts about flexibility.*

Haas: Flexibility is often an aspect of software that allows a lighting controls system to expand to encompass certain control needs of a facility even before the actual needs are identified. Quite often, a controls specification is required before all of the operational needs of a facility are identified. The ability to separate, combine or reconfigure control parameters is essential in a system's software capabilities. Although the hard-wire aspect of circuiting will remain a limiting factor, the organization of zones, rooms, sub-rooms and presets must remain assignable throughout a project.

AL: *You also mentioned reliability. What should the specifier look for?*

Haas: Reliability is a consideration that goes beyond the hardware and software elements of system. Certainly the dimmers, relays and control components of any approved lighting controls system need to function properly and consistently throughout the expected life span of the equipment. But in addition to equipment performance, a positive,

constructive relationship between the lighting specifier and controls system manufacturer must be established and maintained. The manufacturer must be accessible to the lighting specifier to incorporate any system modifications and adjustments that may become evident during the development and implementation of a project. Conversely, the specifier must provide clear and accurate feedback on the controls system performance to the manufacturer in an effort to continually improve upon the end user product. The reliability I refer to would be a commitment—on both parties to strive for the best possible product—a collaborative process that does not end upon a system's purchase.

AL: *Which brings us to affordability. Are controls heavily scrutinized in the specification?*

Haas: Although budgets will vary greatly from project to project, there has not been one project that I have designed where the cost of a lighting controls system is not scrutinized. In other words, at some point and at some level, cost does become a consideration. If a system is promoted as "the best in the industry," but is twice the cost of another product that will meet all of the project's control requirements, the specifier would be negligent to suggest the additional. Many of the controls system manufacturers are competitive with their pricing and consequently, no one particular company locks in the bid by price alone; an "apples-to-apples" comparison often results in a similar pricing structure.

AL: *What compatibility issues must you take into account when specifying controls?*

Haas: Due to the nature of many of the projects our firm specifies, it is often necessary for the lighting controls system to interface with a variety of show controls systems. Our projects are often associated with some entertainment-based element, which provides either constant or on a repeated cycle, a "show." This dictates that the lighting controls system—while being able to function as a stand-alone architectural controls system—also be able to receive and respond to show control signals typical to the themed entertainment industry standards. Consequently, I have had the tendency to favor a lighting controls system that has evolved from the theatrical community.

AL: *A lot of theatrical controls manufacturers have begun marketing their products for architectural environments over the past 15-20 years ...*

Haas: The cross-over between theatrical and architectural lighting controls systems has increased tremendously. Theatrical controls manufacturers like Strand Lighting, Electronic Theatre Controls and Rosco Entertainment Technology have continued to develop architectural products and expanded their dimming and control devices to accommodate large networked facilities like convention centers,

theme parks and performing arts complexes. While expanding their product line, they have incorporated the theatrical qualities of the systems, such as the ability to address large numbers of dimmers, channels and presets as well as the ability to interface with show control requirements. The programming "language" for these types of controls systems has been developed from the entertainment industry where time is often critical and therefore has a tendency to be more "user-friendly" and provide quicker methods to getting from point A to point B in the process.

Simultaneously, the more traditional architectural controls manufacturers like Lutron have advanced their hardware to support theatrical applications like DMX protocol capabilities.

The bottom line has resulted in a "win-win" situation for the lighting specifier and the end user. As technology advances, the delineation between theatrical and architectural lighting controls has become less and less obvious. The justifications for the use of lighting controls may not experience a major change. Hopefully, as budgets and costs come closer together and competition creates a continued level of options and features, the specifier will not need to defend so forcefully the need for the inclusion of a sophisticated level of lighting control.

Tom Kaczowski, AIA
Lighting Group Director—HOK

AL: *What types of controls systems do you favor in your designs?*

Kaczowski: We specify and use most manufacturers' controls products but are always on the lookout for those who go the extra mile to simplify the set-ups. Many of our lives have gotten to be too technologically complicated already. Walking into a conference room and not being able to turn on/off/dim the lights is really an unnecessary challenge.

AL: *Where does this difficulty arise?*

Kaczowski: With preset controls systems, advancing technology can sometimes be a burden when it comes to wall box lighting controls. As more features are included, the understanding/comfort level of the typical "office user" drops significantly. Too many options can be a bad thing. In other words, if a wall box dimming system in an office could flash "12:00" like many home VCRs, it probably would. "Just tell me how to turn the lights on/off/dim when I walk into the room," is a common statement we hear from clients. Educating an end-user, all end-users, who potentially walk into a conference room is a tall order.

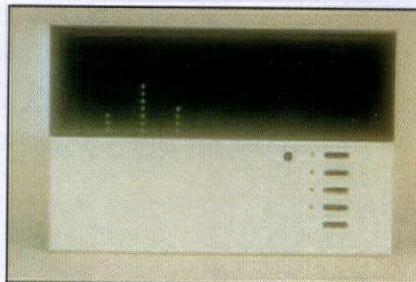
When it comes to lighting management software, every system we have seen at HOK has been incredibly "engineered" to "do everything" needed in our buildings. However, putting it all in layman's terms has eluded most major manufacturers. I also think of a building as having a variety of "looks" or "scenes" like set-ups in a dimming system, but this idea is not simply translated in lighting management software I have seen to date. Basic end-user interface also needs to be more intuitive and less engineered. Pull a building manager in off the street and ask them to program their lighting without the 2-in.-thick manual. A technical support hotline should not be required to re-program the building lighting.

LIGHTING CONTROLS SYSTEMS

Spark by **Complite** is a compact lighting console that features 240 control channels, 48 scrollers, 512 dimmers (including scrollers) and 24 or more intelligent moving lights. Other features include automatic split dipless cross-fader with manual override and two displays; three wheels for parameter control; trackball to control pan and tilt; general master with blackout switch; two output connectors for DMX512 or proprietary protocol; position, color and gobo libraries; multi-part cues; memory modification with delta tracking; and multi-layered soft patching. **Circle No. 90**



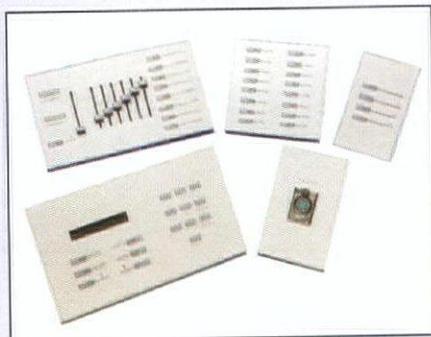
Unison by **ETC**, designed for applications such as theaters, hotels, churches and convention centers, offers lighting control flexibility. Desired lighting looks can be programmed on a theatrical console or at a multi-page Unison LCD touchscreen station, and presets selected with a touch of a button or automatically by the integral astronomical timeclock. Unison features a fully programmable button, fader and LCD stations and the Echelon Link power control network offers topology-free wiring so that stations can be wired in any configuration—star, bus or loop. **Circle No. 91**



The Grafik Eye Series of multi-scene preset lighting controls from **Lutron** enables lighting designers to create different moods and adjust the lighting for various activities

in any room. From a wall-mounted control or an infrared, wireless remote control, Grafik Eye can transform a room into a number of lighting scenes that have been pre-programmed into the system. The controls can interface to projection screens, A/V equipment, climate controls and security systems for an integrated total control system. **Circle No. 92**

The Premiere lighting control system by **Strand Lighting** is comprised of three basic elements: a central processor, control stations and various load devices. The central processor interprets user's commands received from control stations and provides control signals to the load devices. Control stations feature 16 templates per station, concealed fasteners for screwless faceplates and can connect to a common data highway (C-LAN). The system is configured via a data file created with Premiere Configuration Software. **Circle No. 93**



The **GE Total Lighting Control Level III Lighting Control System** combines the power of the PC with distributed intelligence in each panel to provide energy savings and occupant satisfaction according to the company. Optional software modules include energy usage analysis and graphics giving the operator powerful tools for managing the facility. Key features and benefits include: distributed panel intelligence in which each panel operates independently so the system continues to operate even in the event of isolated failures; remote/local PC programming that may be done at a central PC, a portable PC connected to local panel or remotely via modem; a complete suite of occupant-sensitive, energy-saving scenarios including smart time delay overrides via phone or switch, blink warning, cleaning/janitor function, daylight shed and common area control; multiple options for integration; management reports and realtime graphics. **Circle No. 94**

Erco Lightcontrol networks luminaires to create "intelligent" luminaire systems. Based on LON bus, the international standard for building control and instrumentation technology, the system features an illuminated preset display that guides the user through the various operation steps by means of plain text menus and softkeys. The preset not only operates Lightcontrol, but also programs and configures the system.



An infrared receiver is integrated into the preset. Extensions are connected directly to the bus control cable. When used with a PC interface and the V24 preset software, Lightcontrol can be operated from a PC. **Circle No. 95**

AL: *What would ideally be done to fix these problems?*

Kaczkowski: Design a preset lighting controls system that requires no training to use and that is more intuitive than engineered. This is the biggest challenge I see facing the lighting controls industry. I, for one, have requested that Lutron bring back the Aurora dimming control plate which, in my opinion is the simplest control station in the industry. A "basic model" and more advanced models would be beneficial so the control solution can be tailored to the application's and client's level of sophistication.

Regarding lighting management software, I would appreciate a simple marketing piece in layman's terms that I can take to an owner describing the "10 things" the system can do. In the beginning of many projects, a simple system's overview is critical to ensure owner "buy-in"; the real system's details can come later and will, of course. The interface should also be more intuitive.

Stephen Bakin
Architectural Lighting Engineer—Kling Lindquist

AL: *What controls manufacturers do you prefer in your designs?*

Bakin: I generally use Lutron products in dimming specifications since their products tend to be a bit more versatile and they offer a wide spectrum of dimming-related products. It is certainly an advantage to have a ballast that dims all the way down to one percent instead of five percent or 10 percent. One can usually specify a system that suits the needs of almost any situation, without excessive inclusion of redundant products. For example, the Grafik Eye system allows full dimming control and preset scenes for an individual room, without the need for a more elaborate and expensive system, as is traditionally required in order to achieve preset scenes. They also now have thin-profile dimmers that are rated at 16 amps user-friendly software as an aid to specification.

I've also had a high degree of success with the TLC (Total Lighting Control) system from GE. A particularly noteworthy example was the upgrade of the lighting controls system in the Pennsylvania Convention Center. Prior to the installation of this system, the electricians and engineers in the facility had a very disorganized method of lighting control, whereby walkie-talkies would constantly be used to request switching of light fixtures. In a building with more than 12,000 fixtures, the existing control method resulted in tremendous inconvenience and huge energy waste, as lights were often on when not needed. After the GE software program was installed, all light fixtures could be controlled via one computer terminal, accessible for switching purposes via in-house phones. The electricians now each carry a credit card-size card that features a series of codes needed to facilitate switching via in-house phones. This has resulted in significant energy savings and efficiency.

Rogier van der Heide, IALD
Hollands Licht

AL: *What controls manufacturers do you prefer in your designs?*

van der Heide: As the projects I design include hundreds of channels and since I create quite complicated scenes and sequences, I prefer manufacturers who have their roots in the theater. Although their systems are not the most user-friendly at first sight, Compulite of Israel certainly has the most powerful tools available on the market for the type of architectural work I do. Although the effects I achieve in my work are usually architectural, because of my background in theater, the way I compose lighting scenes and sequence them is, technically

speaking, theatrical. Compulite is a firm that has a very strong position in theater lighting controls. They have the hardware that could easily control a large opera or ballet with 2,000 or more channels. In architecture, it's usually limited to maybe 100. This is helpful because the scale of my projects tends to be very large.

AL: For example?

van der Heide: One of the best examples is the Millennium Dome. The lighting for the Dome basically consists of translucent walls and floors that are backlit. The light behind the walls and underneath the floor moves with shifting intensity from the back of the space to the front of the space. To create this high-impact effect, thousands of fluorescent lamps are organized into rows and individually controlled to turn on and off, one after another. Consequently, you need that many addresses to control them individually. The computer fades them in and out in sequence. While that's typically something you might do with an architectural controls system, which is based on presets and wall panels, this is just a little bit more demanding.

AL: Besides size of the project, what is your criteria when deciding whether to use architectural controls systems versus theatrical controls systems?

van der Heide: Architectural systems and even building management systems that incorporate lighting are fine for general purposes, but when the project demands a more dramatic, theatrical or entertainment-oriented lighting, you really need a dedicated system. The controls systems that are available in the architectural market usually don't have all the features and capacity that you need for large entertainment, theatrical-like lighting designs. On the other hand, the truly theatrical controls systems that are very powerful and reliable because they're backed up by sister systems are more difficult to apply in architecture. The user interface is very primitive compared to what architects and building owners are accustomed to and involve old-fashioned programming with a lot of numbers on a screen—that's it. There's no user interface, no mouse control, no menus—the systems are just not as sophisticated. People should take into account these differences when specifying the very powerful controls systems. When a project uses over 1,500 channels that are all controlled at the same time, the complexity lies not only with the processor of the computer, but also the huge amount of data traffic that must be managed. And architectural controls systems are just not able to do that.

AL: What would you like to see happen about that?

van der Heide: I wish there were more theatrical lighting controls manufacturers moving into the architectural field. One of my very strong desires is improved interaction between the two disciplines in the future. In terms of atmosphere, effect and impact, we can learn tremendously from the theater and the theater people can learn a lot from us in terms of energy efficiency and maintainability of the installation, which isn't an issue for them. The theatrical systems all have a 200-hour lifetime and for them that's fine. We all love that sort of equipment—its effects, colors and gobos, but often cannot use it because of its maintainability.

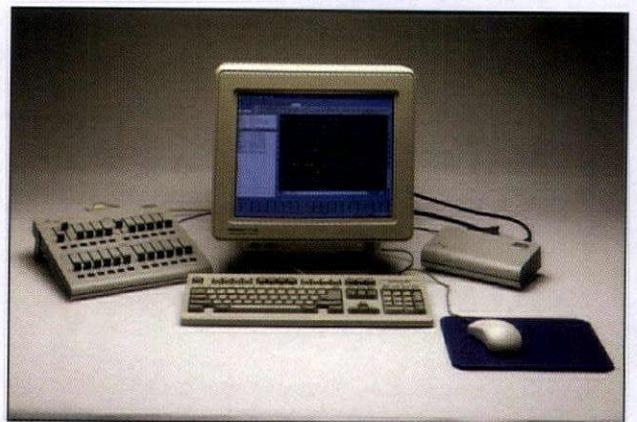
A great development, however, is the introduction of run-only processors that offer all the capabilities of a full version of a control desk, but at a much lower price. Because many clients cannot afford a CPU that costs in the range \$15,000, a run-only device provides an alternative to buying a machine. A lighting designer can rent a computer to do all the programming and upload the program into the run-only processor, which is a small and simple unit with hardly any

Microlite's 600 Series Lighting Controllers easily interface to Johnson Controls Metasys System through the MicroLite Communications Module (COM), an auxiliary board fitted into the electronics section of the lighting controller. MicroLite features include photocell or occupancy sensor selectable switch inputs, occupant warning, astronomical control from panel and can network up to 256 panels with a maximum of 89 lighting panels. MicroLite also enables programming, monitoring and control of lighting loads through central PC configuration. **Circle No. 96**

HUNT Dimming's line of 0 to 10V DC controls for use with dimmable electronic fluorescent ballasts provide linear lighting control from 100 to 50 percent of rated lumen output and are available for both 120V and 277V applications. The Eclipsis series model PS-010 preset slide wallbox dimmer is for use in low-amperage applications controlling up to 40 T8 lamps. Model FD-010 modular system incorporates a wall-mounted, single-point-of-control preset slide unit with a remote-mounted module for high-amperage applications controlling up to 100 T8 lamps. **Circle No. 97**



Horizon software from **Rosco Entertainment Technology** enables users to control a lighting system via a Pentium class PC. Horizon features Windows 98 support, multiple cue lists, which allow simultaneous playback of three different sequences of cues, support for a hand-held focus remote and support for multiple DMX interfaces to increase dimmer counts. Enhanced versions of Horizon software provide an unlimited number of cue lists and moving light control. **Circle No. 98**



buttons. A run-only unit is not programmable, but it can run the show, and in many projects, using one makes sense, because the programming is done when the project is delivered. The programs are still pretty advanced and can trigger certain loops of lighting scenes and wait for input from a sensor or switch. The unit is still an interactive system. Clients are usually not interested at all in programming, but if they need to re-program because they're changing the interior of a store or adding a new gallery, they can rent the machine again. So that's a development that's enabling theater lighting controls companies to move into architecture.

AL: *What products do you prefer?*

van der Heide: In most of our projects, Compulite's model Spark, a full-programmable unit, serves us pretty well. Their run-only version is called SP19—a 19-in. unit, which matches the standard size for electronic devices, professional audio and video equipment. Making the units 19 in. is very smart and facilitates installation. In terms of architectural lighting systems, Erco's Light Control is very extensive. It has a lot of accessories, panels and processors. You can do something very simple or manage an entire building. While it may be more expensive than the Compulite solution, it offers a much more user-friendly interface. Erco's done a good job in terms of interaction with the user.

Keith Yancey, AIA, PE
Lam Partners Inc.

AL: *What manufacturers do you prefer in your controls specifications?*

Yancey: My favorite lighting controls manufacturers tend to be Lutron and ETC since they seem to be on the cutting edge of technology and the most user-friendly. Their actual physical controls feel like they are made, for the most part, of high-quality components.

AL: *What type of controls do you favor in your designs?*

Yancey: Dimmable fluorescent and photocell controls are among my favorite products since the possibility of daylighting as a more usable ambient lighting source is realized through fine-tuned lighting controls that can maintain somewhat constant levels of illumination while reducing energy consumption.

Dimming fluorescent sources can provide greater user satisfaction with the ability to control one's luminous environment. Combining daylighting with ambient electric lighting through photocell control and dimming can help better integrate daylighting into the workspace more efficiently and effectively. The daylight itself will add to the aesthetics of the space but can only result in reduced energy consumption with a well-designed controls system. The overall architectural character of the space and building can be dramatically altered if the building envelope is designed to promote daylight. The building design will have a specific vernacular while being environmentally conscious. The "smarter" the controls, the better the energy savings, and the higher the user satisfaction.

Michael D. White
Leedy & Petzold Associates

AL: *What manufacturers do you favor in your specifications?*

White: My favorite manufacturers are those who produce a consistent product of high quality that is easy for the customer to use. Lutron wall-box controls are uncomplicated and work well. The Lutron Grafik Eye series tops my product list with their bulletproof dimmers that are capa-

ble of dimming a variety of line- and low-voltage sources using the same module. Lutron's fluorescent dimming ballast is the best available for architectural applications since it dims to relatively low levels.

From the customer's point of view, controls must be simple to use, and the Lutron user interface is extremely simple. The Grafik Eye has the usual push-button selection of pre-set scenes and is well-planned and intuitive. More importantly, programming the system is also simple. While many designers would prefer that the user not mangle the perfection that only designers can achieve, a customer needs change and therefore the programming must change as well. Better to give them a tool they can use—after all, we want customers to think about lighting, and experimenting with the dimmers does that.

AL: *When do you prefer more advanced controls in your designs?*

White: On the dry side of architectural lighting, we control lighting intensity with fixture spacing and lamping. For many projects where the architecture is about intersecting planes and abstract space, this works fine. In any space where practical or aesthetic needs are more complex, however, controls are often the right tool to use. The office conference room is a good example since the lighting must address practical needs for low-level lighting during media presentations and aesthetic needs to make our customers (and their customers) look their best and feel comfortable. Wallbox dimmers can provide the basics, but I prefer a preset system to ensure consistency. The user can then call up a well-planned lighting scene by pushing the button labeled "Make the Sale."

At the other end of the scale, projects that require revelation of form, replication of nature and/or sex appeal need dimming so that the intensity of light from various angles can be adjusted for balance, effect or to add meaning. A current project of mine is a jungle fantasy of faux rock and trees surrounding an indoor residential pool. Much more than an enhancement, the controls system for this project is integral to the design so that the sky can change from night to day, and the mood can change from "kids playground" to "adults in suits discuss Mozart." The controls system is pivotal to the success of this kind of project. It allows the designer to create a series of lighted environments to meet diverse needs. You just can't get there any other way.

Harry B. Zackrisson Jr., PE, CVS, FIES
Director of Engineering—Entech Inc.

AL: *What types of controls systems do you prefer in your designs?*

Zackrisson: The lighting controls I favor are occupancy sensors and photocell controls for fluorescent and HID lighting systems and their associated automatic energy controls systems.

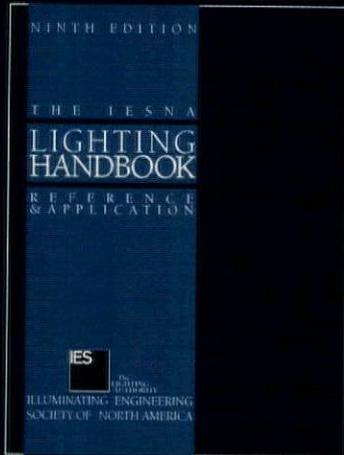
AL: *What manufacturers do you favor?*

Zackrisson: Some of the manufacturers whose dimming devices and photocell control of automatic energy controls systems I prefer are Lutron, Hunt Dimming and Wide-Lite.

Off-the-shelf items can be employed to develop an energy conservative interior lighting system with low overall life cycle costs. The simple provision of adequate lighting at lower levels of energy consumption is no longer a technical problem. The challenge facing us today is to provide quality and control of lighting with attendant reductions in power consumption. Particular techniques emphasized included the use of highly efficient lamp types and control of lighting with automatic dimming. The intent of all of these techniques is the reduction of energy used by and life cycle cost attributable to interior lighting systems. ■

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American Nail Plate Lighting

Phone: (800) LITE-BAR

American Nail Plate Lighting introduces its new line of warehouse-style RLMs, which features products for commercial and residential use. Featured is one of several cast bases with a four-arm head assembly. Part #CBP3510199. Call for a complete catalog.



CIRCLE NO. 100

Bartco Lighting

Phone: (714) 848-0892

Bartco's BFL 600 T5 Integral Ballast Fixture is a versatile, low-profile, two-part aluminum extrusion suitable for architectural and interior display applications with many accessories—extruded snap-on symmetrical and asymmetrical reflector in polished high-reflectance anodized or powdercoat white finishes along with snap-on polycarbon lenses and plug-in male and female connectors for tandem runs. Includes plug-in power cord to electrical supply. Snap-in mounting clips installed with minimum field labor. Visit us at www.bartcolighting.com.

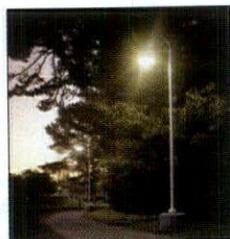


CIRCLE NO. 103

Architectural Area Lighting

Phone: (714) 994-2700

The Universe Collection by AAL is a complete family of decorative and functional luminaires that transcend architectural styles for past and present applications. The Universe Collection fixtures are scaled in three sizes with more forms and configurations to give you an expanded design palette. Made of the finest-grade aluminum for strength and corrosion resistance, the Universe Collection is available in four high-performance reflector systems. Options include aluminum, natural copper or stainless steel hoods, four modular luminous elements and super TGIC powder coating finishes. Three egress options are also available. Visit us at www.aal.net. info@aal.net.

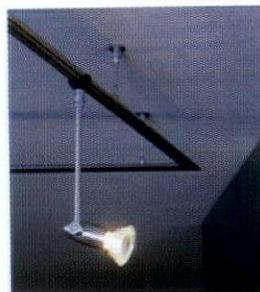


CIRCLE NO. 101

Bruck Lighting

Phone: (714) 424-0500

Bruck Lighting, a manufacturer of innovative low-voltage cable and track systems, introduces Boa, a low-voltage two-circuit track system with dual switching ability. This system may be suspended or flush mounted, installed vertically or horizontally and is available in chrome or matte chrome. All Uni-lights fixtures can be utilized with Boa as well as all seven other Bruck systems. Boa will be on display at Lightfair in booth #101. Visit us at www.brucklighting.com.

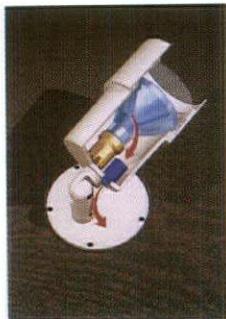


CIRCLE NO. 104

B-K Lighting, Inc.

Phone: (559) 438-5800

The AC Valve System (Anti-Condensation Valve) utilized in B-K Lighting's PAR30/PAR38 fixtures expels moisture-laden air from the hermetically sealed optical compartment, creating an internal vacuum and eliminating the possibility of condensation. Leading industry organizations have awarded the ACV Valve System for its significant advancement to the art and science of lighting.



CIRCLE NO. 102

Bronzelite

Phone: (717) 350-7131

Bronzelite's DB1000 in-ground fixture provides a solution for creative accent lighting that adds value and impact to commercial architectural and landscape features. Built to outperform and outlast any other fixture on the market, the DB1000 also represents new levels of contractor compatibility, fail-safe operation and ease of installation.



CIRCLE NO. 105

Color Kinetics

Phone: (888) 385-5742

ColorBlast from Color Kinetics is a solid-state, silent fixture designed to wash interior and exterior walls with rich, saturated colors and color-changing effects. Available in both black and white finishes, ColorBlast uses the company's patented Chromacore technology to generate over 16.7 million colors and color effects via microprocessor-controlled LEDs. Visit us at www.colorkinetics.com.



CIRCLE NO. 106

Cooper Lighting

Phone: (912) 924-8000

Cooper Lighting introduces Sure Lites FasTest CC-7 and CC-8 high-capacity emergency fixtures. Operation of the transfer circuit and emergency lamps can be safely verified by activating the FasTest Photocell Test Switch with a laser pointer. Crafted from rugged polycarbonate, each unit features line-latched electronic circuitry and snap-together components. Both 12W/12V heads, featuring PAR36 lamps and glare-free lenses, offer horizontal and vertical adjustability. Housing boasts eight locations for mounting of heads. The CC-7 has a total capacity of 60W with 36W remote capacity; the CC-8 has a total capacity of 100W with 76W remote capacity. A solid-state charger, switching transistor and overload monitoring device provide trouble-free service. The long-life lead-calcium battery is fully sealed and maintenance-free.

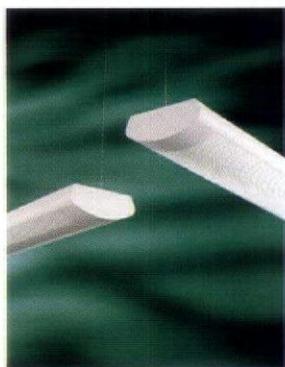


CIRCLE NO. 109

Columbia Lighting

Phone: (509) 921-8300

Lexim from Alera Lighting is the newest suspended luminaire designed for the T5/HO lamp. Its compact, oval shape and innovative perforated housing give Lexim a unique and contemporary appearance. Constructed of steel, Lexim is available in lengths up to 12 ft.



CIRCLE NO. 107

Davis/Muller Lighting

Phone: (888) DAV-MULL

Davis/Muller Lighting's Elements Series S5510 is one of the many newly introduced, specification-grade sconces in our extensive line of decorative lighting products. Shown with perforated diffuser, this ADA-compliant sconce is also available with frosted glass or white acrylic diffuser. All designs can be complemented with matching pendants and surface mounts. Davis/Muller fixtures are available in numerous sizes, lamping options and finishes. Visit us at www.davismuller.com.

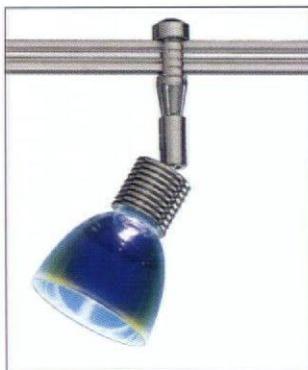


CIRCLE NO. 110

Con-Tech Lighting

Phone: (847) 559-5500

The Optic, exclusively from Sirius and obtainable only from Con-Tech Lighting in North America, is a totally new, innovative concept in high-efficiency glass reflectors. Eighteen optical coatings on a crystal reflector give the Optic superior illumination capabilities. An 86-percent reflectance casts a crisply defined beam with sharp edges and no lamp striations.



CIRCLE NO. 108

Delray Lighting

Phone: (818) 982-3701

Delray's new Aspect is a line of pendant-, wall- and ceiling-mount fixtures. The architectural line features glass fixtures with optional downlight and/or indirect components. Decorative industrial high bays feature matte metal shades on hammertone gray fixtures. Fixtures are offered in energy-efficient, dimmable compact fluorescent, metal halide or incandescent. Standard finishes are white and hammertone gray but custom powdercoat finishes are available. Maximum wattages available are 42W compact fluorescent, 100W metal halide and 150W incandescent.

CIRCLE NO. 111

ETC

Phone: (608) 831-4116

Representing the next generation of specialized indoor floodlighting, the Irideon AR50 Interior Wash Luminaire by ETC features a patented, computer-controlled, dichroic color-changing assembly, automated pan and tilt and an optional diffuser or douser mechanism. The AR50 is supplied with a DL50W/3,000-hour lamp and uses an innovative radial color-changer with permanent dichroic filters to produce smooth color crossfades throughout the entire color spectrum. The AR50 luminaire is controlled by the Irideon Composer or Composer Lite control system, which allows system configuration and programming from an IBM-compatible PC. Optional control via lighting controllers with DMX-512 output is also available.



CIRCLE NO. 112

E-lite Technologies

Phone: (877) 502-3951

"The World's Widest, Thinnest, Longest Lightbulb!" Wouldn't it be nice to have a light source that was 1/4 in. to 24 in. wide, 0.025 in. thick, 1,200 ft. long, produced no heat, could be formed around corners, cut to any length, was available in a rainbow of colors, and had no glass or filament to break or gas to escape? The FLATLITE Electroluminescent System from e-Lite Technologies Inc. fits the description. Find out more about the FLATLITE System and how it can help create architectural impact at www.e-lite.com.



CIRCLE NO. 115

ETC

Phone: (608) 831-4116

Unison Lighting Control Systems are used in applications such as churches, hotels and convention centers. Unison dimming provides elegant low-profile dimming racks with integrated backlit control electronics. The modular racks are available in 100V, 120V, 230V and 277V configurations and use ETC dimmers. Unison controls offer unsurpassed ease of operation and programming flexibility from simple one-room churches or meeting rooms to large multi-room convention centers.



CIRCLE NO. 113

Engineered Lighting Products

Phone: (626) 579-0943

Our low-level floodlights are available for various PL, quad and biax fluorescent lamps. Excellent color rendering is provided, which eliminates the unpleasant color distortion created by many HID fixtures. Light levels easily meet IES recommendations with excellent max/min ratios. Some models have cold weather starting to -20 degrees. Only 4-in. recess depth. Visit our website at www.elplighting.com.



CIRCLE NO. 116

ETC

Phone: (608) 831-4116

The R20 Relay Module is a dual, electrically held relay designed to switch a variety of loads including HID. Used in both Sensor and Unison dimming racks, the R20 Relay module often eliminates the need for a separate relay cabinet.

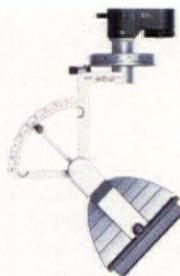


CIRCLE NO. 114

Erco

Phone: (201)689-7589

Quinta is a range of fixtures for track systems whose design is inspired by the precision of the sextant. The pinions and gear ring guides fulfill two major tasks: rotating and tilting the light beam within clearly defined angles and fixing set directions of the beam to avoid accidental change. Quinta was designed in cooperation with Knud Holscher, Denmark.



CIRCLE NO. 117

Estiluz, Inc.

Phone: (201) 641-1997

From Estiluz, the T-9028 and T-9029 suspension fixtures are available in satin nickel and provide direct and indirect light. Both feature opal white slumped glass for both bottom and top diffusion and are available in two sizes of 20 and 23 1/2 in. in width. T-9028 and T-9029 also incorporate precision hang-straight cable. Lamping is two 150W incandescent. Matching flushmount and wall sconce are also available.



CIRCLE NO. 118

Holophane

Phone: (745) 349-4119

Holophane's new Retailer luminaire combines a simple, uncluttered appearance with long ballast life and quiet operation for "big box" applications. Superior glass optics provide optimum efficiency and photometric stability. The ballast, which is warranted for five years, is encapsulated in a potting material for excellent thermal dissipation and sound absorption.



CIRCLE NO. 121

Fibrevisions International Ltd.

Phone: 604-439-6782

Let the leaders in fiber-optic lighting and design provide you with a pure (no UV or IR) efficient lighting system for interior or exterior use. We create:

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- custom signage
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Our international clients include Hard Rock Café, Rainforest Café and Caesars International. View our home page at www.fibreoptic.com.



CIRCLE NO. 119

IL America Inc.

Phone: (203) 407-8000

Nemo Italiana Luce's Bridge Wall light provides excellent indirect uplight for general illumination. The backplate reflector is anodized aluminum and the arms are chrome steel. Diffuser is clear Pyrex with bottom reflector in perforated anodized aluminum. A 250W R7s linear halogen lamp is included. The Bridge Wall light is the perfect companion to our line-voltage Bridge Cable System. UL-approved.

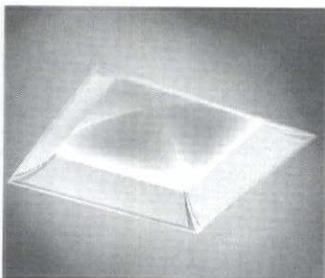


CIRCLE NO. 122

Focal Point, LLC

Phone: (773) 247-9494

Focal Point's Sky is the first symmetric recessed indirect of its kind. This 2 ft. x 2 ft., four-lamp fluorescent luminaire houses either the linear 14W T5, 24W T5/HO or 55W TT5. The quadripartite vault form, often seen in Romanesque and Gothic architecture, inspired Sky's elegantly contoured reflector design.

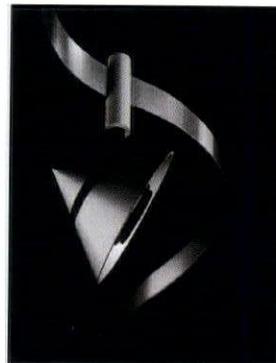


CIRCLE NO. 120

Juno Lighting

Phone: (847) 813-8443

Flex12, Juno Lighting's new decorative low-voltage track lighting system, integrates the best of European design with practical, cost-effective components and installation techniques. Flex12 offers an elegant aesthetic characterized by pure geometric forms and matte silver finishes. Flex12 is field-curvable and offers an infinite number of installed configurations. Flex12 complements residential interiors, retail boutiques, department stores, restaurants, galleries and museums.



CIRCLE NO. 123

Kim Lighting

Phone: (626) 968-5666

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

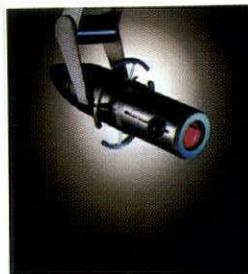


CIRCLE NO. 124

Lighting Services Inc

Phone: (800) 999-9574

The BP75 Series Image Projector is a dramatic design for "state-of-the-art" projection lighting. Designed for display and architectural environments, the BP75 features a unique drop-in cartridge with the ability to project, focus and align (up to 90 degrees) any combination of (two) gobos (patterns), which can be either glass or metal, simultaneously. The user-friendly unit features easy (no tools required) lens barrel replacement for either narrow-angle zoom from 15 to 25 degrees or wide-angle zoom from 25- to 40-degree beam widths. Visit us at www.LightingServicesInc.com.



CIRCLE NO. 127

Leviton

Phone: (715) 229-4040

Leviton's new Architectural Grade Modular Dimming Cabinets offer an easy-to-install, easy-to-maintain, economical lighting control solution for commercial facilities. Ideal for controlling incandescent, fluorescent, low-voltage, neon and cold cathode loads, the dimming cabinets feature a plug-in dimmer design that houses up to 18 electronic dimmers. By stacking two units, a total of 36 dimmers can be housed.

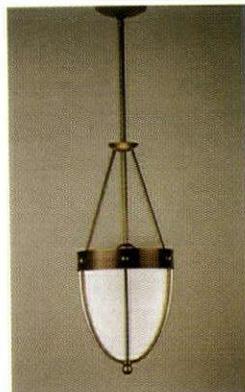


CIRCLE NO. 125

LightingUniverse.com

Phone: (888) 404-2744

The Dorothy #2890 Pendant features an acrylic diffuser and an antique brass finish, and is available in polished brass/chrome or satin brass/chrome finishes. Manufactured by Architectural Design, Inc., this pendant is one of many in a quality line of ceiling, wall and floor lighting products known for its high level of craftsmanship and commitment to excellence. The entire line is available at www.LightingUniverse.com.

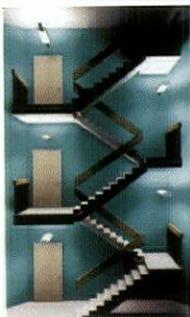


CIRCLE NO. 128

Lighting Analysts, Inc.

Phone: (303) 972-8852

AGI32 lighting design and rendering software is a high-speed 3D lighting analysis program that is unparalleled in the industry. AGI32 produces full-color renderings and predictive lighting system calculations for designers, architects and engineers utilizing any type of electric lighting in interior and exterior design projects. AGI32 delivers revolutionary gains in calculation and rendering speeds and contains a comprehensive library of manufacturers' lighting product data. Complex environments are easily created including domes, vaults and curved surfaces. Allows the import/export of CAD-compatible DXF files. Visit us at www.lightinganalysts.com.

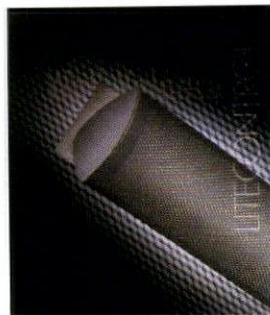


CIRCLE NO. 126

Litecontrol

Phone: (781) 294-0100

Litecontrol's new V3 high-design, adjustable distribution wall valance offers: two fascia designs (solid and perf); a choice of lamps (T5, T5/HO, T8); die-formed steel housing and fascia; a choice of three distribution settings for varying combinations of uplight and downlight; and easy installation for either individual or row mounting. V3's slim, ADA-compliant profile makes it ideal for corridors, small offices, conference rooms, classrooms and a variety of public places, especially those with low ceilings. The V3 is available with a one-lamp configuration in 3-, 4-, 6- or 8-ft. lengths.

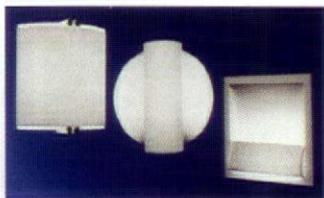


CIRCLE NO. 129

Lithonia Lighting

Phone: (770) 922-9000

The Avante family of direct/indirect fluorescent fixtures includes three companion compact fluorescent sconces: AVSP, AVSC and AVSR. The AVSP sconce features an arched rectangle of perforated metal over a 1/8-in. acrylic diffuser. A natural aluminum back plate is optional. The AVSC combines a perforated cylinder on a white round or curved reflector and uses 18W-32W compact fluorescent lamps. Resembling a ceiling-mounted Avante wall wash fixture, the recessed AVSR also uses 18W-32W compact fluorescent lamps and features a rotatable trim housing for up- or downlighting applications. All fixtures are ADA compliant.



CIRCLE NO. 130

Luminis

Phone: (954) 771-3252

Eclipse presents a complete line of cast aluminum copper-free luminaires, engineered with design detail to fulfill various lighting requirements. Eclipse is part of a large selection of cast architectural luminaires offered by Luminis. See us on the web at www.luminis.com. Lightfair booth #1219.

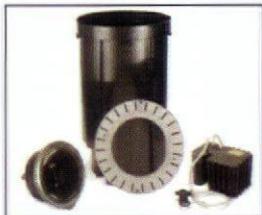


CIRCLE NO. 133

Lithonia Lighting/Hydrel

Phone: (818) 362-9465

The latest addition to the M9000 Series—Hydrel M9700 to 175W HID—provides a variety of distributions plus internal glare control. New features of the 12-in. M9700 Series include cooler operation—new connective design and double lenses reduce surface temperature; external aiming—aim mechanically and optically without entering the lamp module; locked settings—indexed and locking components allow relamping without reaiming; rugged construction—for superior drive over capability.



CIRCLE NO. 131

Lumux

Phone: (877) 895-5552

Lumux Lighting, Inc. published its new 2000 catalogue. The new 2000 catalogue features Lumux's full product lines consisted of: decorative posts, architectural wall sconces, step lights, flood lights, sign lights...all in HID or compact fluorescent light source. All items are UL- & CUL-listed, in stock for immediate delivery. All items are US-assembled with the highest grade of quality control. www.lumux.net. Toll-free phone: (877) 895-5552.



CIRCLE NO. 134

Lumière

Phone: (805) 496-2003

The patented award-winning Lumière Coronado 720 features energy-efficient PAR20 metal halide lamps, elegant styling, ease of installation and aiming and an unparalleled variety of mounting choices. Coronado Series fixtures are also available in PAR30 and PAR38 versions.



CIRCLE NO. 132

Lutron Electronics

Phone: (800) 523-9466

Lutron's Hi-lume electronic fluorescent dimming ballast provides one-percent architectural dimming for new 54W T5/HO linear fluorescent lamps. With a physical cross-section 1 in. high x 1.18 in. wide, the ballast is ideal for one- and two-lamp, low-profile fixtures.



CIRCLE NO. 135

Manning Lighting

Phone: (920) 458-2184

ADA compliance, a curved acrylic diffuser and fast two-day delivery make Manning Lighting's XS-125 a natural for fast-track projects. Manning's Expelite series gives you two pendants and six sconces to choose from, all available for immediate delivery. Visit us at www.manningltg.com.

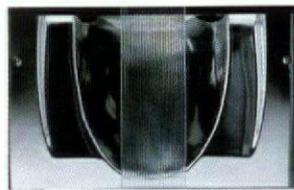


CIRCLE NO. 136

Moldcast

Phone: (714) 562-8434

Paracyl by Moldcast is an HID luminaire (70W-400W) that produces unparalleled performance and versatility. Its field-adjustable optics produce sharp cutoff and low glare, allowing forward throw luminance to be terminated precisely at property lines or other boundaries, eliminating issues of light trespass. Paracyl also produces extraordinary horizontal control of light, yielding uniform distribution and wide spacing capabilities. Available in small and large models, the Paracyl fixture can be pole, pedestal or building mounted. Visit us at www.moldcast.com.



CIRCLE NO. 139

Martin Professional

Phone: (954) 927-3005

The MiniMac Profile is an automated moving-head spotlight that provides 12 dichroic color filters and seven interchangeable rotating gobos. This all-purpose spot houses a high-speed mechanical shutter, manually adjustable focus, 540 degrees of pan by 270 degrees of tilt and more. It uses a 150W discharge source is included and is DMX-controllable. Lightfair booth #959. Visit us at www.martin.dk.



CIRCLE NO. 137

Nora Lighting

Phone: (800) 686-6672

The NHRPM-700 Series Remodel Housing is a new 6-in. ceramic metal halide recessed remodel downlight for existing sheetrock ceilings. The fixture accommodates 35W, 70W and 100W ED- or PAR-type ceramic metal halide light sources. By utilizing electronic ceramic metal halide technology, Nora Lighting has created the industry's first HID fixture sufficiently lightweight and compact to install into existing sheetrock ceilings. The NHRPM-700 is accessible from below the ceiling and does not require above ceiling access for wiring or ballast maintenance. For the best possible light control and distribution, an internal adjustment allows the user to raise or lower the light source at will. A wide variety of decorative trims are available for ceiling finish. Visit us at Lightfair booth #1246.



CIRCLE NO. 140

Michaels' Lighting

Phone: (507) 454-5560

Michaels' Lighting is pleased to introduce the "Quest" Series of pendant fluorescent uplights with a sleek contemporary look and available with a variety of metal finishes and center diffusers. They are now offering standard products in addition to their well-respected custom lighting capabilities. Michaels' is dedicated to excellent quality and customer service. Visit us at www.michaelslighting.com.



CIRCLE NO. 138

NoUVIR Research

Phone: (302) 628-9935

Miniature, anodized-aluminum, fiber-optic eyeball that aims, zooms, locks, dims or on/off switches. Pure-white, stone-cold light. No UV, no IR = NoUVIR. Halogen projector powers 32 luminaires with 3:1 zoom from 15- to 50-degree beam. A 12-in. throw produces 330 fc in 3-in. beam or 6-ft. throw: 10 fc at 16-in. diameter. Beam is smooth from edge to edge, has soft, exact cut-off, no spill, no aberration. CRI=100 percent with color balance of sunlight. Breakthrough performance.

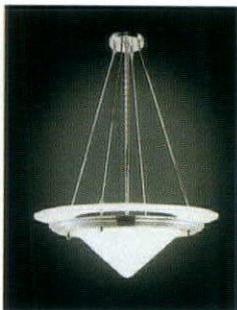


CIRCLE NO. 141

The Original Cast Lighting

Phone: (314) 863-1895

Introducing our new Venus family series. The attractive top acrylic halo accents the contemporary conical styling of this energy-saving fixture. Availability in a variety of finishes and fixture styles (pendant, sconce or ceiling mounted) enables you to design signature luminaires for any application. Shown here, our catalog number VND-32AQ-4DPI. Visit us at www.theOCL.com.



CIRCLE NO. 142

Philips Lighting

Phone: (800) 555-0050

Philips Lighting Company will unveil another industry first with its MasterColor metal halide line of lamps at Lightfair International. The expanded MasterColor line will provide the highest wattage available in its class ranging from 150W to 400W. The new additions to the line have a sustained color rendering index (CRI) of 92—the highest in the industry—and a 4000K color temperature. This breakthrough lamp is well suited for a number of applications, especially where there is a need to enhance the colors and textures of products in retail displays.

CIRCLE NO. 145

Osram Sylvania

Phone: (978) 777-1900

Offering a complete line of TCLP-lamps, the Ecologic family encompasses fluorescent, compact fluorescent, HID, halogen and incandescent lamps. All Ecologic products are clearly marked with green etch or an "ECO" designation for easy identification. Offered in over 350 types, Ecologic incandescent and halogen lamps have either lead-free soldered or welded bases. Ecologic HID lamps have a welded-base design with lead-free glass and solder. Ecologic fluorescent lamps are offered in a variety of compact and linear fluorescent types.

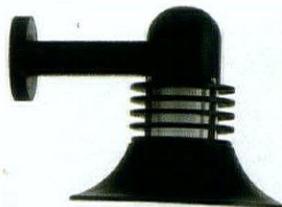


CIRCLE NO. 143

Phoenix Products Co.

Phone: (414) 431-2353

The Metro Series is the latest fixture family in the Phoenix Intrigue Series. The Metro Series features an open light area with solid rings and a modern European design for good glare control and increased ambient light. Available in two sizes for pole, wall and pendant mount applications. Corresponding bollard also available. Lamps include up to 175W HID, 150W incandescent, 42W compact fluorescent and the 55W and 85W induction lamp system.



CIRCLE NO. 146

Osram Sylvania

Phone: (978) 777-1900

Osram Sylvania is offering a full line of Pentron T5 and T5/HO linear fluorescent systems, including Quicktronic PS, PHO and PHO Dim at Lightfair 2000. These lighting systems offer energy savings and increased performance while providing new possibilities for ambient and accent lighting including indirect lighting opportunities to reduce glare in office spaces. Pentron T5 lamps can save energy with better lumen output and a thinner lamp, providing a highly concentrated light source that can enhance the performance of the fixture.



CIRCLE NO. 144

Prima Lighting

Phone: (661) 775-4839

Orbit is designed to fit today's fashion track lighting. It can be made to any sizes with the multiple tiers. The fixture is suitable for the entry, lobby and dinner area. Prima Lighting has developed the simplest, most flexible and practical track system in the market. We offer individual creation possibilities in all fields of application. Visit us at Lightfair booth #1450.

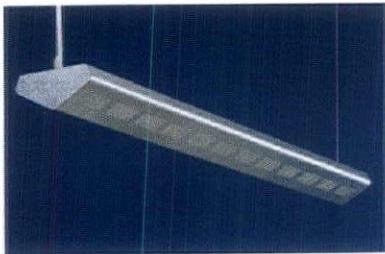


CIRCLE NO. 147

Prudential Lighting

Phone: (213) 746-0360

Diminutive size. Impressive lumen packages and fixture spacing. The industry's broadest selection of finishes to match any space. The NV series from Prudential Lighting is available in four distinctive body styles, six possible lamp packages, two metal finishes and innumerable paint color possibilities, which makes choosing which NV series to use the only tough decision.



CIRCLE NO. 148

Tech Lighting

Phone: (773) 883-6110

Tech Lighting introduces Tigris, which combines vanity lighting with a classic and elegant design. Tigris recesses into the wall so the mirror is flush with the surface, creating the illusion that the mirror is floating in the wall. Eight dimmable halogen lamps surround the mirror and provide a bright white light that shows skin tones accurately and illuminates evenly without shadows or glare. Two styles: Oval, 36 in. high x 16 in. wide (shown); and 25-in. round. Visit us at www.techlighting.com.

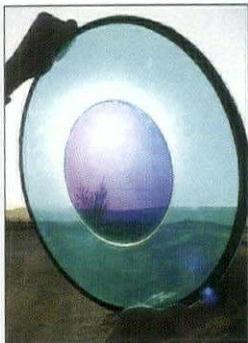


CIRCLE NO. 151

Special FX Lighting

Phone: (435) 635-0239

The Dichro•X architectural lens is tempered, bonded and completely weatherproof. The award winning Dichro•X design is the most durable and cost effective permanent color lens available for all architectural lighting applications. Dichro•X can cancel or enhance halation. These lenses are fabricated with no exposed dichroic film layer, eliminating damage from water, fog, weather, scratching, etc. Dichro•X lenses may be used on the hottest instruments in permanent installations.

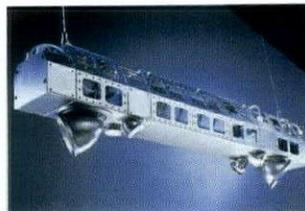


CIRCLE NO. 149

Targetti-Tivoli

Phone: (714) 957-6101

Mondial F-1 offers innovative lighting design capabilities in horizontally and vertically aimable, fully orbital UL-listed projector lights, mounted in modular steel space frames that join to the architectural planes of the space. Units may be specified for line-voltage or low-voltage halogen, AR111 and CDMT Master Color lamps. Visit us at www.targetti.com.

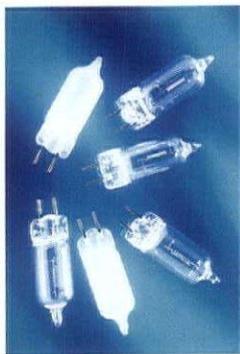


CIRCLE NO. 152

THHC

Phone: (800) 468-8442

THHC Lighting, the originator of low-voltage miniature Rigid Loop, Festoon and Wedge-base Xenon lamps, presents the newly developed Xelogen JC bi-pin lamps. The Xelogen bi-pin lamp series is available in 12V and 24V at 5W, 10W, 20W, 35W and 50W with a life expectancy of 5,000 to 20,000 hours. Other advantages of Xelogen lamps when compared to its halogen equivalent are: less heat, low pressure, no UV hazard, dimmable, no shielding required and ease of handling (bare hands do not damage lamp). THHC Xelogen lamps are an ideal replacement for halogen JC bi-pin lamps in countless lighting applications.



CIRCLE NO. 150

Times Square Lighting

Phone: (914) 947-3034

The MC70E is a specification-grade PAR38 metal halide spotlight available in 75W and 100W. A clean, lightweight extruded aluminum body and hidden ballast make this unit ideal for all lighting applications. Accessory clips for diffusion and colored glass, louvers and barn doors are featured. Numerous mounting options are available.

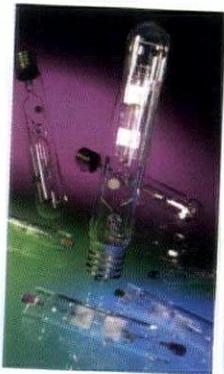


CIRCLE NO. 153

Ushio America Inc.

Phone: (800) 838-7466

Ushio Colorlite metal halide lamps were designed with lighting designers in mind, allowing the ability to paint with light. Colorlites are available in double-ended 150W and single-ended 400W configurations. These lamps feature deep color saturation, eliminating the need for color filters or gels with fixtures. Applications include building and structural floodlighting, fountains, shop windows, landscape and themed environments. Visit us at www.ushio.com.



CIRCLE NO. 154

The Watt Stopper

Phone: (800) 879-8585

A manufacturer of lighting and energy control products, The Watt Stopper produces a complete family of occupancy sensors, including indoor sensors, outdoor motion sensors and wall switch sensors. Other products include lighting control panels, time switches, daylighting systems, dimming control systems and plug load controls. Visit us at www.wattstopper.com.

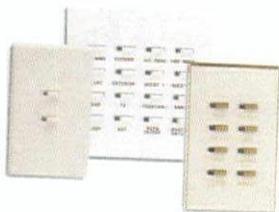


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Vantage Controls, Inc.

Phone: (800) 555-9891

The Vantage Home Automation System offers total home control with thousands of customizable lighting scenes and functions. Vantage controls any home system—lighting, security, audio/video, heating/cooling, draperies, pumps, fountains and motors. The addition of several colors and finishes makes the Vantage Home Automation System a fit for any home.



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Phone: (800) 526-2588

Extensive state-of-the-art line features innovative track heads, recessed housing/trims and a linear system designed for task, accent, cove and general lighting, under- and in-cabinet, toe spaces and hard-to-light areas. Also available: miniature fixtures, surface mounts, pendants, rope lighting, Button Lights, display lights, track extensions/suspensions, accessories. Visit us at www.waclighting.com.



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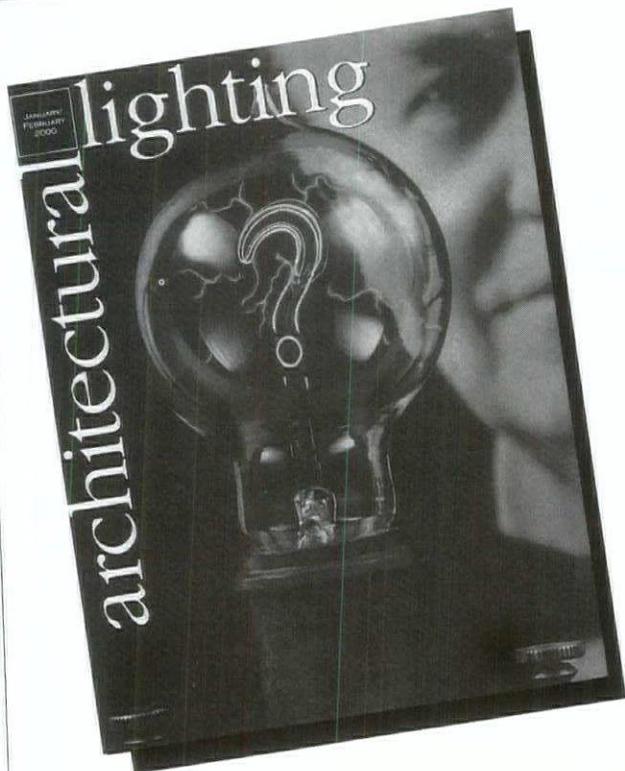


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PROMOTING PROFESSIONAL LIGHTING DESIGN

BY JOANNE LINDSLEY, FIALD, LC

As the International Association of Lighting Designers (IALD) begins its fourth decade, we have been shaping the future of the organization, while looking back at how and why the group began. Early in 1969, a small group of lighting designers got together informally and began to discuss forming a new organization. The first meeting took place at the home of Richard Kelly and was followed by others, held occasionally at the Lamb's Club in Manhattan and in restaurants where they often could fit into one booth. Most of those assembled were members of the Illuminating Engineering Society (IES). They felt the desire to band together to recognize their unique position as independent lighting designers whose sole means of support was through design fees. By creating a new group, they believed they could communicate to potential clients the importance and benefit of their independence. And, incidentally, they thought that collectively they could obtain better group insurance benefits.

A few others may have drifted in and out of meetings, but as far as we can determine, these early founders were: Abe Feder, Lesley Wheel, Martin Garen, David Mintz, Lewis Smith, Jules Horton, Howard Brandston, Richard Kelly, Ernest Wotten, Ray Grenald, William Warfel, Jim Nuckolls and Donald Gersztoff. The group grew to about 150 members, mostly New Yorkers, and remained about that size until the early '80s, when, under Jeffrey Milham's administration, *Lighting World*, the precursor to *Lightfair* was established in partnership with the IESNA, giving the profession another forum for promoting good lighting design and also providing important funding to allow programs to expand and the membership to grow. The membership is now more than 600 worldwide with concentrations of members in North America, Britain and Australia—and we're growing rapidly.

We are mindful of this bit of history and nostalgia now for several reasons. Thirty years later, our goals have expanded but remain focused on the same vision: To set the global standard for lighting design excellence by promoting the advancement and recognition of professional lighting designers. The successful body of work produced and influenced by IALD members over the past three decades has helped to make the independent lighting designer an essential member of design teams for most major projects designed in North America. Lighting awards programs sponsored by both the IESNA and the IALD, and well publicized by magazines such as *Architectural Lighting*, have drawn remarkable attention to the stunning effects of well-planned lighting.

And accomplishments are not just in glamorous cover shots. Lighting designers, with other members of the lighting industry, have successfully established energy codes that achieve energy

conservation goals but allow the flexibility necessary for effective lighting design. In recognition of a necessity to qualify those who specify lighting systems, the IALD was instrumental in the forming of the highly successful National Council on Qualifications for Lighting Professionals (NCQLP). There are now almost 800 individuals who are LC certified, and while the program began in the "epicenter" of lighting, the U.S. has certified professionals in many parts of the world.

The U.S. Federal Government for the first time in an organized way solicited the opinions of industry leaders through a series of workshops. The result of that research is a document—"Vision 2020: The Lighting Technology Roadmap"—which charts a future course for lighting, "to meet the demands of tomorrow's buildings and the needs of the people who design, build, own and occupy them." The IALD, along with 60 other organizations contributed to and sponsored the two-year process.

The IALD, in conjunction with their allied manufacturers group, The Lighting Industry Resource Council (LIRC), has just completed the "Specification Guideline," which is intended to reinforce integrity in the specification writing process.

While there are many success stories, much remains to be done—or redone. When we were a handful of friends in a single location, we met and did things together. Now that we are too big and far-flung to gather everyone in a general meeting, we have to find new ways to lend support. And, while so many firms desperately need trained employees, there aren't enough to fill the positions available, and we are losing skilled designers to the manufacturing firms for what I can only presume are better wages and a less hectic lifestyle.

In some parts of the world where manufacturers are expected to provide the lighting plan along with the equipment, designers are still struggling to present the benefits of hiring a lighting designer. Several years ago, European lighting designers formed ELDA (European Lighting Designers Association) for many of the same reasons that the IALD began. We are now discussing the process for combining our two organizations, so that we may speak for our profession in a single voice. The Europeans remind me so much of the IALD in its early years when we were still small and close enough to meet and share ideas. I have visited with them a number of times in the last two years, and being amidst their camaraderie and excitement reminds me of our early days and the fun involved in creating something new and worthwhile. ■

JoAnne Lindsley, FIALD, LC, principal of Lindsley Consultants Inc. in Manhattan, is current chairman of the IALD.

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