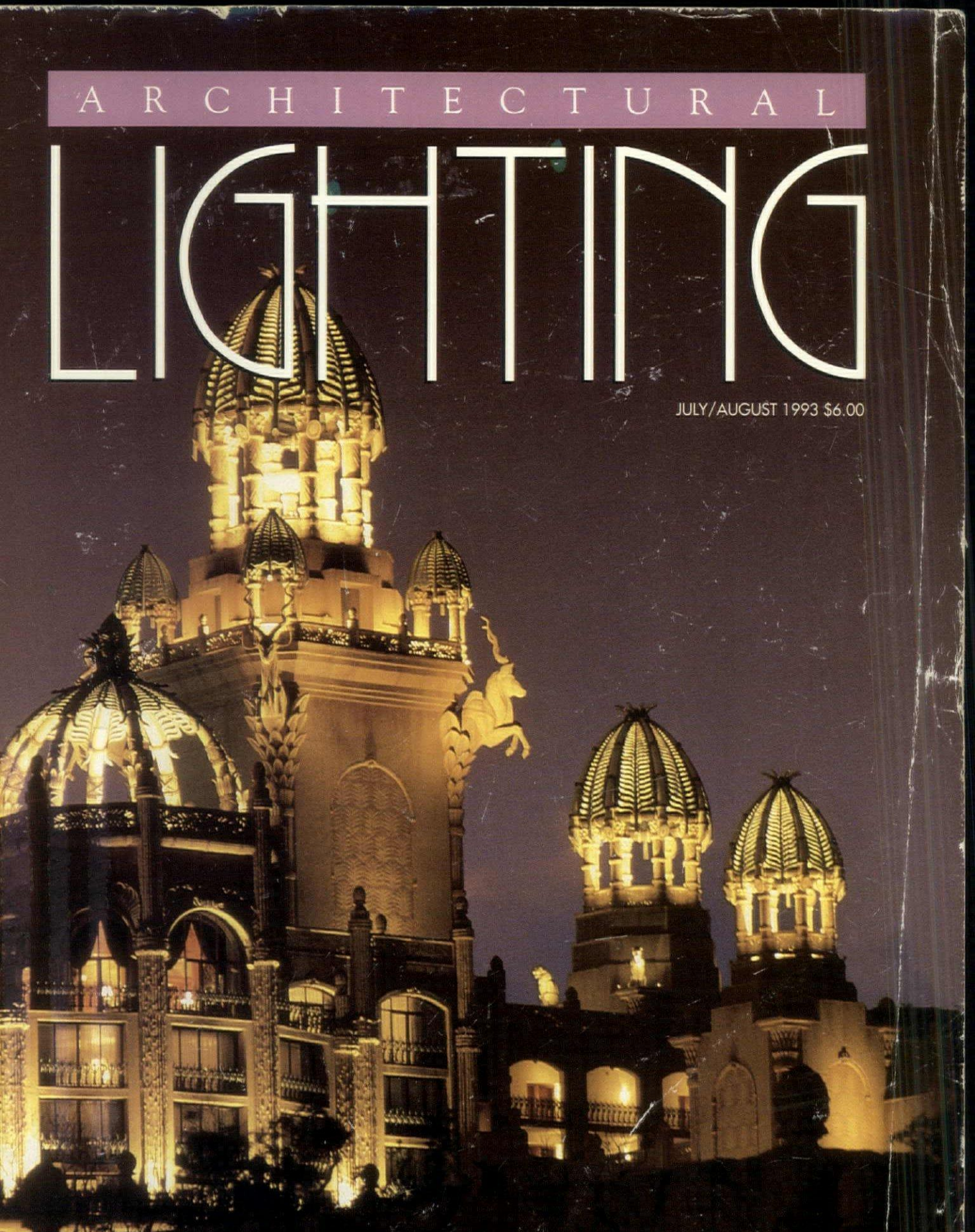
ARCHITECTURAL

LIGHTING

JULY/AUGUST 1993 $6.00

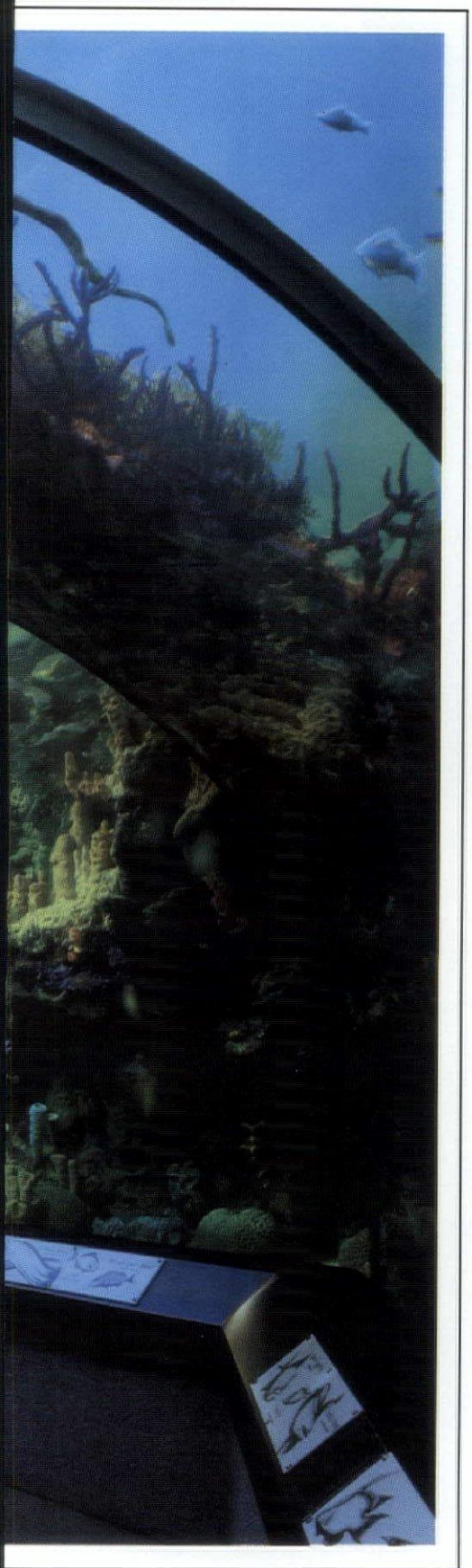


Palace Of The Lost City

FANTASY REALIZED IN BOPHUTHATSWANA, SOUTH AFRICA

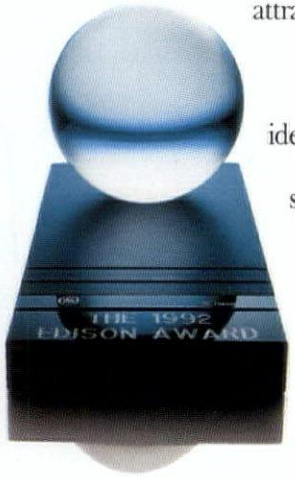
To Find The Best Lighting Solutions,

Usually Pays To Look Beneath The Surface.



But when the surface is 835,000 gallons of salt water populated with the world's largest collection of dangerous sea creatures, it pays to look to GE.

That's what Randy Burkett and Mark Hershman of Randy Burkett Lighting Design did in conjunction with Scott McMurtrie of Sea World® of Florida in Orlando when illuminating the theme park's "Terrors of the Deep" attraction.



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GE Lighting

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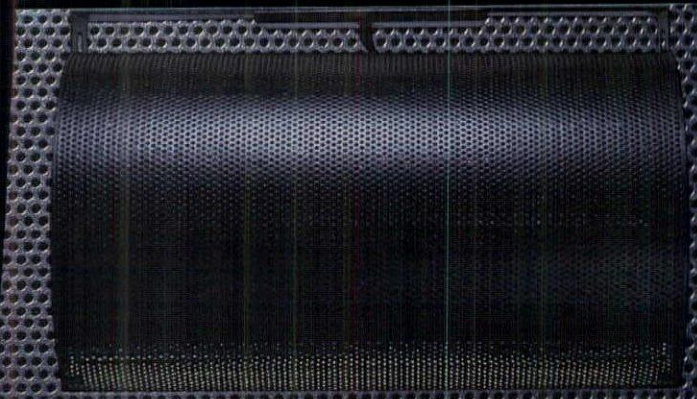

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Echo is three sizes with multiple lamp types and wattages.

Echo is wall, ceiling or pier mounted with integral or remote ballasting.

Echo is superior optical performance and safe, cool operation.

Echo is perforated or solid housings with decorative shrouds.

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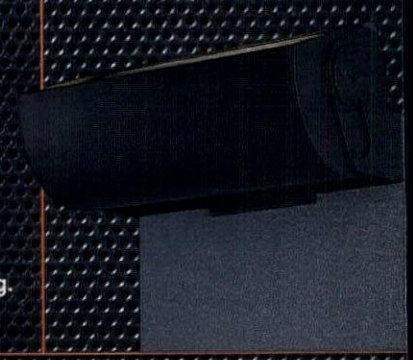

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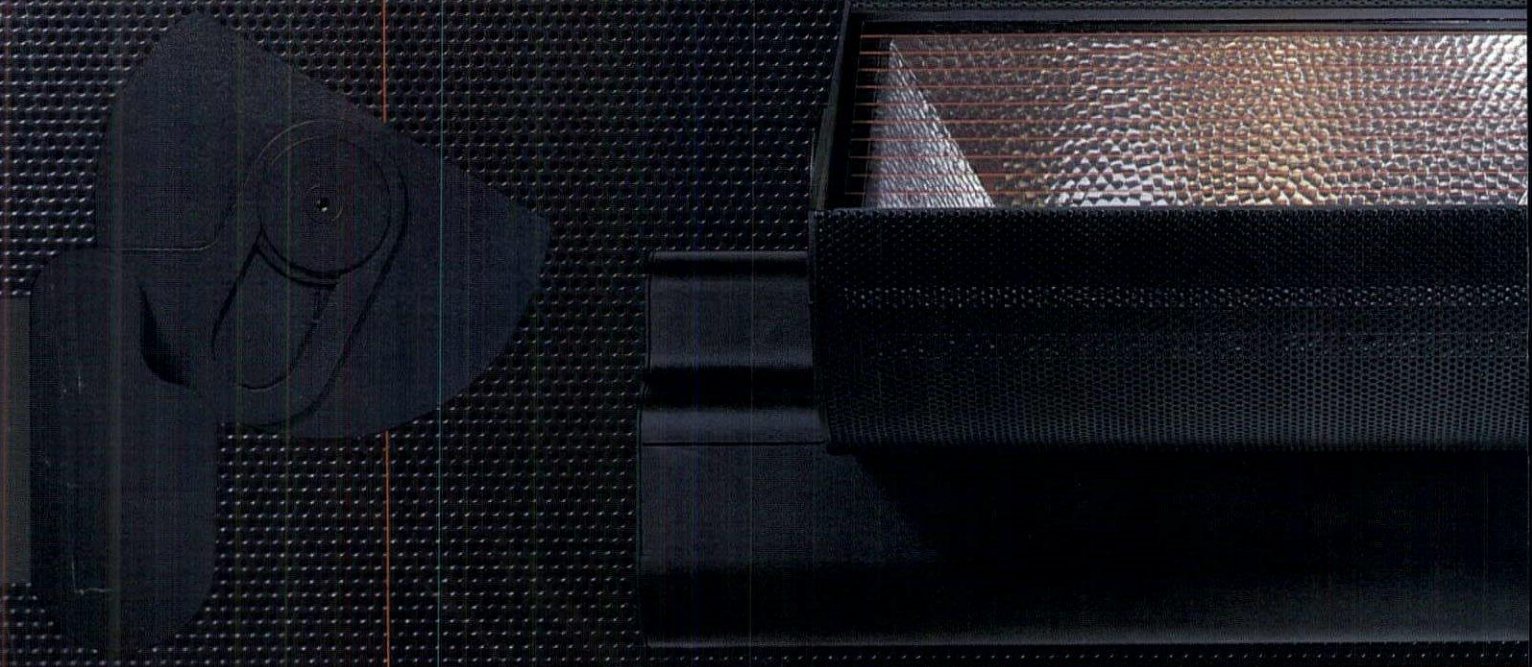

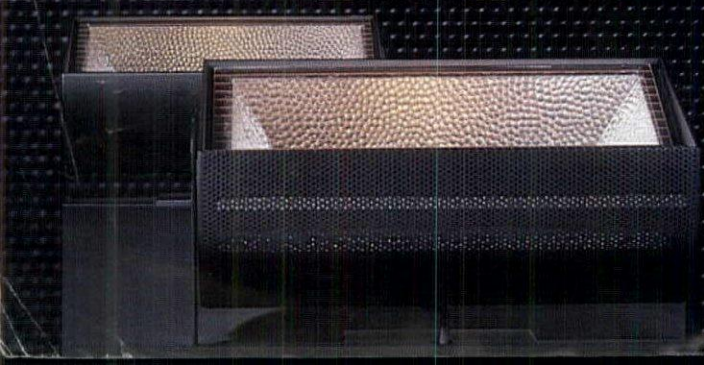

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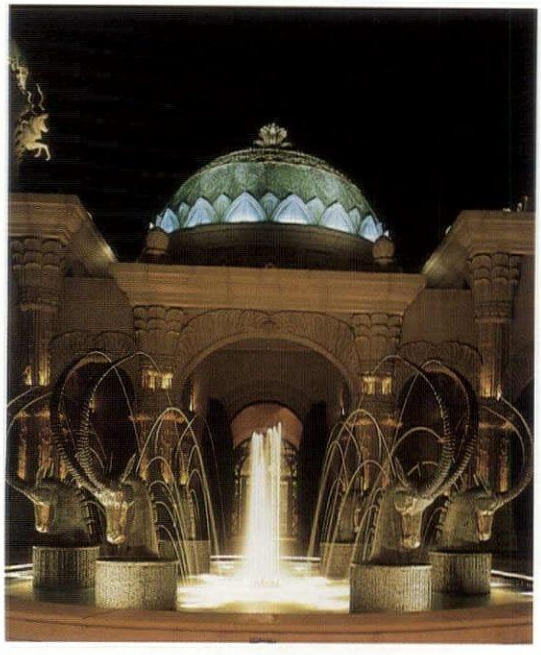
ARCHITECTURAL
LIGHTING

JULY/AUGUST 1993 VOLUME 7, NUMBER 3



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IALD AWARDS

ENERGY SECTION

DEPARTMENTS

ARCHITECTURAL LIGHTING (ISSN 0894-0436) is published quarterly by Miller Freeman Inc., a member of United Newspapers Group, 600 Harrison St., San Francisco, CA 94107. Phone (415) 905-2200. Editorial offices, 1515 Broadway, New York, NY 10036. Phone (212) 869-1300. Subscriptions: U.S. and possessions—1 year (4 issues) $24. Canadian—1 year $30. Other foreign—1 year $125. Single copy price: U.S—$6 plus postage; outside the U.S.—$8 plus postage. **Prepayment required for single copy orders.** Address all single copy requests along with payment to ARCHITECTURAL LIGHTING, P.O. Box 105448, Atlanta, GA 30348-5448, or call (800) 444-4881. **CUSTOMER SERVICE INQUIRIES** call 1-800-964-9494 (from New Jersey 609-461-3838 weekdays from 9 a.m. to 5 p.m. (EST) or write to ARCHITECTURAL LIGHTING, PO Box 7611, Riverton, NJ 08077-7611. Allow 4 to 6 weeks for change of address; provide old mailing label and new address, including ZIP or postal code. **POSTMASTER:** Send address changes to ARCHITECTURAL LIGHTING, PO Box 7611, Riverton, NJ 08077-9111. Second class postage paid at San Francisco, California and additional mailing offices.

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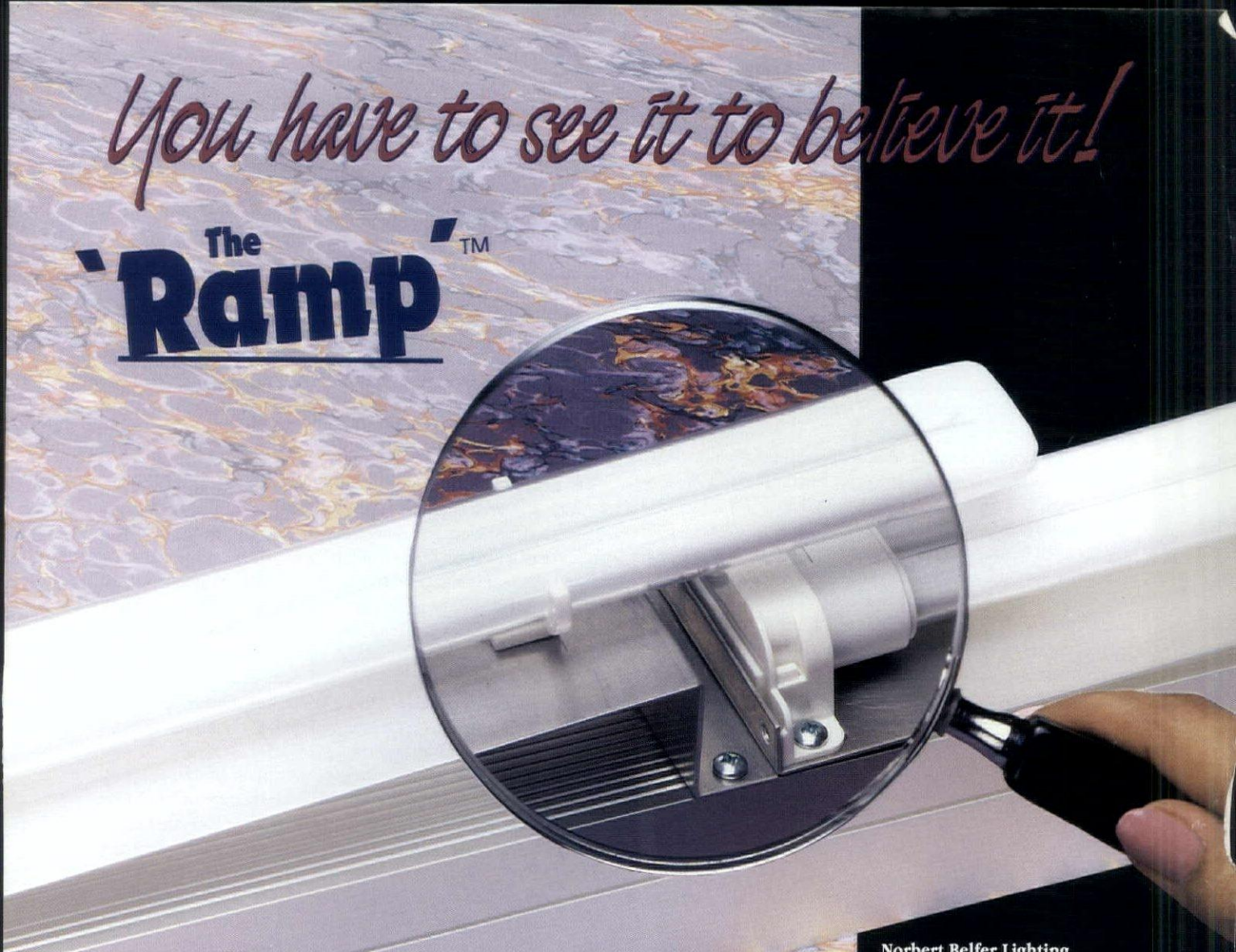

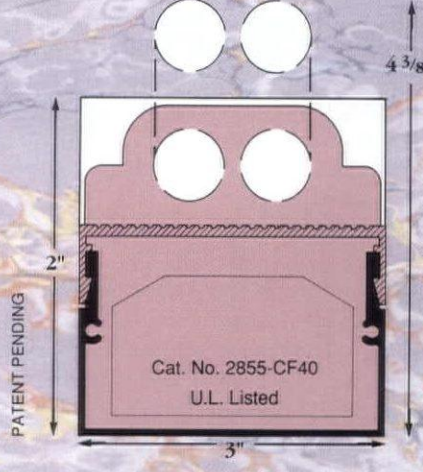

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Sockets are mounted on an extruded aluminum raceway which is supplied in custom lengths or factory mitred for curving. Even re-lamping has been made easy with "Lift-up" sockets.

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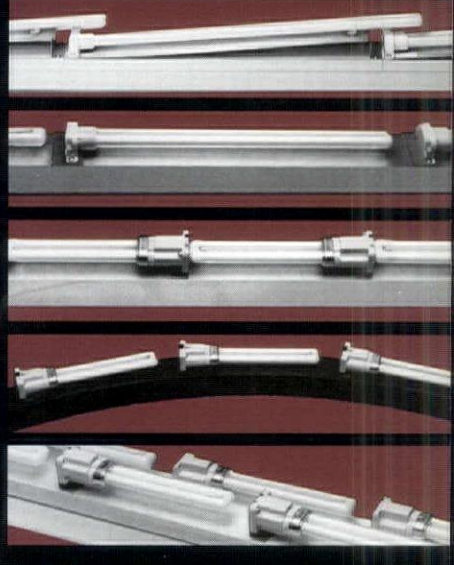

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DESIGNER'S SATURDAY/ MILLER FREEMAN TEAM UP IN '94

Designer's Saturday, the Contract Manufacturer Trade Association, Miller Freeman, Inc. and The Commercial Design Network (which includes *Contract Design*, *Facilities Design & Management*, and *Architectural Lighting* magazines) have joined forces to co-produce and co-sponsor a new fall market event.

Bringing the contract industry into a new era of marketing, the new Designer's Saturday Show format will be launched as an exhibit-based event scheduled for September 27-29, 1994, at the Jacob Javits Convention Center in New York.

The Designer's Saturday Board of Directors voted on teaming up with Miller Freeman, Inc. because of its trade show expertise and unmatched commitment to the commercial design industry. Miller Freeman's Commercial Design Network magazines will play an important role in promoting and marketing this event. Miller Freeman, Inc. is a multi-million dollar international publishing, exposition and information services organization.

Exhibitors will include a range of manufacturers, service firms and technology providers serving the design community. Attendees will include architects, interior designers, product specifiers, facilities managers,and corporate end-users.

A prospectus will be available shortly. A new name for the event and more detailed information will also follow.

For immediate information, please contact either: Carrie Enfield, Group Publisher, The Commercial Design Network, Miller Freeman, Inc., tel. 212-626-2392, fax 212-302-2905; or Hank deCillia, Executive Director, Designer's Saturday, tel. 516-725-2745, fax 516-725-5062.

GE LIGHTING PRESENTS EDISON AWARD

The winners, finalists and semi-finalists of GE Lighting's Edison Award were announced at a dinner held on May 9, 1993 in San Francisco, on the eve of the LightFair International trade show. The team of Randy Burkett and Mark Hershman, both of Randy Burkett Lighting Design, Inc., St. Louis, MO, and Scott McMurtrie, of Sea World of Florida in Orlando are the winners of the 1992 Edison Award, acknowledging excellence in lighting design, for the "Terrors of the Deep" underwater exhibit (see page 35 for details—the project has also received an Award of Excellence in the International Association of Lighting Designers awards program).

Finalists in the award program included: Stefan R. Graf, Illuminart, and Mojtaba Navvab, The University of Michigan for the Styling Dome and Sky Simulator at the Chrysler Technology Center, Auburn Hills, MI; Ross De Alessi (currently principal of Ross De Alessi Lighting Design) and Leif Johnson, Luminae Souter Lighting Design, for One Montgomery Street, the flagship of a California bank; Thomas J. Skradski and Stephanie Cissna, Luminae Souter Lighting Design, for The Doctor's Company, Napa Valley, CA; Naomi Miller, formerly with Architectural Lighting Design (now with Rensselaer's Lighting Research Center), Richard Osborn, Luminae Souter lighting Design, and Laura Seccombe, Seccombe Design Associates, for The Stratford, San Mateo, CA.

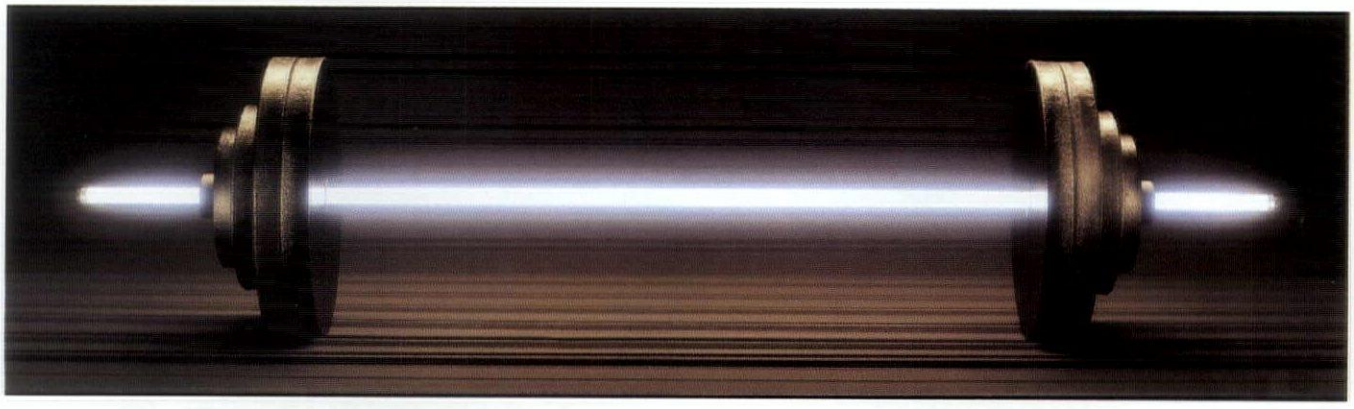
The following designers were honored as semi-finalists in the competition: Gary Gordon, Gary Gordon Architectural Lighting, Inc.; David Orgish and James R. Benya, Luminae Souter Lighting Design; Michael K. Souter and Bradley A. Bouch, Luminae Souter Lighting Design; Ross De Alessi, Ross De Alessi Lighting Design, Stefan R. Graf, Illuminart; David Apfel, HTI/Space Design International; Julia Poppen Rezek, Lighting Design Alliance; and Patrick Gallegos and Nick Pagliante, Gallegos Lighting Design.

GE Lighting sponsors the Edison Award competition annually to recognize excellence in lighting designs that use GE Lighting products. The GE Lighting Edison Award competition celebrated it's 10th anniversary this year.

The judges for this year's competition were: Janet Lennox Moyer, Jan Moyer Design, IALD, IES, ASID; Lee Waldron, Grenald Associates Ltd, IALD, IES; Russell P. Leslie, Lighting Research Center, Rensselaer Polytechnic Institute, AIA, IES; Frank LaGiusa, Illuminations Plus, Inc., FIES; and Joseph G. Howley, GE Lighting, IALD, IES.

For information on the award program: Joe Howley, Senior Specialist/Commercial Lighting Applications, GE Lighting, Nela Park, Cleveland, OH 44112, tel. 216-266-2085.

Not Even Charles Atlas Could Make Something So Thin So Powerful.



Not to kick sand in the competition's face, but no other T-8 fluorescent outperforms our TL 80™ Series. When combined with electronic ballasts, they can reduce costs up to 43%.

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A fact that carries a lot of weight. Especially considering lighting can account for up to 50% of your electric bill. What's more, when you combine those savings with utility rebates, your system payback period will be reduced even further.

Our TL 80s dramatically improve lighting quality as well. Resulting in more natural colors and a more productive working environment. They're now available in a wider range of sizes. Including an 8', which provides up to 40% energy savings versus standard slimlines. And a U-Bent, an ideal retrofit for 2x2 fixtures.

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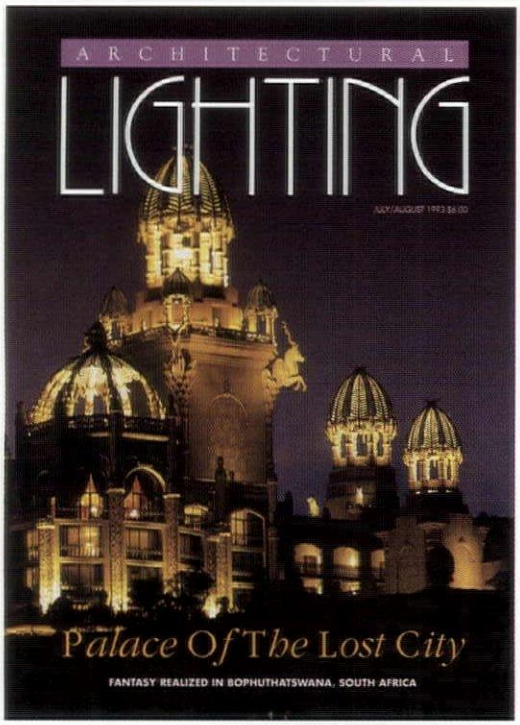
LITECONTROL

INTEGRATION, ENERGY & AWARDS

It is clear from the products exhibited at LightFair International that not only is energy a permanent and primary industry theme, but advancing technology, and economic and energy considerations are fostering the increasing integration of lighting systems and design with other building disciplines and operations.

Already we've seen lighting controls dovetailed with audiovisual and other types of remote controls in the office and even in the home. The effectiveness of some occupancy sensors depends on the effective use of daylighting, dictating a growing interdependent relationship between architect and lighting consultant. Creating the optimum building control system that manages lighting, heating and air-conditioning, and other systems necessitates a collaboration among the lighting professional, and the mechanical and HVAC engineers.

Advice to the lighting professional: invest in updating yourself, and educating your client in the value of quality lighting and energy-saving techniques, because if you don't, other design team members will do it for you—and reap the benefits.



Advice to the architect: if you don't have time to learn all about lighting, be more flexible and open to using the lighting expertise of others and the technology available today to enhance your visions and improve the comfort and functionality of your buildings.

Advice to interior designers: lighting as a design tool has progressed way beyond being an extra, non-essential enhancement. Don't short-change your clients by discounting the cost, energy-saving, productivity, and psychological benefits that a high-quality lighting design can bring to your projects.

Both attendees and non-attendees of LightFair will benefit from the "LightFair New Product Showcase" in this issue—a compilation of the 75 products from exhibitors who chose to submit them by a specified deadline, and that formed the show's opening session. Putting the exhibits in perspective, introductory comments by the lighting professionals who hosted the Product Showcase event—Mark Kruger and Craig Roeder—are included.

The special Energy Section, that contains articles on controls, issues surrounding the use and evaluation of lamp and luminaire data, and a case study of how the Boston Edison rebate program brought savings to an historic theater, is a demonstration of our continuing dedication to promoting energy consciousness.

IALD LIGHTING DESIGN AWARDS

We are pleased to present the winners of the 10th Annual Lighting Design Awards sponsored by the International Association of Lighting Designers (IALD). Though we have chosen the Palace of the Lost City as our cover story, there are four additional Awards of Excellence featured, as well as 13 Citation recipients.

The awards were presented on May 11, 1993 at a dinner in San Francisco held in conjunction with LightFair International. The judging panel included: Jeffrey Henry, Gensler & Associates; Charles Israel, Lighting Design Alliance; Juliette Lam, HOK; Mark Mack, Mack Architects; Naomi Miller, then with Architectural Lighting Design (currently with Lighting Research Center, Rensselaer Polytechnic Institute); Janet Nolan, Horton Lees Lighting Design; and Lesley Wheel, Wheel Gersztoff Friedman Shankar.

IALD Awards Committee Chairman, Kenneth E. Yarnell, The Kling Lindquist Partnership, and committee member, Alice Prussin, IALD, Luminous Environments for Architecture, deserve a round of applause for their hard work in pulling together this year's outstanding program.

For information on how and when to enter next year's program, contact: IALD, 18 East 16 Street, Suite 208, New York, NY 10003-3139, tel. 212-206-1281, fax 212-206-1327.

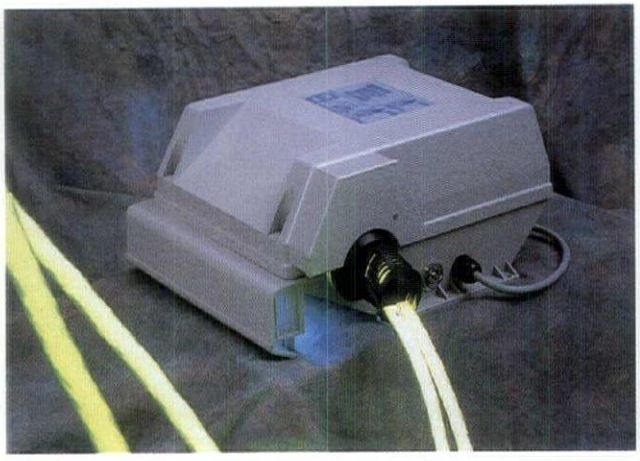
WANDA JANKOWSKI

EDITOR-IN-CHIEF

FIBER OPTICS— REALIZING POTENTIAL

(Below Left)The 501 Illuminator with BritePak fiber optic tubing.

(Below Right) Fiber optics can be used in a variety of indoor, outdoor, and wet location applications.



Technological advancements in the making of optical fibers and the metal halide lamp have enabled light levels of Fiberstars new Model 501 to be achieved that are comparable to neon—that's 30 times the original brightness of the Model 101 fiber optic lighting unit originally introduced by the Fremont, CA-based company when it began shipping in 1988.

Fiberstars' president, David Ruckert explains, "The fibers are put through a heat process that causes the interface between the cladding and the core of the fibers to be interrupted, and to leak the light out. Each fiber is also twisted, and that microbending causes more light to be emitted."

The thin fiber strands are then grouped into anywhere from one to 10 bundles of 14 strands each which are, in turn, twisted over each other and drawn into a clear, UV stabilized PVC outer tubing that ranges from 1/4 inch to 5/8 inch in diameter.

Housed in the illuminator of the Model 501 is a 400-watt metal halide lamp designed especially for Fiberstars by Osram. "A very bright light was needed from a relatively small lamp package with a narrow gap between the electrodes. This pointed us toward certain single-ended metal halide sources with relatively narrow arc gaps to create focal points," says Ruckert.

"In the illuminator, the bright light is focused down to one centimeter square to create a very hot focal point that achieves between 400 and 500 degrees Fahrenheit. Since the optical fiber melts at 180 degrees, one of the main challenges was to process the heat out," says Ruckert. Fiberstars has 16 patent claims on that process alone, which took about two years to develop. A fan and cooling system in the illuminator create two separate channels of air that cool down the focal point areas and the lamp to extend lamp life.

"The metal box is cool enough to be touched—it feels warm, but since the unit needs to 'breathe', it should be installed in a well ventilated space," Ruckert advises. The Model 501, adaptable from 100 to 277 volts, has a custom solid-state, electronic power supply, with a quick-start feature that eliminates the normal delay in reaching full lamp brightness.

Also offered by Fiberstars is the Model 401, which uses a 150-watt Thorn metal halide lamp with a patented integral reflector, and standard magnetic ballast. Though the linear fiber optics in the 401 do not achieve as high a light level as the Model 501, this unit is less expensive, with a lumen output approximately three times higher than the originally offered Model 301, which it has replaced.

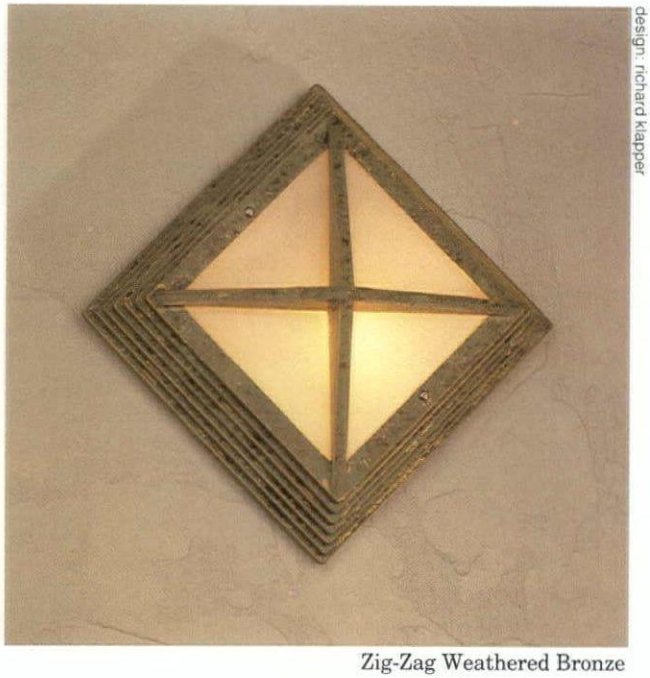
Computerized programming controls can be used in both models to provide special effects: varied speed color changes, including strobe-like effects, that can be synchronized with several illuminators throughout a fiber optics lighting system; interface with music or audio effects; and "dowsing," a dimming effect not previously possible with an HID source.

The cost of a fiber optics system in comparision to neon varies in each part of the U.S., according to Ruckert. "We are generally competitive in the market, but in some sectors of the U.S., neon is less expensive because of intense competition. In Florida, for example, our product costs run 20 to 30 percent higher than neon. In California, however, we are equal," Ruckert explains. "Neon is generally sold on a maintenance contract, however. We don't require anything like that. And a fiber optic system's use of electricity is about one-tenth that of neon, so there is operating cost savings."

Ruckert notes that the fiber optics lasts indefinitely when used indoors. However, all plastics degrade over time, "and we estimate a life of between five and 15 years outdoors, depending on the specific environment in which it's located," says Ruckert. Though maximum brightness is achieved using fiber lengths of 100 feet or less, fibers can often be used in longer increments before an additional illuminator needs to be installed to illuminate added fiber lengths.

Future developments include a spotlight, scheduled to be available in the third quarter of 1993, and intended for use as an accent light in retail and display applications. Ruckert estimates eight fiber optic spotlights can be run off one 150-watt illuminator and used as replacements for 20- or 35-watt quartz halogen lamps. A fiber optics landscaping fixture, units for use in hazardous areas, and for magnetic resonance imaging (MRI) rooms, where interference from standard electrical lighting luminaires is a problem, are also in progress. *Circle 150*

WHO SAYS VANDAL RESISTANT LIGHTING NEEDS TO BE UGLY



design: richard klapper

Zig-Zag Weathered Bronze

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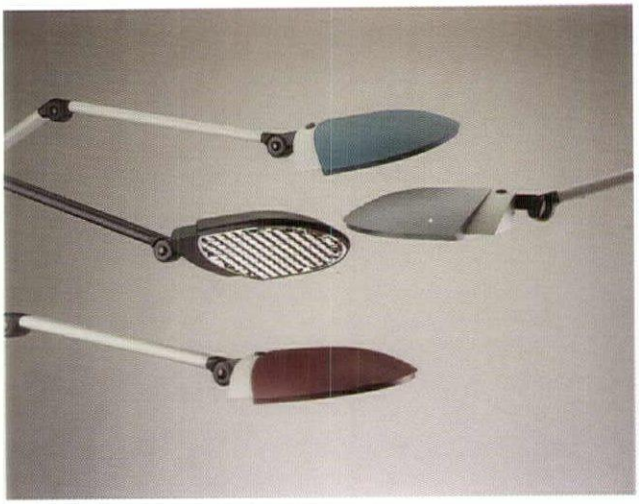
TASK LIGHTS: THE OFFICE ENVIRONMENT AND BEYOND

(Below left) The Valencia comes in a variety of colors and mounting options.

(Below right)The 5/8-inch grid parabolic louver has a specular silver finish.



Computer screen glare, shadows on written materials, and excessive contrast between screen and surroundings are common complaints which contribute to office employees' physical ailments and decrease in productivity.

Criteria for appropriate task lighting, according to the U.S. government, include: ample illumination for work performed at all utilized areas of the workstation, even illumination over an adequate range, little or no direct or indirect glare, little or no spill light onto the VDT screen, a fluorescent light source to minimize heat, a non-reflective surface finish on luminaires, and the capability to manuever the light in multiple directions, to suit changing task locations.

These ergonomic principles and design elements are embodied in Waldmann Lighting's "Euro-Select" task lighting series, which includes the Barcelona, Geneva, Vienna, and Milano models.

The most recent addition to the Euro-Select series is the Valencia, which is distinguished from many other task lights by the 5/8-inch grid, specular silver finish parabolic louver. The parabolic louver helps reduce unwanted glare and reflections from the computer screen.

The individual can control the positioning of the Valencia to meet changing task needs. The impact-resistant ABS head can swivel 120 degrees and tilt 180 degrees via a fully articulated 16-inch single arm, or twin spring-balanced arms, each 16 inches, with concealed arms for exact positioning.

The single arm unit works well in small work spaces, while the larger twin arm model is suitable for environments that require broad reaches of light, such as an executive office.

Each light uses two 9-watt or one 13-watt compact fluorescent lamp with 10,000 hours of lamp life, 4100 degrees Kelvin color temperature, and a Color Rendering Index (CRI) rating of 85. Other lamp color temperatures available include 2700, 3500, and 5000 degrees Kelvin. These fluorescent lamps use 77 percent less energy than standard incandescents.

Good quality light and efficient light output also result from the built-in aluminum reflector. There is a 10 foot polarized cord set with a quick-release in-line ballast.

The Valencia is intended to complement overhead ambient illumination, while affording the user task light control. Mounting options include a standard table clamp, table base, wall bracket, or panel bracket that fits over 40 different office furniture systems. A weighted table base is optional.

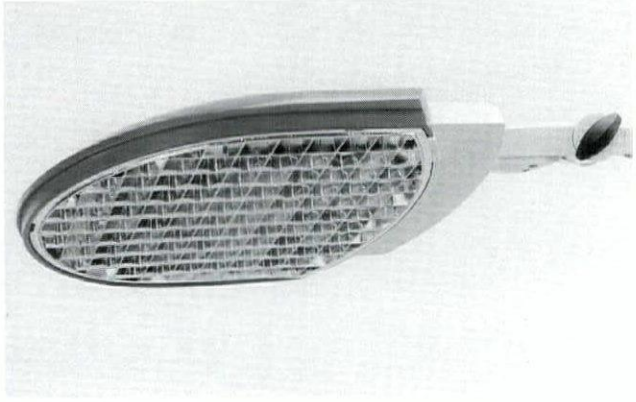
The Valencia is available in solid matte black, and light gray, with optional teal green, and burgundy wine shade.

Waldmann is a privately held corporation with over 500 employees worldwide. It is headquartered in Schwenningen, Germany, with subsidiaries in France, Switzerland, Italy, Austria, and the U.S. The U.S. facilities are located on a three-acre site in Wheeling, Illinois.

Waldmann's task lights go beyond accommodating the office environment. The company produces over 100 standard models, and over 2,000 special versions that are adapted for use in virtually every type of industry or workplace.

For example, their machinery task lighting models are designed to withstand harsh ambient conditions, such as splashing by lubricants and coolants, subjection to mechanical stress and vibration, and exposure to extreme temperatures. Lighting for those who operate machinery is particularly critical because of the tremendous costs that can result from having to correct errors.

Waldmann manufactures specialty luminaires, such as magnifying fixtures that enlarge the view of the work areas with accompanying shadow-casting, or shadow-free light. Ultraviolet luminaires are available for special inspection tasks. Waldmann even builds booths equipped with special lighting for highly specialized tasks like assessing metameric effects of colors, or to verify bank notes and personal identification for security purposes.



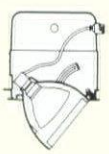
The medical lighting equipment includes a range of task units, from general exam luminaires, to ultraviolet light therapy systems, special diagnostic dermatological examination units, and hospital room lights that can be used by individual patients without disturbing others in the room.

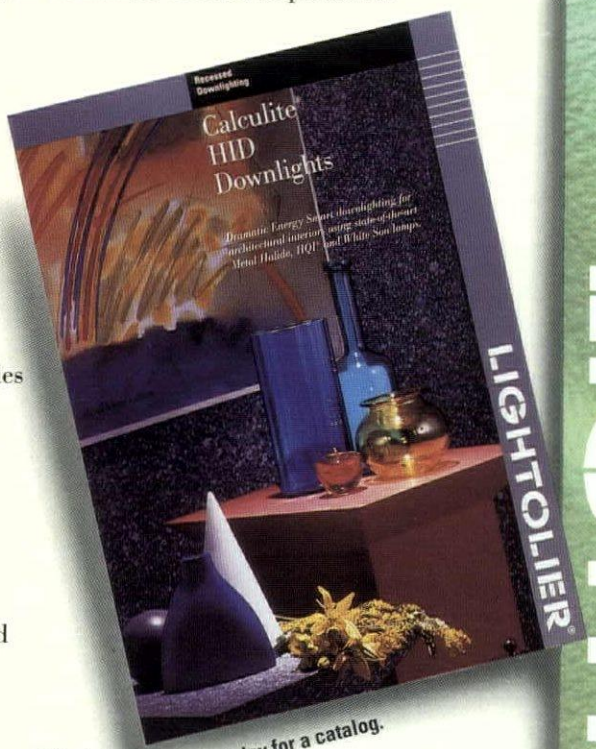
The design of any task light begins with an analysis of the task itself and its visual requirements. Prototypes are built and lab tested to insure quality engineering. Then the lights are tested in the workplace as well to gain a subjective view of the fixture's operation from users. Only after these steps are taken is a Waldmann fixture put into production. *Circle 152*

ENERGY SMART

Calculite HID Downlights deliver dramatic and Energy Smart lighting using state-of-the-art Metal Halide, HQI, and White Son lamps.

Save 50-70% of the energy consumed by incandescent downlights of comparable intensity

These lamps offer the **high efficiency and good color** needed for retailing and other "viewing" spaces, as well as the control required for effective downlighting. With **over 350 options** and outstanding quality, Calculite HID Downlights satisfy the widest range of requirements. The new selection includes narrow- and wide-beam  **downlights,** recessed and retractable **accent lights,**  open and lensed **wallwashers,**  and more. Matched apertures and finishes **simplify design coordination.** Unitized optics assure that the lamp and carefully contoured reflector are always in focus.



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Light sources	Metal Halide, HQI, White Son
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LIGHTOLIER

Circle No. 9 on product service card

COMBINING DIRECT AND INDIRECT LIGHT

Over the past 10 years, indirect lighting has emerged as one of the preferred methods of lighting commercial and institutional spaces. The light produced by a well designed and executed indirect scheme is diffuse, free of direct and reflected glare, and free of high contrast shadows as well. Indirect lighting can provide a visually comfortable environment that is forgiving of a wide range of visual tasks and orientations.

In certain situations, however, designers may desire to add some highlight and even drama to indirectly lit work areas. One means by which to accomplish this is through the use of auxiliary luminaires, such as spot or other accent lighting. Another method is to use a single luminaire to provide both direct and indirect lighting components in a workspace.

This concept makes sense on the surface, but how well does it really work? The answer lies in responses to three questions:

1. Does the indirect component perform well enough to meet IESNA standards set forth in RP 24 (the Recommended Practice "Photometry of Indoor Type Luminaires with Tubular Fluorescent Lamps), which recommends the ceiling luminance ratio be within 10:1 (preferably within 4:1), and the maximum ceiling luminance be no greater than 850 candelas per square meter.
2. Does the direct component also meet IESNA RP 24?
3. Does the direct lighting component add the right amount of highlighting, or does it create a glare source that defeats the primary visual comfort advantages offered by indirect lighting?

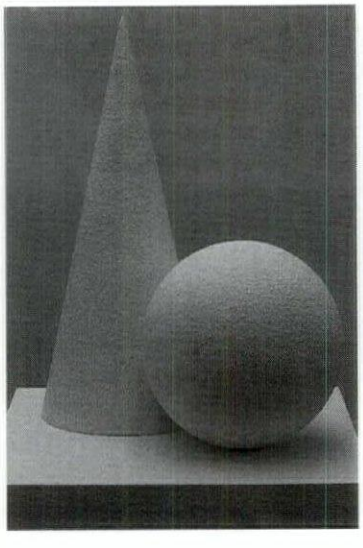
The answers to the first two questions can be found through photometric and point-by-point evaluations, but the third is more complex and potentially more confusing. Just how much downlight component do we need to provide highlight, and does the delivery of that downlight defeat the visual comfort and visibility potential of the indirect component?

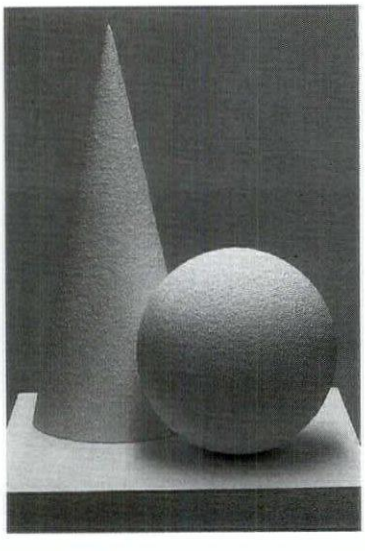
Traditionally, such fixtures have been designed to produce a significant direct component. Typically as much as 35 , 40 or even 50 percent of the fixture's total light output has been direct. These amounts provide highlighting, but they may also create direct and reflected glare as well. In order to assess the balance of these effects, specific areas need to be investigated:

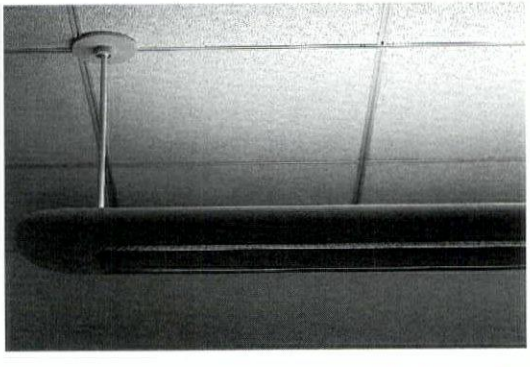
1. The degradation of visual comfort from excessive downlight can be assessed by using Visual Comfort Probability (VCP) and other glare measures.
2. The degradation of visibility due to excessive downlight can be evaluated utilizing Relative Visual Performance (RVP) or Equivalent Sphere Illumination (ESI), consistent with the techniques presented in IES RP 18.2 (the Recommended Practice "The Basis of Physical Photometry").
3. The amount of downlight needed to achieve the desired highlighting has not been as well researched or documented as visual comfort or visibility, but discussions and observations are revealing that as little as 5, 10 or 20 percent downlight component is enough to provide significant highlighting and modeling effects within the space.

The photographs below illustrate this conclusion. The photo on the left was taken in a totally indirect environment; the photo in the center in an 85 percent indirect, 15 percent direct environment. The added 15 percent direct component makes a significant contribution to highlights and shadows.

According to Peter Ngai, PE, FIES, Chief Engineer for Peerless Lighting Coproration in Berkeley, CA, "Our own experimentation, combined with discussions with a number of designers have led us to the conclusion that if both direct and indirect components are present in the same luminaire, the appropriate downlight percentage for most work areas is somewhere between 5 and 20 percent of total light output, depending on the visual tasks and on the preference of the designer.







(Left) Objects illuminated with 100 percent indirect light.

(Center) Objects illuminated with 85 percent indirect and 15 percent direct light.

(Right) One of Peerless Lighting Corporation's new bi-directional luminaires.

"Since the probability of both visibility and visual comfort are our greatest concern, we are offering our new bi-directional luminaires with various percentages of downlight up to a maximum of 20 percent. This offers designers a fixture with highlighting capabilities, while preserving many of the beneficial effects of good indirect lighting...in other words, fixtures that provide highlighting with a minimum glare." *Circle 151*

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LIGHTFAIR INTERNATIONAL'S New Product Showcase

INTRODUCTION

All products shown at the LightFair Product Showcase session are listed here. Individual product descriptions and photos have been edited to meet space requirements.

Craig A. Roeder, IALD, IES, principal of Craig A. Roeder Associates, Dallas, TX, and Mark D. Kruger, IALD, IES, principal of Mark D. Kruger Designs Light, New York, NY, hosted the showcase session, and so it is fitting that their comments as practicing lighting consultants provide an overview of "What's new at LightFair?"

BY CRAIG A. ROEDER, IALD, IES

As someone who has attended lighting trade shows for years, it is interesting to note how the rationale for developing new light fixtures has changed. More and more, new fixtures aren't coming about because we need new fixtures, but instead, the lamp manufacturers are improving on, or creating new themes that the fixture manufacturers then pick up on and respond to in their own ways.

One of the areas in which this is happening now involves the small and very energy efficient, linear T2 fluorescent, displayed by Osram Sylvania. It's been around for a couple of years, and now, manufacturers like Norbert Belfer Lighting are creating fixtures around it and exploring its potential. Another interesting lamp is the PAR 64 metal halide, which has versions manufactured by both Venture Lighting International and GE Lighting. It's a great lamp to use in atriums and on large scale projects where you need to throw a lot of light a long distance in an energy efficient manner. GE has developed that lamp in a 3000 degree Kelvin version so it's warm, as opposed to the cool 4300 degree Kelvin temperature of standard metal halides. These lamps have been on the market for a year or so, but many specifiers may not be familiar with them yet.

Philips Lighting has introduced some metal halide PAR lamps, which are very interesting sources for use in commercial installations, or possibly even in exterior applications.

The PAR 36 White Son, also by Osram Sylvania is the White Son propelled into another generation, by its evolution into a PAR 36. Though the lamp is very good for use in commercial projects, additional time is probably needed to solve the problem of the White Son's color shift. But I remember the days when they said, "We can't make sodium or metal halide look like incandescent because of the phosphors." That was 10 years ago. Well, they did. And so it is the lamp manufacturers who are on the cutting edge of the lighting industry today, creating new energy efficient sources. The fascinating development is that as we see light sources emerge, fixture manufacturers are creatively inventing fixtures around them.

In the decorative fixture category, Artup wins my blue ribbon for best of show for the most creative new wall sconces for use architecturally. This company is reinventing the wheel in a fresh way, and it's nice to see.

Modular International Inc. and Lucifer Lighting Co. also have an interesting product array. And several manufacturers are introducing welcomed miniaturized versions of fixtures that used to be huge. Hydrel, Lumiere and Ardee all have introduced tiny underwater lights, which are very useful, because not every body of water that has to be lit is a large pond. (And there are more fixtures that need to be scaled down as well.)

Ballasts aren't boring when it comes to energy issues. Bodine's new dimmable ballast for fluorescents works well because it does not cause the lamp to color shift. One of the problems in the past was that when the fluorescents were dimmed down to 10-15 percent, their color turned green, and that's unacceptable, particularly in a residential project. With increased concern for energy savings, we have to consider designing residences with more fluorescents, so improvements in the color and dimming have become increasingly important.

BY MARK D. KRUGER, IALD, IES

According to the United Nations Population Division, the world adds the equivalent of a Mexico every year. At that rate, and in just three decades, the population of our planet will have increased by some 65 percent, to a mind-boggling eight and one-half billion people.

So, it should come as no surprise when last month some 35 of the 75 entries in the 1993 LightFair International "New Product Showcase" responded directly to the ever-growing demands for energy efficient lighting products. Whether in lamp, ballast, or fixture design, in "smart" control systems and components, or in software programming refinements, the lighting industry is now beginning to seriously address one of the most pressing social and ecological issues of the day.

Although some of the cutting edge technologies will require more time for development, and for their ultimate integration into our collective lifestyle, it is clear that many manufacturers are now asking the same resonant question posed by Alan Lightman in his recent and excellent novel, *Einstein's Dreams*. That is, "What sense is there in continuing the present when one has seen the future?"

Still, the full weight of our contribution is yet to be felt. In conception, development and utilization of new products and applications, there is far more to be done. As individuals, we must redouble our efforts to educate our clients, our colleagues, and our children about the enormous stake that we all share in reducing our conspicuous consumption of energy-producing natural resources.

I come away from the 1993 LightFair in San Francisco much encouraged. If the "New Product Showcase" is any measure, then we, as an industry, *have* seen the future, and are well and truly committed to its improvement.

ACCESSORIES

Dazor Manufacturing Corporation's Hangtight universal mounting system for task lights on workstation partitions fits tightly into the vertical slotted channels to eliminate wobble. Available as single mount, or in track lengths that span panels. *Circle 60*

Lighting Labels by Salter's Express Listing Mark Service is the hassle-free way to obtain UL Combination Listing Marks. Once a customer orders the UL combination Listing Marks, the company designs the L/M, gets the OK and Issue Numbers from UL, pays the UL service charge, and sends the labels to the manufacturer. *Circle 61*

COMMERCIAL/FLUORESCENT

A.L.P. Lighting and Ceiling Products' Multi-Radii Roll Formed Reflector has no sharp bends to cause light striations. Roll forming creates a smooth curve for precise control and maximum use of light from fluorescent lamps. Units fit strip and recessed troffers. *Circle 62*

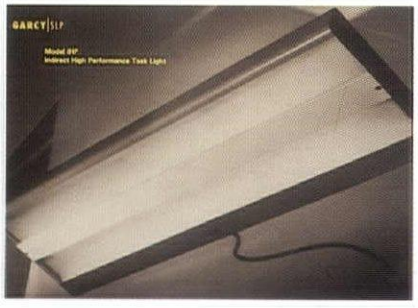
Beghelli's Regina NEMA-4X rated indoor/outdoor fixture with electronic ballast is water and weather resistant. It is made of polycarbonate plastic, liquid silicone gasketed, with a Lexan prismatic lens to deter yellowing. *Circle 63*

Brayer Lighting Incorporated's SuperStrip Lighting Fixture uses octic lamps, specular materials and a unique optical configuration to deliver maximum vertical plane illuminance. Well-suited for retail merchandising layouts. *Circle 64*

▼ **Elliptipar's** Small Fluted Compact Fluorescent Wall Washer has a 26-watt, surface-mounted quad tube and integral ballast. The fixture produces even, asymmetrical wall washing with 100 percent more light on the wall than one-lamp recessed lensed wall washers at equal spacings. *Circle 65*

Engineered Lighting Products' Mini Wall Wash recessed fluorescent fixture has a 3 3/4-inch by 4 1/2-inch aperture, and a 3 1/2-inch depth. The fixture uses a 13-watt lamp, has a long, 10,000 hour life, low heat and high color rendering. *Circle 66*

▼ **Garcy/SLP's** Indirect High Performance Task Light has a metal shield concealing the off-center mounted fluorescent lamp to eliminate direct and reflected glare by blocking direct lamp view when mounted above eye level; blocking direct light from striking a horizontal task below fixture; & reflecting direct light back into the fixture for redirection by an upper reflector. *Circle 67*



H.E. Williams' 1-foot by 1-foot Recessed Compact Fluorescent Fixtures are available with parabolic louvers, prismatic lenses, or the H. E. Williams blade louver. The fixture accommodates up to three lamps and is available with options. *Circle 68*

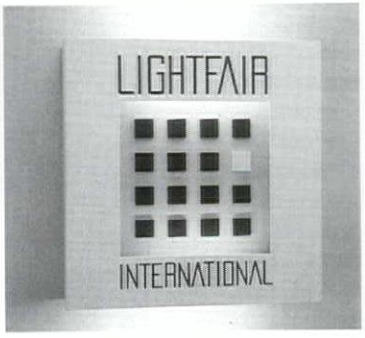
Lights of America's Decorative Dome Ceiling Fixtures with electronic ballasts include the C1100C crystal series that allows interchanging of all available circular and PL hardwire fixtures (with the exception of C2030 TP-L-H and C2050 TP-L-H); and the C1400D series that allows interchanging of all available circular hardwire fixtures. *Circle 69*

Litecontrol's Classica has an advanced reflector system that produces efficient and wide indirect distribution for areas requiring low-brightness ceilings with VDT's. The 13-inch by 3 1/2-inch fixture, which uses two, three, or four T8, or two or four 40-watt compact fluorescents, has lighted perforated sides. *Circle 70*

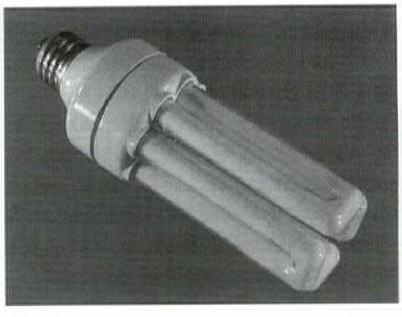
Lumatech Corporation's Reflect-a-Star with PermaBase is a permanent fluorescent lighting conversion system for recessed downlights. Remote and self-ballasted units are offered in magnetic or electronic versions. *Circle 71*

New Product Showcase

Norbert Belfer Lighting's Wedgeline is an individual self-contained cove unit, or a linked series of prewired modules. Utilizing 40- and 50-watt Biax lamps in one lamp 2-inch, two lamp 4-inch or three lamp 6-inch lengths, with electronic ballasts and Belfer's wide distribution Ambia reflector, the Wedgeline offers shadowless, indirect room illumination. *Circle 72*



▶ **Osram Sylvania's** Dulux T and T/E Triple Tube Compact Fluorescent Lamps are available in 18- and 26-watt sizes. The Dulux T lamps operate on the same magnetic ballasts as comparable Dulux D lamps. Four-pin based lamps are available for electronic ballast operation. *Circle 73*



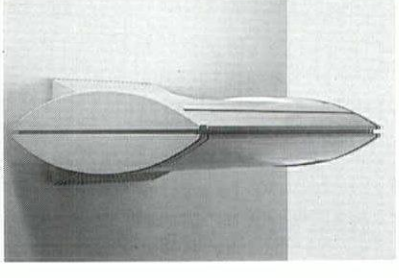
Polarized Lighting International's Energy-Efficient Polarized glare-free 2-foot by 4-foot one-lamp luminaire includes a polarizing panel, specially designed reflector and one fluorescent lamp. It meets or exceeds visual performance capability of 2 by 4 fixtures with double or triple the lamps. *Circle 74*

SPI Lighting's Options Stem-Mounted Pendant with domed bottom shield and downlight is an efficient, low-profile fixture particularly suited for low-ceiling applications. The 2-inch deep fixture's reflector system provides wide, even indirect distribution. *Circle 75*

Starfire Lighting's Ultraline luminaire, part of the Techtrac line, is well-suited for task and indirect applications. It is 2 inches wide, 8/10 inch high and uses the Subminiature T-2 fluorescent Osram/Sylvania lamp. One electronic ballast and two 20-inch lamps give 40 inches of continuous light. Multiple ballasts allow up to 80 inches per fixture. *Circle 76*

◀ **Visa Lighting Corporation** believes its Art Sconce family was the first wall sconce to formally address the Americans With Disability Act. It can be modified to meet specific job requirements. *Circle 77*

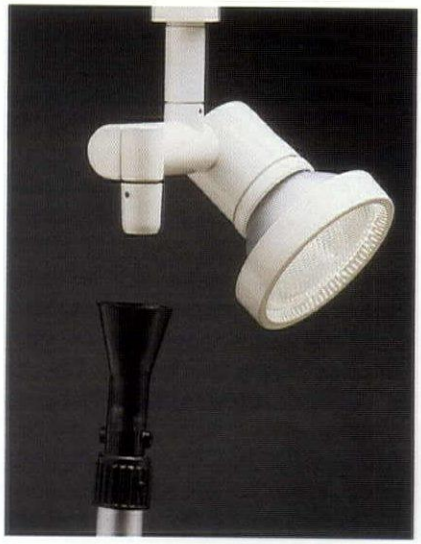
▼ **Zumtobel Lighting's** Spheros SI-W Indirect Luminaire series is enhanced by the introduction of a wall-mounted model that allows specifiers to



create lighting moods in harmony with the architecture through the interaction of wall and ceiling. *Circle 78*

CONTROLS/COMPONENTS

Capri Lighting, a subdivision of Thomas Industries, pre-



sents the Axis adjustable line and low-voltage track lighting heads which contain an internal gear-driven aiming system that permits 180 degrees vertical and 358 degrees horizontal adjustment from a hand-held pole. *Circle 79*▲

DuPont's BJB, VLM, and VOSSLOH lampholders are made of DuPont's Rynite polyester resin and can cost less and be easier to use than phenolic sockets. Rynite is color stable and has long-term heat resistance at up to 210 degrees Centigrade. *Circle 80*

Novitas' Energy-Saving Wall Switch Model 01-151 has user-selectable features for automatic or manual modes, two-level lighting capability and an entry sensitivity feature. The sensor is compatible with all electronic ballasts, will control either 120 or 277 VAC lighting, and is available in white, gray, or sand. *Circle 81*

Translite System's low-voltage Control Circuit automatically reads and sets the current limit. It offers semi-conductor powered cut-out in 15 microseconds in the

event of a fault, and has a voltage regulator to compensate for up to 10 percent variation in primary voltage. *Circle 82*

The Watt Stopper's Passive Infrared Ceiling Mount Occupancy Sensor has 360 degree coverage, turns lights on in areas occupied, and off when they are vacated. A built-in sensor holds lights off when daylight levels are adequate. An isolated relay contact enables it to interact with HVAC or other systems. *Circle 83*

CUSTOM APPLICATION

◀ **Lucifer Lighting Company's** Helix track is made of wafer-thin, chryoscale-plated materials that allow a minimum bending radius of 12 inches, and mounting in single and double track configurations on ceiling and walls. It is available in up to 15 foot lengths, with spotlight designs utilizing 50-watt MR-16 lamps. *Circle 84*

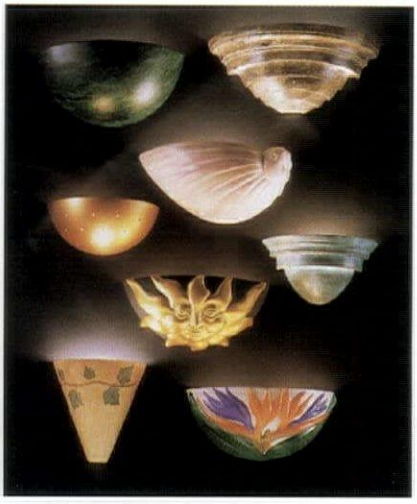
DECORATIVE FIXTURES

Architectural Cathode Lighting's Light Stix fixtures install separately or mounted in series. Options include neon, T8 fluorescent lamps, electronic ballast, adjustable louver, and continuous-through wiring. The adjustable louver comes in etched glass or perforated metal. *Circle 85*

Baldinger Architectural Lighting's Lante Ceiling Pendant, designed by Michael Graves, is hand-crafted from fine materials. Available finishes include Etruscan Bronze. *Circle 86*

Boyd Lighting Company's Eclipse Wall Bracket is designed in response to the ADA legislation has a four-inch projection and a diffuser of hand-quarried white alabaster or white flash glass. The softly diffused incandescent or fluorescent illumination accentuates contract or residential environments. *Circle 87*

▼ **The Justice Design Group's** Ambience Collection of bisque ceramic sconces



New Product Showcase

contains over 70 designs in varied sizes, finishes and lamping options. Specifiers have the option of custom painting the sconces with standard Latex paints at job site or the Justice factory. *Circle 88*

LAM Lighting Systems' Powertube, an option for indirect lighting in large spaces, can be wall- or column-mounted, and is available in single or twin, and 175-watt to 400-watt metal halide versions. It is rotatable for flexible aiming and has an integral ballast. *Circle 89*

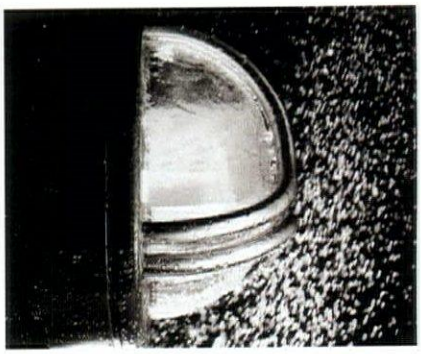
Lampi Corporation's Micro Sensor is a fluorescent anywhere/ night/ security light. The 4-watt light plugs into any outlet and can be switched to on, off, or auto. The auto sensor will turn the light on when the surroundings are dark, and off when they are bright. It remains cool and can be used in a child's room, as well as in hallways, bathrooms, corners, work benches, etc. *Circle 90*

Luxo Corporation's Lo-Vo-Wal combines the Halogen System II arm technology with a cast aluminum cover box. It can be hardwired to a standard J-box or wired with a cord and plug. It is available in 20- and 29- inch arm lengths. Tech gray and soft white arm finishes; six shade housings. *Circle 91*

Metal Luma high-end quality metal sconces are handmade, hard cut, hand finished, and made entirely in the U.S. The contemporary line debuted at LightFair joins the existing Americana line. *Circle 92*

▶ **Morrison Lighting's** Micoga Pendant is a contemporary hanging fixture with mica diffusers, arts-and-crafts inspired. Using mica panels as diffusers aids in its adaptability to a multitude of design styles. *Circle 93*

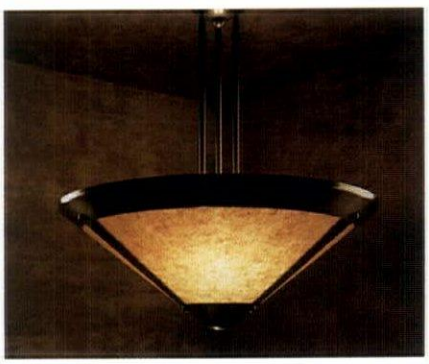
▼ **Poulsen Lighting's** Columbus wall-mounted fixture is a bulkhead unit for use with both compact fluroescent and high-intensity discharge lamps. It has a triangular perforated metal controlling shield to provide a more downward illumination. *Circle 94*



Staff Lighting's STAFF/ se'lux Laser provides glare-free direct lighting using electronic ballasts and energy efficient sources. Light diffuses laterally through etched glass wings, and combines with a minimal oval shape. *Circle 95*

Tech Lighting's Agony and Ecstasy fixtures combine the art of casting metal with low-voltage halogen lighting. The curved and linear shapes when juxtaposed provide the appearance of sculpture. The lamps are solid brass, and sold separately or as a set. *Circle 96*

Basic Source's Cilindro 820, a natural alabaster one-half

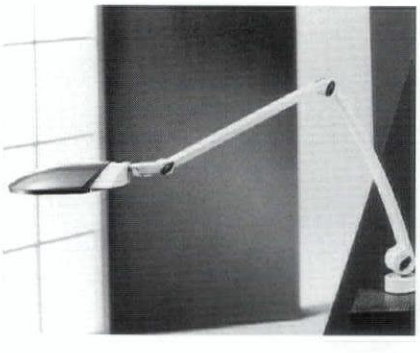


cylinder wall sconce, is available in antique ivory or natural white. The sconce complies with ADA or Title 24. It uses two 13-watt PLC lamps. *Circle 97*

Tokistar Lighting's Crescent low-voltage linear point source extrusion is one inch wide, with a 6/10-inch deep extruded PVC housing and a 90-degree profile. The lamps inside are replaceable and available with ratings of 2.1 or 3.8 lumens. Open or shielded configurations are offered. *Circle 98*

Troy Lighting's B5905 wall sconce is crafted of alabaster from Spain, and available in incandescent or fluorescent versions (normal or high power factor). It is one of 26 different models from Troy's 4P Low Profile Wall Luminaires supplement. *Circle 99*

▼ **Waldmann Lighting Company's** Valencia is part of the Euro-Select Series and is fastened by a weighted table base, clamp or open office furniture panel. The parabolic louver reduces glare from VDTs and disperses light evenly. It uses two 9-watt compact fluorescents. *Circle 100*



INDUSTRIAL/COMMERCIAL

LexaLite International Corporation's 22-inch enclosing Conical Lens mounts to LexaLite's Model 822 Reflexor or to reflexors of the same size. It offers 92.9 percent efficiency, 27.5 percent uplight, and can be used with 250- to 400-watt HID lamps. *Circle 101*

LAMPS/BALLASTS

Advance Transformer's PowrKut Ballasts, when operating two F32T8 lamps, have average 62-watt input, .88 ballast factor, crest factor not exceeding 1.4 and maintained total harmonic distortion of less than 15 percent. *Circle 102*

Canterra Electronics International's Ultra 3000 Electronic Selectable Fluorescent Power supply (ballast) introduces unprecedented control of fluorescent light output and power consumption. Four light levels and corresponding power settings can be selected by turning the set-and-forget switch on the ballast, allowing matching of light output to task and ambient conditions. *Circle 103*

▼ **GE Lighting's** Triple Biax is a three-legged, integrally ballasted, electronic screw-in compact fluorescent with power

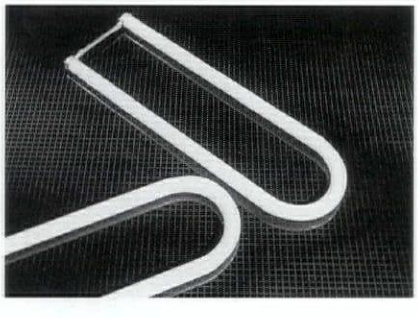
factor greater than .9F and harmonic distortion of less than 33 percent. It is 6.6 inches long, has excellent color, 10,000 hour life, and energy savings: 20 watts versus 75 watts incandescent. *Circle 104*

Hybec's PL Adaptor allows the use of one adaptor for three ranges, providing lumen efficiency for each. It gives the full life of PL lamps. It is suitable for indoor lighting and has a high output current, but with little heat or noise. PL adaptor life spans 50,000 hours. *Circle 105*

Motorola Lighting's Electronic Ballast for F96T8 Slimline lamps features full light output, and lamp choices in different color temperatures. The F96T8 paired with the Slimline T8 ballast is appropriate for retrofit or new applications. *Circle 106*

Panasonic Lighting's Improved Power Quality Electronic Compact Fluorescent Lamps have a 0.98 power factor, total harmonic distortion of less than 10%, 2800 Kelvin correlated color temperature, 84 CRI, and replace incandescents for up to 75% energy savings. *Circle 107*

▼ **Philips Lighting Company's** TL 80/6 is the first T8 fluorescent U-Bent lamp



New Product Showcase

with 6-inch leg spacing, making it an easy and cost-effective alternative to retrofitting standard U-Bent or other T8 U-Bent lamps in 2 by 2 foot luminaires. Main features are the 31 watts, 2800 lumen rating, 85 CRI, 91 percent lumen maintenance, and 20,000 hour life. *Circle 108*

The Bodine Company's Fluorescent Emergency Ballast for Hazardous Location Fixtures is the first of its kind for Division 2 applications. The B65 will enable users to complete almost any life safety system and meet fire and safety codes. *Circle 109*

Toshiba America Consumer Products, Lighting Products and Components Div., has the Series Resonance Oscillation Rapid Start/Parallel T8 High Frequency Electronic Ballast that allows parallel lamp connection of up to four one-inch T8 lamps. Crest factors stay at 1.5 or less. *Circle 110*

Valmont Electric's Ultra Miser electronic ballasts for 8 foot T8 lamps will operate two FO96T8/IS lamps at 120 or 277 volts. These ballasts operate at 107 input watts, and have total harmonic distortion below 20 percent. *Circle 111*

LIGHTING DESIGN SOFTWARE

Lighting Technologies Lumen-Specifier Microsoft Windows-based lighting specification tool allows the user to search an equipment database on over 50 luminaire characteristics. The resulting list may be evaluated by viewing video images, sectional line drawings, and complete technical specifications. *Circle 112*

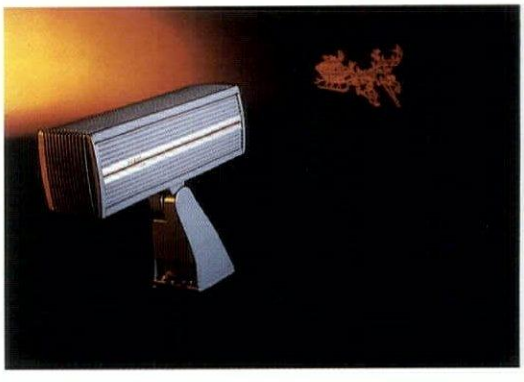
OUTDOOR

LBL Lighting's Geoform Series is a modular system of fixtures consisting of three basic fixture body sizes, five groups of trims with diffusers, and a variety of lamping and functional operations. Geoform performs in harsh environments, but also suits interior applications. *Circle 113*

▶ **Phoenix Products Company's** Phoenix 100 Projection Luminaire casts light over a great distance with precise control. The weather-tight luminaire permits users to highlight architectural details, or project a logo on virtually any exterior surface. *Circle 114*

Spaulding Lighting's Santa Fe Area Light is a rectilinear fixture with a reveal that can also be supplied as a glow ring. For design flexibility, the Santa Fe's five optical systems allow placement of light where it's needed. The fixture is available in three sizes. *Circle 115*

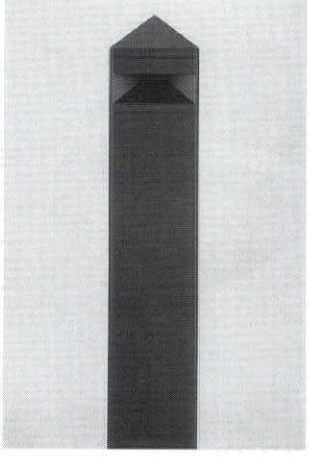
Moldcast Lighting's Vonda Bollard has an uplight component that can light a pedestrian's face, act as a marker to outline a pathway, or with the clear lens option,



give adequate light for under foliage. The accent band can match the color of the building. Solid top, three-post or six-post configurations are offered. *Circle 116*

Vista Landscape Lighting's Bollards #BR-8214, -8215, and -8216 are made of heavy-gauge cast aluminum with a finish of baked-on textured polyester urethane powdercoat. Finishes are textured black, verde, or bronze. Its design and construction contribute to its low-voltage lighting capabilities. *Circle 117*

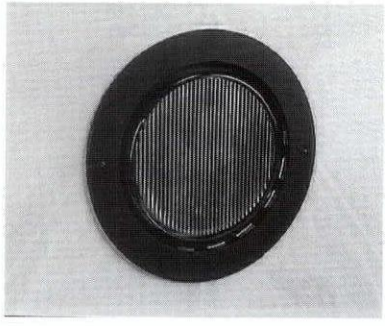
▼ **Bega's** 8422 Bollard is a straight-sided obelisk, 8 by 11/16 inches square, with four port windows. There is no closure glass in the windows; the lamp is enclosed, and the light spread by a horizontal borosilicate glass lens. It has full illumination to the base; a concealed lens, reflector, and lamp. *Circle 118*



B-K Lighting's Glow Star Series uses a recessed 20-watt MR 16 lamp and serves as a decorative marker, uplight, or small path or area light. Each fixture provides its own lighting pattern and can be used with color filters. The unit has machined aluminum or solid brass components and acrylic rod or frosted tubing. *Circle 119*

Fail-Safe Lighting Systems' Diamond is an HID fixture with a prismatic unbreakable lens that can be used for building facades, walkways, canopies, or signage lighting. The fixture is wet-location listed and available with a clear, smoked or leaded glass-looking lens. *Circle 120*

▼ **Hydrel's** 9400 Series Recessed Wall Lights, in round or square versions, is for HID sources to 100 watts and



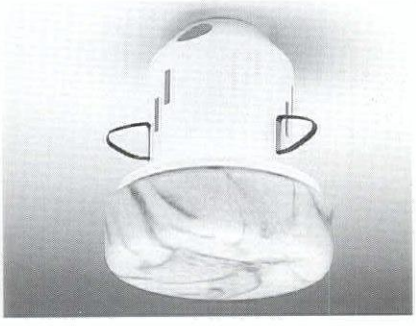
incandescent sources to 150 watts. The fixtures feature a low glare optical system and modular construction with six beam distributions available. Cast bronze or aluminum trims. *Circle 121*

▼ **Kim Lighting's** Micro-Flood measures only 5 1/2 inches wide by 3 3/4 inches deep, by 6 3/4 inches high. The hydroformed aluminum reflector provides a broad, uniform, horizontal flood distribution using either 120-volt or 12-volt quartz lamps. For narrower distributions, 12-volt MR 16 lamps can also be used. *Circle 122*

New Product Showcase

RECESSED DOWNLIGHTS

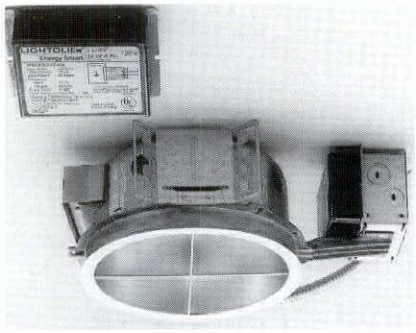
▼ **CSL Lighting's** 2D Very Shallow Recessed Fluorescent Fixture, in 10 or 21



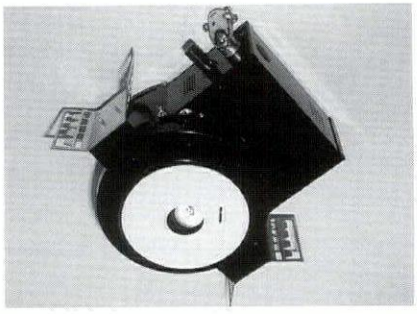
watt versions, can be mounted above the ceiling or behind a wall in 3 5/8 inches of space. It has an electronic ballast, with power factor of .95 and total harmonic distortion of 17 percent. Triplex opal, marbleized glass, or uv stabilized .125 virgin acrylic diffusers offered. *Circle 123*

▶ **Lightolier's** Electronic Compact Fluorescent Ballast and Downlights use a sample wall box control. The four-pin, 26-watt downlight dims to 30 percent; starting is flicker-free. A non-dimming two-pin version and full fixture palette complete the offering. The ballast has a power factor over 98 percent, and total harmonic distortion below 15 percent. *Circle 124*

▶ **NL Corporation's** Very Shallow Recessed MR 16 Low-Voltage Bottom Adjustable Downlight is 4 3/4 inches deep, designed for the lamp to be focused without removing the bottom trim. It has a 35 degree tilt and 359 degree rotation. The narrow



aperture, 6-inch diameter plate trim reduces glare and unwanted spill light. *Circle 125*



The Kirlin Company's Infrared-Remote Controlled Low-Voltage Adjustable Downlighting System can be used in birthing suites and for patient examination. Adjustability and intensity selection is possible from control center, remote, or wall. The system features two inconspicuous motorized luminaires. *Circle 126*

RESEARCH/PUBLICATION

Illuminating Engineering Society of North America's 44-page "Color and

Illumination" explores the nature of light, human color vision, color language, rendering, industrial color management, and the aesthetic and practical applications of color. *Circle 127*

OTHER

Isolite Corporation's LED Litebar Retrofit Kits for Exit Signs, Commercial Signs, and Illuminated House Numbers features a parallel proprietary lateral fiber-optic acrylic light lens with end-mounted LEDs installed on a horizontal circuit bus. Letters are illuminated with a 3/8 inch by 5mm square coated acrylic light lens with embedded colored LEDs. *Circle 128*

Kenall High Abuse Lighting's Sentinall Luminaire Series operates incandescent, fluorescent and HPS lamp sources, including the minus-20 degree Fahrenheit 28-watt PLC compact fluorescent. The prisms provide lamp source shielding at normal viewing angles and optimum light utilization. *Circle 129*

King Technology's One-Step safety corrosion-proof/waterproof twist-on wire connector line comes in gray, dark blue, orange, yellow and red Wing models. All wire combinations are covered. Testing confirms no measurable dielectric loss. *Circle 130*

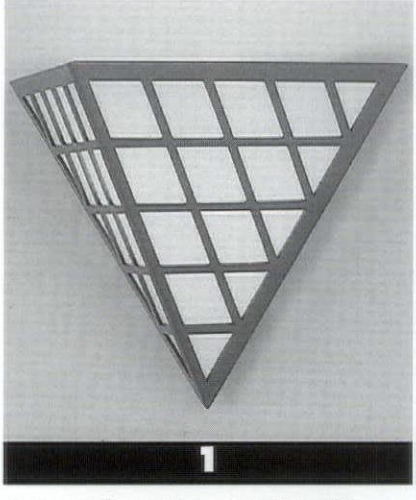
Miroflector's MHP 1020 recessed accent light is open bottomed and adjustable (358 degree horizontal rotation and 180 degrees vertical tilt). An ancillary thermal protect device is on the prewire box, per UL regulations. *Circle 131*

▶ **ProLight's** OmniFlood has nearly 50 percent more candlepower than any other fluorescent floodlight, according to ProLight. It is positioned as the smallest fluorescent floodlight on the market. *Circle 132*

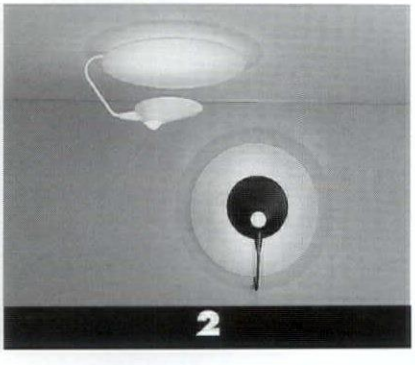
Reggiani USA, Incorporated's Ceiling/Wall Mount Fixture for accent or ambient lighting can be used with single or double-ended HQI and color corrected HPS lamps. The fixture aims 0-120 degrees vertically, and rotates 350 degrees. It has a plug mount feature. *Circle 133*

Shield Source's Evenlite LED Emergency Exit Sign has even illumination via indirect lighting; LEDs are invisible. Each face uses less than 3 watts. The housing is slim with integral charger and battery for universal mounting and arrows. *Circle 134*

NEW PRODUCTS

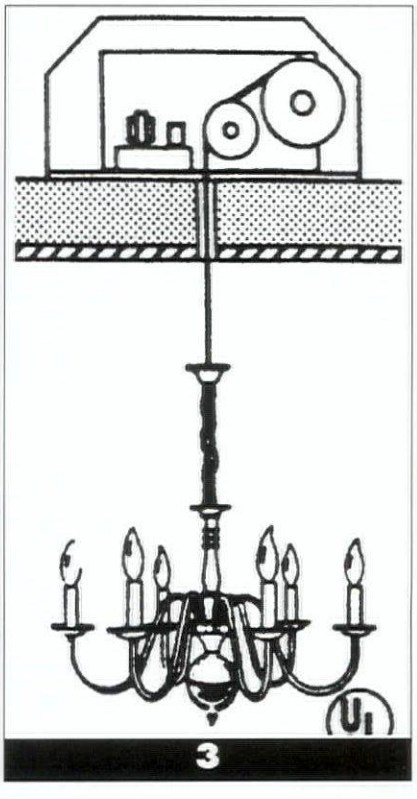


1. Incandescent /Fluorescent Grid Sconce
The Vera Grid Sconce is 15 inches wide, and 11 inches high, with a 9 1/2 inch projection. It is made with a painted steel housing, opal acrylic lens, and uses an incandescent or fluorescent lamp. Appleton Lamplighter, Appleton, WI. **Circle 160**



2. Decorative Contemporary
Dazzle is available in black, white and gold finishes. It takes one 150-watt halogen lamp. The fixture is made of cast aluminum, steel and glass, and the body is offered polished and plated or with a textured powder coating. Artup Corp., Santa Ana, CA. **Circle 161**

3. Light Lift
The Aladdin Light Lift is an easily installed electrical unit that raises and lowers chandeliers. A built-in key switch operates the unit, eliminating accidental activation. The lift comes in both residential and commercial sizes, to raise 200 or 300 pounds. Units come with 35 feet of cable, but additional lengths are available. Aladdin Light Lift Inc., Memphis, TN. **Circle 162**

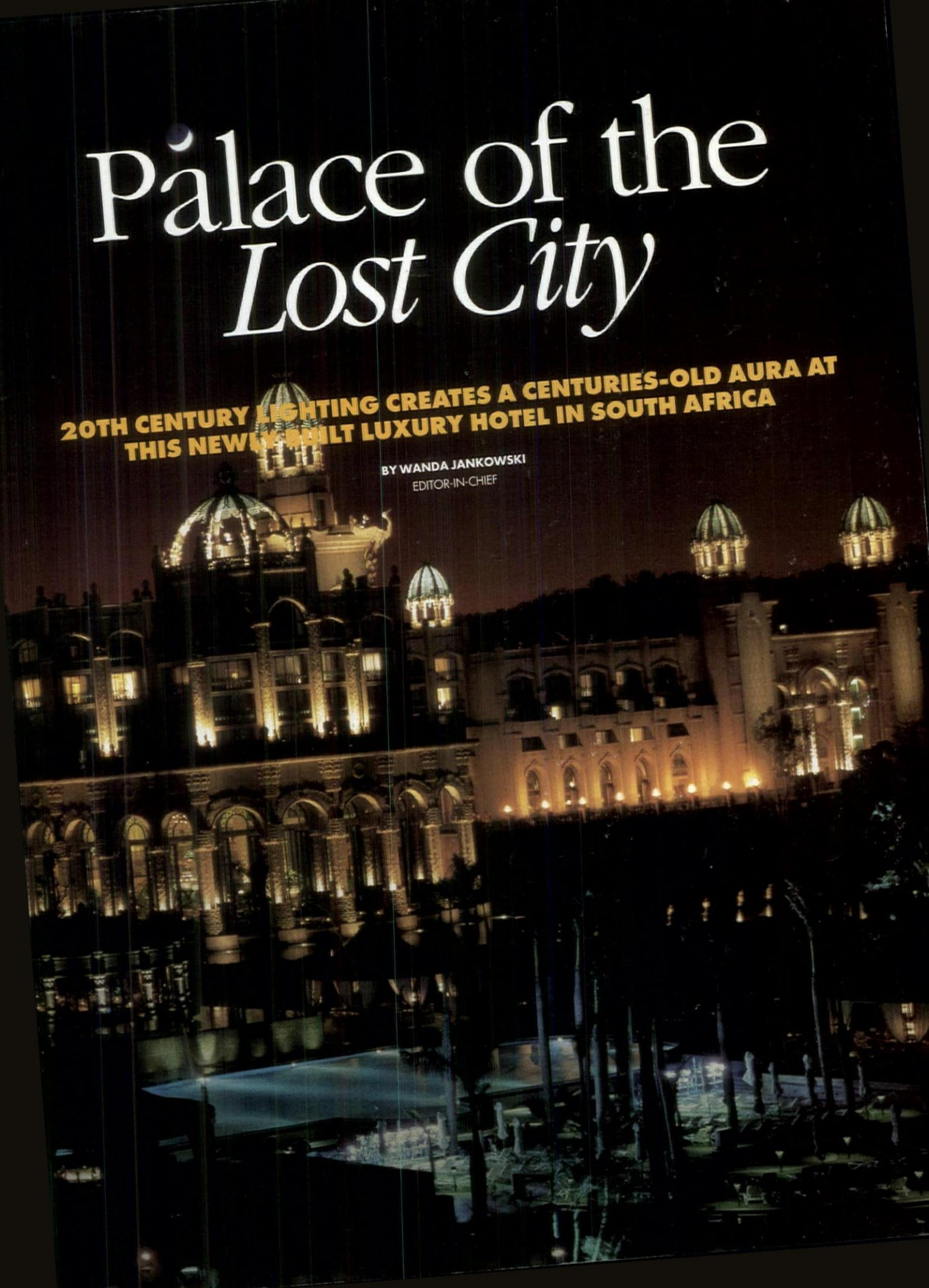


HOMEFIRES BURNING: The Palace lighting is designed to create the impression that someone is always awaiting the arrival of the "king's" guests.

Palace of the *Lost City*

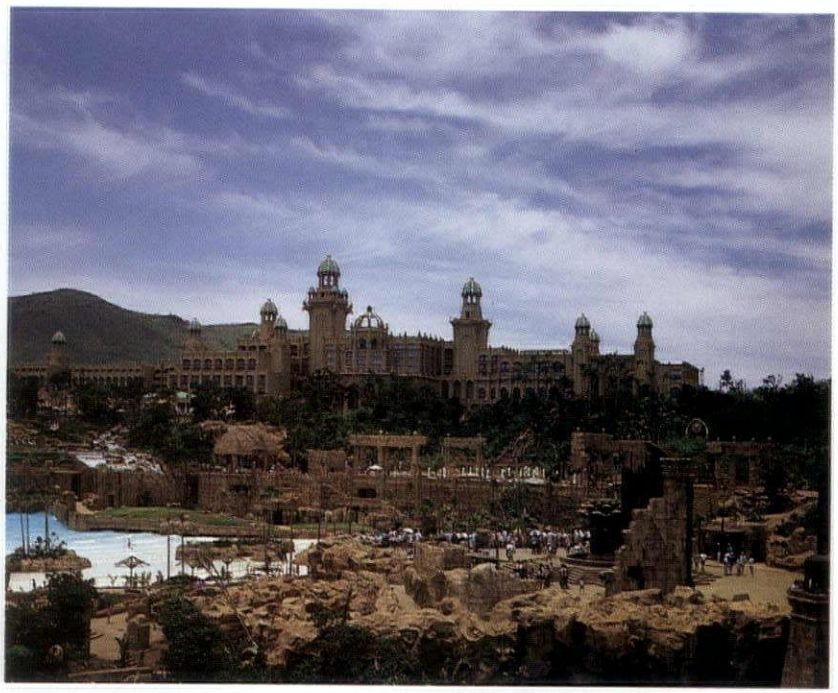
20TH CENTURY LIGHTING CREATES A CENTURIES-OLD AURA AT THIS NEWLY BUILT LUXURY HOTEL IN SOUTH AFRICA

BY WANDA JANKOWSKI
EDITOR-IN-CHIEF



LIGHTING IALD DESIGN AWARDS

AWARD OF EXCELLENCE



DESERT OASIS: (Left) Architects at WATG created the ornate and opulent vision of the hotel and resort by day.

"In Xanadu did Kubla Khan, A stately pleasure-dome decree," is the way Samuel Taylor Coleridge begins the description in the poem "Kubla Khan" of a mythical place of idyllic beauty. Unlike Xanadu, the Palace of the Lost City is a real oasis in the arid valley of Bophuthatswana, South Africa.

Though its ornate architectural details and gold-leafed beauty make it worthy to be a home to royalty, the Palace of the Lost City is not really a palace, but a 352-room luxury hotel accessible to any well-heeled commoner after a two-hour drive northwest of Johannesburg.

The Palace is part of a water park and resort complex envisioned by its owner, Sol Kerzner of Sun International, and designed by architects Wimberly Allison Tong &Goo (WATG). Though lighting consultants John Watson, John Watson Landscape Illumination, Inc., and Craig Roberts, Craig Roberts Lighting Design, had been successfully engaged to create the soft landscape lighting and the Palace's interior lighting, respectively, exactly who was to design the architectural exterior and hard landscape lighting changed hands several times until the Palace was nearly completely built.

Two lighting consultants—one from the U.S. and one from South Africa—had been engaged and promptly disengaged before the architect contacted Ross De Alessi, IALD, MIES, then with Luminae Souter Lighting Design, and currently principal of Ross De Alessi Lighting Design, Portola Valley, CA.

"At the end of July 1992, I received a call from Gerald Allison at WATG. He said they saw an advertisement that GE Lighting ran publicizing the Edison Award and featuring the Palace of Fine Arts (for which De Alessi had received the 1990 GE Edison Award) and they had a similar job for me," says De Alessi, who was hired on August 8, 1992 to meet a December 1, 1992 opening date deadline.

DESIGN CONCEPT

In discussing the project with the architects, De Alessi formed lighting goals focused around several concepts. "The central idea was to create an historic character for the building and the illusion that the Palace was deeply rooted in the ancient culture of the surrounding locale," says De Alessi. "This translated, for example, into using the technique of vignetting the edges of the building—having them via the lighting seem to fade off, ghost-like, so it would look historical."

At the same time, the Palace was not to be lit like a cold, uninhabited monument. "A lot of guests arrive in the middle of the night. We wanted it to look like somebody's always home, and waiting for the guest's arrival. We wanted to create the illusion that people lived even in the unoccupied parts of the building, like the towers," De Alessi explains. This led to De Alessi's using modern equipment to simulate the look of ancient forms of illumination—pockets of fire and flame from burning torches and braziers—indicating a constant warm and welcoming hospitality.

Driving toward the Palace, the guest first notices the towers in the distance, which are capped by open air domes formed of detailed copper patinaed palm fronds.

The tallest tower, adorned by a deer-like kudu frozen in mid-leap at each corner, is the King's Tower, which is also distinguished by a genuine flame burning within its dome. To enhance the effect of the burning torch by giving it a "sense of place" in the darkness, and to balance this dome visually with the other, solely electrically lit tower domes, the large bowl that contains the flame has been uplit with MR 16s.

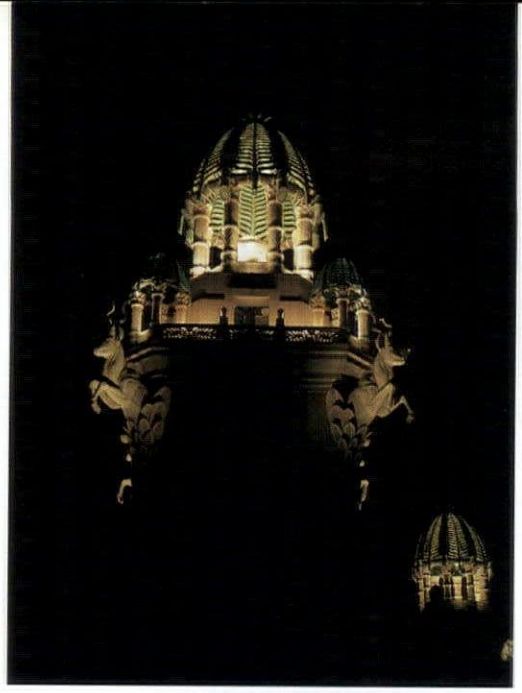
Because of this tower's great height, its exterior walls have been lit differently than those of the other towers. Asymmetric, 120-volt quartz 350/500-watt floodlights have been used with

transformers that provide the needed lumen output within the energy constraints.

"Each of the other tower domes has four quartz floodlights, 300 watts each, and radically dimmed 60 percent to emulate a flame color, that washes up inside the patina of the green leaves to indicate figuratively that 'somebody's home'," says De Alessi. Tinted compact fluorescent wall packs supplement color and also serve as safety lights.

The exterior walls of these towers are lit with 300-watt quartz floodlights. "The floodlight is positioned against the tower wall so that it bounces light off a reflector built into the balustrade and back onto the wall to create a soft glow, rather than a harsh uplit look," says De Alessi. "The deck behind the balustrade also glows and creates the illusion that there's a burning brazier out on the deck, accompanied by guests enjoying the night air, even though those decks are really uninhabited."

The internally lit domes and the externally glowing walls are controlled separately to reach to 100 percent brightness at dusk, and dim to 60 percent over one hour. Most of the control switches are housed in each of the towers.



ETERNAL FLAME: (Above) The King's Tower is marked by a genuine, ever-burning flame, and detailed kudus frozen in mid-leap at the corners.

UPLIT DOME: (Below) The Rotunda's enclosed dome is uplit with MR 16s. The fountain is illuminated with submersed fixtures.

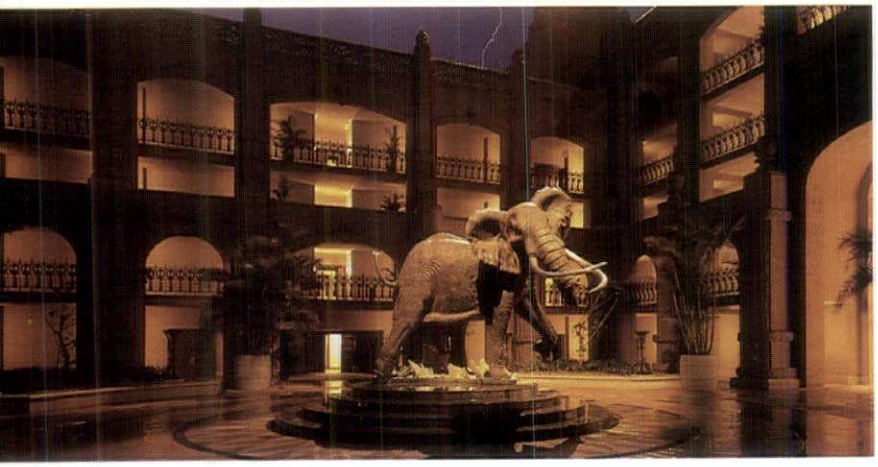
LIONS, KUDUS, ELEPHANTS & CHEETAHS

The low-set, enclosed Rotunda dome is illuminated with a multi-tiered system. The base is ringed with 1500mm cool white fluorescent lamps in lensed uplight fixtures that flatter the patinaed color of the large leaves. The central portion is lit by roof-mounted, dimmed PAR 56 heads outfitted with snoots and louvers. The finial is lit with two 12-volt, 5-degree pinspots. The lions on either side of the dome are uplit with lensed, louvered and snooted MR 16s. All the fixtures are positioned so that they are concealed from viewing by guests, whose rooms surround the Rotunda.

The kudu fountain in front of the Rotunda has graceful arches of water shooting inward from the horns of the animals. The water is illuminated a bright white by non-filtered, submersible niche-mounted MR 16s with linear spread lenses. De Alessi notes that "with South Africa's 240-volt, 50 Hz line voltage, filament sizes of lamps must be quite large, so employing the 12-volt MR16 fixtures is a must for critical focal lighting, with their small filaments and great beam control."

The East Gate Bridge leads to an open court in which a bronze replica of the great elephant Shawu is displayed center stage. The elephant sculpture is highlighted with shielded PAR 56 very narrow spot fixtures fitted with long-barrel snoots and louvers, and concealed high in the towers. In the Elephant Court, two genuine gas torches have been added to soften the effect of steep focal lighting.

The Cheetah fountain greets guests as they round the entry's driveway and glide into the porte cochere. The sculptures, depicting cheetahs and impalas in 1 1/3 scale, are colorfully sidelit from waterproof MR 16 fixtures fitted with glass diffusion and color filters, that are submersed in the fountain. Leopards, the symbol of Bophuthatswana, top the porte cochere and are crosslit with frosted lensed and snooted MR 16s, as are most of the building sculptures, to enhance



SHAWU CENTER STAGE: (Above) Shawu the Elephant is crosslit with roof-mounted fixtures placed to be as unobstrusive by day as possible.

CHEETAH CHASE: (Below) The gold-leafed Cheetah fountain is uplit with submerged PAR 38 fixtures that crosslight the sculptured elements to create a sense of drama and action.

the three-dimensional qualities and separate them from the background.

The exterior of the lobby lounge area, adjacent to the pool, is uplit with dimmed 300-watt, PAR 56 narrow spot submersible fixtures. The cables are dressed and the fixtures concealed here, as in other outdoor areas, in rockwork and precast elements, so as not to be conspicuous in the daytime.

The pool bar pavilions are uplit with sconces that use A-lamps and PAR 38s. The decorative portion of the sconces have been designed by Trisha Wilson, and the fixture "guts" have been designed by De Alessi and Leif Johnson, who is with Luminae Souter.

Combinations of 80-, 120- and 150-watt quartz PAR, and incandescent PAR 38s are used extensively in burial and surface-mounted uplights to highlight tall columns. The multi-tiered decorative ornamentation in the columns has been designed specifically to hold light fixtures. Archways are highlighted with PAR 38s and 56s, in various wattages ranging from 60 to 300 watts.

To illuminate pathways, custom bollards have been installed that use 26-watt compact fluorescent lamps and are heavily shielded, so as not to detract from the vision of the Palace. Sharp cut-off, 70-150-watt, deluxe high-pressure sodium custom luminaires light the roadways.

Regarding energy efficiency, De Alessi explains, "In any design that I do, I always consider energy conservation. In this project, because it's located in the desert, and it's expensive to bring power out there, I used compact fluorescents where I could—for example, in the bollards, the stairwells, and the tower domes. And the roadway lighting fixtures use energy-efficient, deluxe high-pressure sodium (HPS)." The quartz PAR and halogen infrared T lamps also are dimmed to increase lamp life and conserve energy.

LOCAL LABOR

Because De Alessi was called in at a later stage in the project, some of the challenges in completing the job arose as a result of having to change existing conditions to suit the new lighting design. "The Palace was essentially built when I arrived on the scene," says De Alessi. "The interiors were well on their way. They were already applying marbles and other lovely finishes and tile."

A lighting design and mock-up were required within two days of the designer's arrival. "The mock-up was approved, but unfortunately, the conduit and outlets already installed from a previous lighting designer's plan were in the wrong places to accommodate the new lighting design," says De Alessi. "The power points had originally been installed in front of columns, instead of between columns where we wanted them."

How were the power points changes made? Painstakingly and largely by hand.

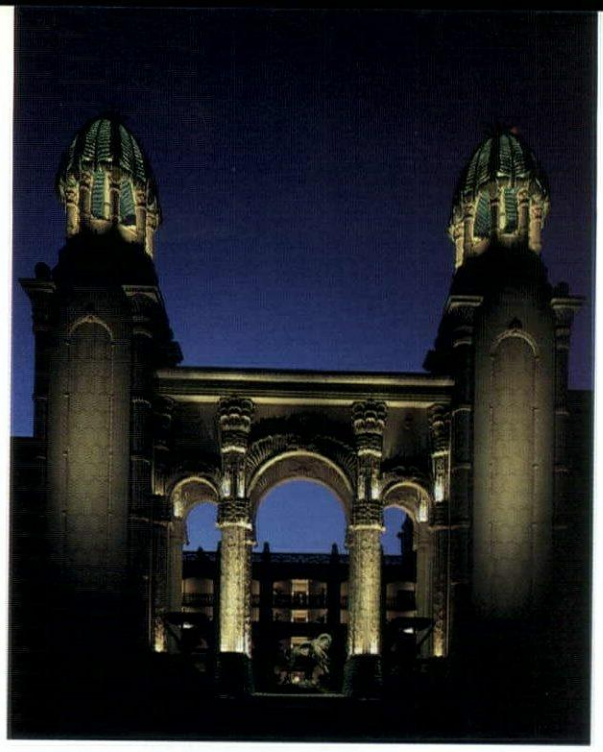
The scene that greeted De Alessi when he arrived on site must have been what it was like when the great pyramids were built—5,000 people were working on the project—mostly migrant labor.

"The unskilled labor force were our saviors, because they had to lift up tiles and chip away marble to reroute so much pipe to get the power points where we needed them. It was all done manually, with very little jackhammering," says De Alessi.

"We transformed voltage from 240 to 120 in certain places to use the halogen infrared (HIR) technology lamps. From there we also stepped down for 12 volt," says De Alessi. "Though there are no outstanding import limits, the import duties are hefty, especially when there's glass involved. So we used a minimum of American equipment—some sophisticated asymmetric and fountain lighting fixtures, but mostly we modified South African PAR and fluorescent lampholders."

Custom accessories had to be designed for local equipment to accommodate the special colored and spread lenses. "Leif Johnson gets 90 percent of the credit for designing the accessories," says De Alessi. In fact, the South African manufacturer, Lascon, has cataloged many of the items.

In addition to the IALD Award of Excellence, this project is a Semi-Finalist in the GE Lighting Edison Award competition.



SHADOW PLAY: (Above) Fixtures are concealed in multi-leveled capitals. Towers are vignetted with soft brushes of light to create the impression that the Palace has been in existence for centuries.

DETAILS

PROJECT: PALACE OF THE LOST CITY, REPUBLIC OF BOPHUTHATSWANA, SOUTH AFRICAN HOMELAND
OWNER: SOL KERZNER; DENE MURPHY, project manager, SUN INTERNATIONAL
LIGHTING DESIGNER (exterior and hard landscape): ROSS DE ALESSI, IALD, MIES, ROSS DE ALESSI LIGHTING DESIGN
LIGHTING DESIGNER (soft landscape): JOHN WATSON, JOHN WATSON LANDSCAPE ILLUMINATION, INC.
LIGHTING DESIGNER (interiors): CRAIG ROBERTS, CRAIG ROBERTS LIGHTING DESIGN
DESIGN ARCHITECT: GERALD L. ALLISON, EDUARDO ROBLES, BOBBY CARAGAY, WIMBERLY ALLISON TONG & GOO (WATG)
ARCHITECT OF RECORD: TONY DOHERTY, BURG DOHERTY BRYANT & PARTNERS
PROJECT MANAGER: ROD OOSTHUIZEN, CHARLES ISRAELITE, COLIN ROTHSCHILD, SCHNEID ISRAELITE & PARTNERS
INTERIOR DESIGNER: TRISHA WILSON, JAMES CARRY, WILSON & ASSOCIATES
ELECTRICAL ENGINEER: JOSE GRANADO, BIDERMAN FINN BEEKHUIZEN
SCULPTOR: DAHIE DE JAGER
PHOTOGRAPHER: ROSS DE ALESSI, ROSS DE ALESSI LIGHTING DESIGN
LIGHTING MANUFACTURERS: GE LIGHTING, TUNGSRAM, OSRAM SYLVANIA—lamps; HYDREL—underwater and fountain fixtures; ELLIPTIPAR INC.—asymmetric fixtures; LASCON—PAR-holders, floodlights, and roadway luminaires

SIDELIGHTS

THE MYTH BROUGHT TO LIFE

The architects at Wimberly Allison Tong & Goo created the following "Legend of the Lost City" to enhance the mythic aura of the Palace:

"Once upon a time and long ago, a peaceful and artistic tribe came upon the Valley of The Ancients. In the shadow of the Pilansberg hills they built a Palace, decorating it with gold leaf, soaring columns and hand-carved furniture of great magnificence.

"But the idyllic existence of these artistic and hard-working peoples was destroyed one terrible noon day when an earthquake devastated the city they had built with so much love. Only the Palace and Royal Arena survived the cataclysm. The people fled in fear, and the magnificence they had created was lost beneath creeper and weed, their heritage flung to the winds.

"It was left to the archaeologists to painstakingly uncover the past and piece together the poignant and romantic history of the legendary kings and peoples of the Valley of the Ancients."

This newly-built Lost City contains the world's largest water park that includes five water slides, several swimming pools, a wave pool, a sandy beach, hippo ponds, an amphitheater, swinging bridges, flora and fauna, and a dazzling collection of tropical birds. There is also a casino designed by Hanry Conversano that embodies the lost city motif, Vegas-style stage shows, an alligator park, a game preserve, two Gary Player golf courses, a manmade lake, and numerous restaurants.

It is frequented mostly by South Afrikanners and Europeans—Germans, French, some Italian, a few Japanese and fewer Americans. A room in the hotel costs about 900 Rand per night. With the current exchange rate of 3:1, in U.S. currency the per night rate would be about $300.

LIGHTING IALD DESIGN AWARDS

AWARD OF EXCELLENCE

100 East Pratt

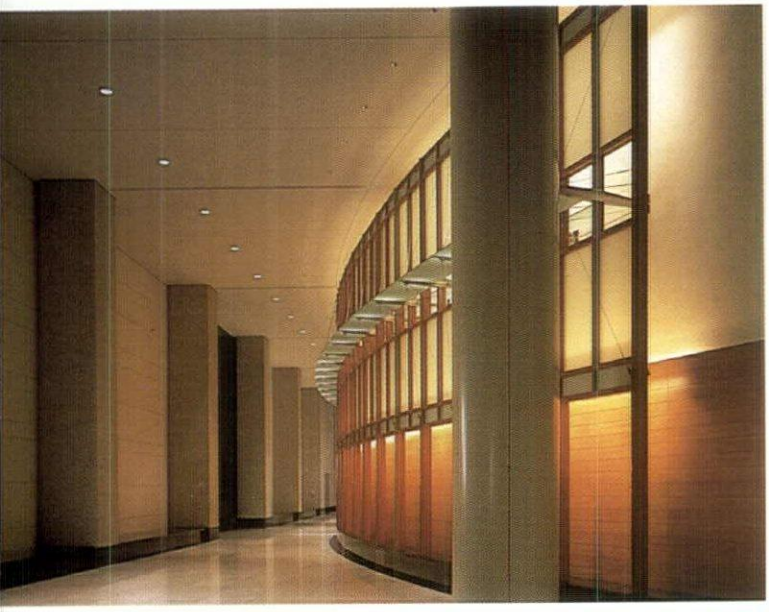
Across from Baltimore's inner harbor, 100 East Pratt Street stands like a powerful luminous force in the night sky. The lobby demonstrates a creative use of simple lighting techniques to enhance a sculpture created from very basic materials.

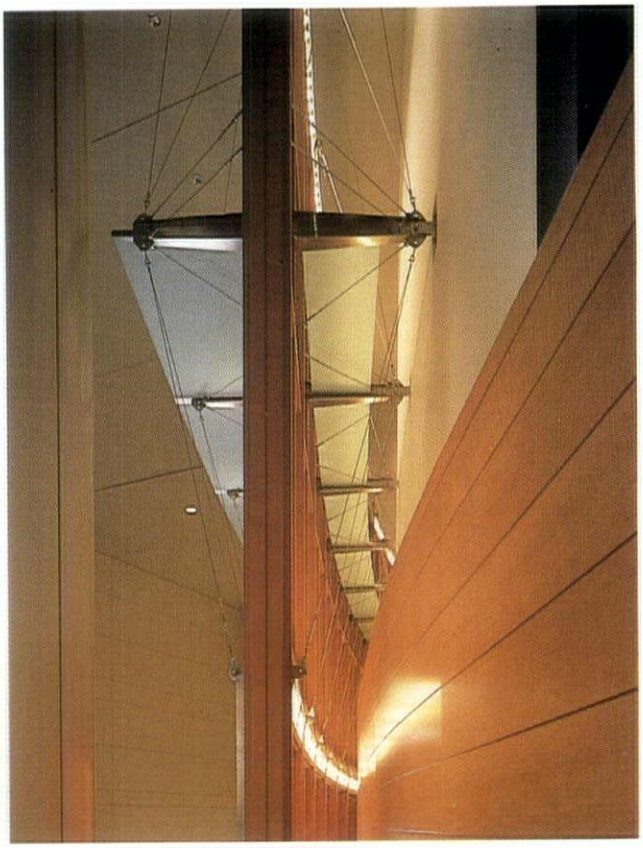
Looking in from the street, the door's glass canopy is illuminated by metal halide uplighting. The lobby beckons as a bright, warm haven.

Lighting designers Charles G. Stone II and Scott Hershman helped to create a lobby dominated by a sculptural construction of luminous wood panels and projecting wings of translucent glass.

The glass is supported by stainless steel brackets and crisscrossing stainless steel cables. Designed in collaboration with the architects, its construction evokes images of sailing ships.

A continuous incandescent strip illuminates the rich wood of the panels. The glass glows throughout as a result of a second strip at the top of the panel wall. The effect of an "horizon line" is created by a third strip hidden above the wood panels. In addition,a group of unobtrusive small-aperture downlights creates highlights on the glass shelf.

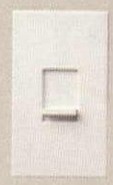




DETAILS

PROJECT: 100 EAST PRATT STREET, BALTIMORE, MD
OWNER: 100 EAST PRATT LIMITED PARTNERSHIP
LIGHTING DESIGNER: CHARLES G. STONE II AND SCOTT HERSHMAN, FISHER MARANTZ RENFRO STONE, NEW YORK, NY
ARCHITECT: CRAIG W. HARTMAN, JOHN WINKLER, ROBERT HOLMES, MIKE DESELICA, RANDALL GAY, LEE QUILL, SKIDMORE OWINGS & MERRILL
PHOTOGRAPHER: NICK MERRICK, HEDRICH-BLESSING
LIGHTING MANUFACTURERS: EDISON PRICE LIGHTING, SENTINEL LIGHTING, WITH CUSTOM HOUSING BY J.M. GITLIN

"Hi-lume Compact"™ Dims Compact Fluorescent Lamps Down to 5% Light



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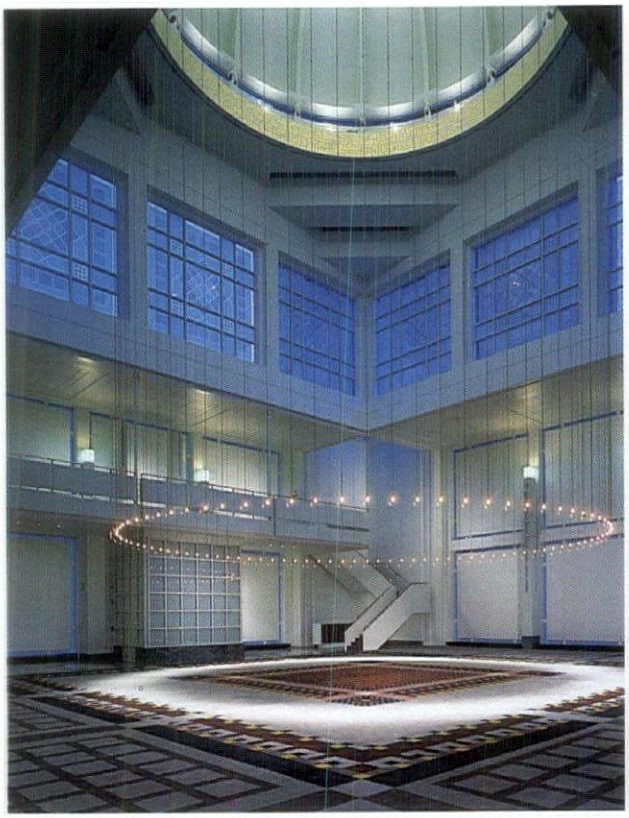
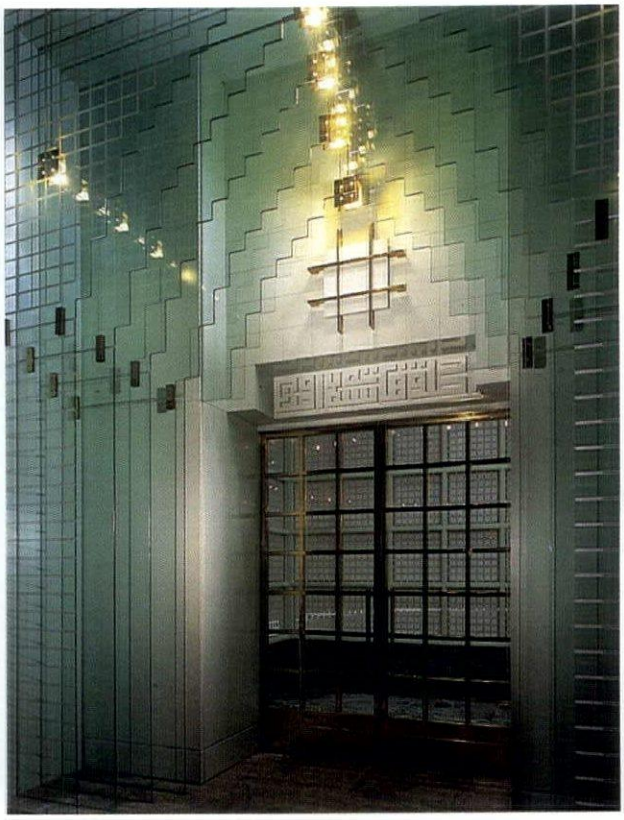
LIGHTING IALD DESIGN AWARDS

AWARD OF EXCELLENCE

Islamic Cultural Center





Modern technology is used to recreate the lighting effects of ancient oil fuels at the Islamic Cultural Center in New York. At the deep entrance of the mosque, a series of tall etched-glass arches draw the visitor into the house of worship. Paul Marantz, Charles Stone and Susan Brady, Fisher Marantz Renfro Stone, utilize small perforated brass pendants with slide openings to illuminate the etched glass. Inside, this elegant theme is recalled at the altar of mihrab, which faces Mecca.

Ancient Byzantine mosques permitted daylight to enter through surface penetrations, but the openings were small and interiors were dark. Thanks to modern construction, the Islamic Cultural Center has a large fritted glass clerestory to provide abundant natural light to the interior. The inner circumference of the dome is cross-lit with low-voltage PAR lamps. From the exterior at night, the window's translucent frit (a fused ceramic coating) offers a warm, generous glow.

Ancient mosques were lighted with pendant wrought-iron oil lamps hung near the floor. That history and spirit is evoked by suspending below the dome a ring of 90 articulated 48-inch brass rods, each tipped with a low-voltage MR 16 lamp. The colorful refracted light from the dichroic reflector of each lamp recalls the ancient oil flame. A perforated brass tube shields the filament.

DETAILS

PROJECT: ISLAMIC CULTURAL CENTER OF NEW YORK, NEW YORK, NY
OWNER: ISLAMIC CULTURAL CENTER OF NEW YORK RELIGIOUS TRUST
LIGHTING DESIGNER: PAUL MARANTZ, IALD, CHARLES G. STONE II, AND SUSAN BRADY, FISHER MARANTZ RENFRO STONE, NEW YORK, NY
ARCHITECT: MICHAEL MCCARTHY, MUSTAFA K. ABADAN, JOHN WINKLER, MICHAEL KESELICA, SKIDMORE OWINGS & MERRILL
PHOTOGRAPHER: PHOTOS COPYRIGHT WOLFGANG HOYT
LIGHTING MANUFACTURERS: BERGEN ART METAL, AND EDISON PRICE LIGHTING

LIGHTING IALD DESIGN AWARDS

AWARD OF EXCELLENCE

Terrors Of The Deep

Lighting designers Randy Burkett and Mark Hershman worked with Scott McMurtrie of Sea World to give visitors an underwater impression of a Caribbean seascape. The underwater creation involves several exhibition tanks, including those for barracuda, pufferfish, and lionfish. Lighting is most spectacular, however, in the walk-through tank that is home to some 400 eels. Here, a meandering acrylic tube allows access through an artificial coral reef.

Much of the undersea sensation is created by lighting equipment sealed in a hidden overhead chamber. The tank's "sky," for example, is illuminated by 1,000-watt metal halide floodlights.

Twelve pattern projectors controlled by a dimming sequencer simulate constantly moving clouds. Standard PAR spotlights mimic direct sunlight, while a cluster of super-bright halogen PARs masquerades as the sun itself.

Meanwhile, fiber optic bundles lurk with the eels in the coral formations, distributing light randomly to shadowed recesses. Neon ribbons of violet, blue and turquoise provide backlight for the fabric banners suspended above the main pathway.

This project and its lighting designers have also received the 1992 GE Edison Award, sponsored by GE Lighting.

DETAILS

PROJECT: SEA WORLD OF FLORIDA'S TERRORS OF THE DEEP, ORLANDO, FL

OWNER: BUSCH ENTERTAINMENT CORPORATION

LIGHTING DESIGNERS: RANDY BURKETT AND MARK HERSHMAN, RANDY BURKETT LIGHTING DESIGN, INC., ST. LOUIS, MO, AND SCOTT MCMURTRIE, SEA WORLD OF FLORIDA, ORLANDO, FL

ARCHITECT: DAVID ASHBY, MIKE KONZEN, SUZANNE LEBEAU, PECKHAM, GUYTON, ALBERS & VIETS, INC.

ENGINEER: STUART SUTHERLAND, TILDEN, LOBNITZ & COOPER, INC.

PHOTOGRAPHERS: RONALD KURTZ, RANDY BURKETT LIGHTING DESIGN, INC., AND MIKE STRAUSS, BUSCH CREATIVE SERVICES CORP.

LIGHTING MANUFACTURERS: STERNER LIGHTING—METAL HALIDE FLOODLIGHTS, LEE COLORTRAN—ELLIPSOIDALS/PATTERN PROJECTORS, FIBEROPTIC SPECIALTIES—FIBER OPTICS, ALTMAN—PAR-LAMP ADJUSTABLE ACCENTS, GE LIGHTING—LAMPS, AND LUTRON—CONTROLS

LIGHTING IALD DESIGN AWARDS

AWARD OF EXCELLENCE

Powell Library

An open tent structure, the temporary library was erected by the University of California at Los Angeles (UCLA) to house the collection of the Powell Library while it is made safe against earthquakes. The facility required a complex lighting system, designed by Hodgetts and Fung Design Associates, in collaboration with Patrick B. Quigley & Associates, Inc., on a shoestring budget.

The temporary facility is formed from bowed aluminum ribs covered with layers of woven polyester, vinyl and urethane. Daylight washes through the translucent portions, making the space seem larger. The electrical lighting goal was to support the industrial aesthetic of the structure, while simultaneously accentuating the soaring tent.

The designers manipulated combinations of metal halide uplights and fluorescent downlight systems to illuminate the many task areas. The uplight system decreased daytime contrast ratios between clear and opaque tent surfaces, with a result of increased visual comfort. Since the budget did not allow the purchase of fixture shielding and baffles, fixtures were carefully oriented to minimize glare and allow fixtures themselves to shield lamps from view.

Standard high-intensity metal halide industrial lights were turned upside down and used as uplights. Strip fluorescent fixtures were placed in a radiating pattern, with cantilevered and discreetly supported positions to give the appearance of floating in the space.

The lighting system consumes only 2 watts per square foot at night and 1.24 watts per square in the daylight, beating the code limit of 2.25 watts per square foot.

DETAILS

PROJECT: UCLA POWELL LIBRARY, TEMPORARY FACILITY, LOS ANGELES, CA
OWNER: UNIVERSITY OF CALIFORNIA
LIGHTING DESIGNER: CRAIG HODGETTS & HSIN-MING FUNG, HODGETTS & FUNG DESIGN ASSOCIATES, SANTA MONICA, CA
ARCHITRECT: CRAIG HODGETTS AND HSIN-MING FUNG, HODGETTS & FUNG DESIGN ASSOCIATES
LIGHTING CONSULTANT: PATRICK B. QUIGLEY, PATRICK B. QUIGLEY & ASSOCIATES, INC.
ENGINEER: MICHAEL FEINBERG, PATRICK BYRNE & ASSOCIATES
PHOTOGRAPHER: KENNETH NAVERSEN PHOTOGRAPHY
LIGHTING MANUFACTURERS: HUBBELL—INDUSTRIAL DOME FIXTURE, FLOODLIGHT UPLIGHT, AND GLASS GLOBE FIXTURES, PRUDENTIAL—STRIPLIGHTS AND LAMPS, DAY-BRITE/BENJAMIN—METAL HALIDE FLOODLIGHT FIXTURES, PHOENIX—WALL-MOUNTED DOCKLIGHT FIXTURE, LIGHTOLIER—WET LOCATION BEACON LIGHT

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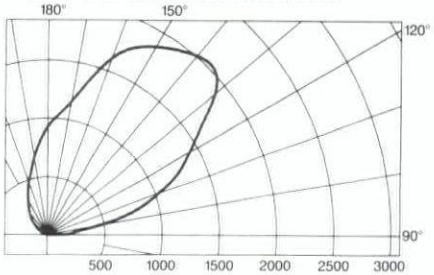
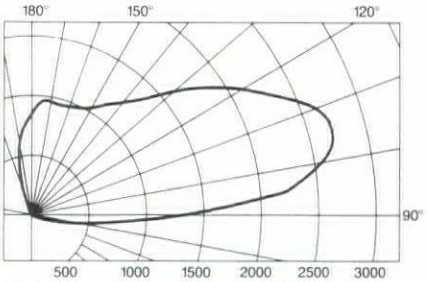
COMPARE LIGHT DISTRIBUTION



Competitor's Cove Mounted Luminaire
Two-lamp 40 watt long twin tube compact fluorescent
- Aiming fixed
- Max. Cp = 2063 (45° above horizontal)
- Total efficiency = 63%



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Two-lamp 40 watt long twin tube compact fluorescent
- Aiming adjusts for optimum uniformity
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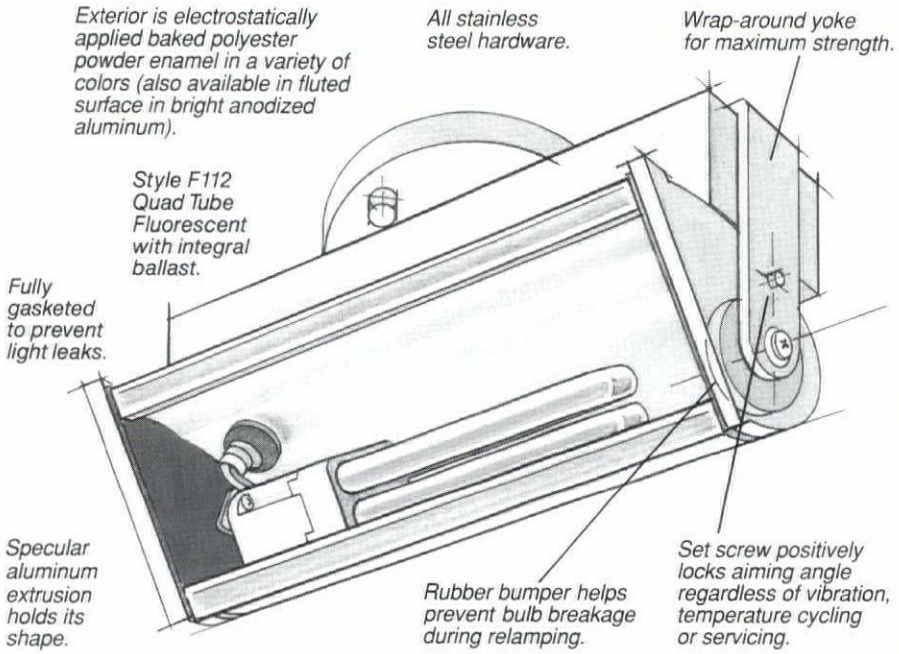
- Total efficiency = 70% (11% better)

Comparison with Long Twin Tube Fluorescent Lamps
Two Lamp 39W Luminaire vs.
elliptipar's Large Fluorescent with One 40W Lamp
Lower right values for **elliptipar** unit,
initial vertical footcandles.

30" Setback	℄	1'	2'	3'	4'
0' Ceiling	68.8 / **47.2**	54.1 / **38.1**	28.9 / **21.4**	11.9 / **9.2**	8.8 / **4.0**
1'	127.0 / **74.4**	100.0 / **58.6**	50.5 / **30.9**	22.7 / **13.2**	11.1 / **6.2**
2'	101.0 / **56.5**	84.4 / **46.6**	49.8 / **27.6**	25.5 / **14.1**	13.8 / **7.3**
3'	50.2 / **40.4**	45.1 / **35.2**	31.4 / **23.4**	19.4 / **15.8**	12.0 / **9.1**
4' Wall	27.2 / **31.5**	26.4 / **28.2**	20.1 / **21.5**	14.5 / **15.8**	11.1 / **10.6**
5'	18.4 / **21.6**	17.5 / **20.5**	14.7 / **16.8**	11.6 / **13.2**	8.7 / **9.9**
6'	13.1 / **15.8**	12.3 / **15.0**	11.9 / **13.3**	9.3 / **11.2**	7.2 / **9.7**
7'	9.6 / **13.4**	9.5 / **13.1**	8.8 / **12.2**	7.5 / **10.7**	6.2 / **9.1**
8' Floor	7.8 / **13.0**	7.6 / **12.8**	7.3 / **11.8**	6.4 / **10.7**	5.6 / **9.1**

Using long twin tube fluorescent lamps, tests between an ordinary two-lamp 39W luminaire and **elliptipar's** reflector with only one 40W lamp prove that, with superior uniformity, **elliptipar** achieves 75 to 80% of the average wall illuminance using 50% less energy.



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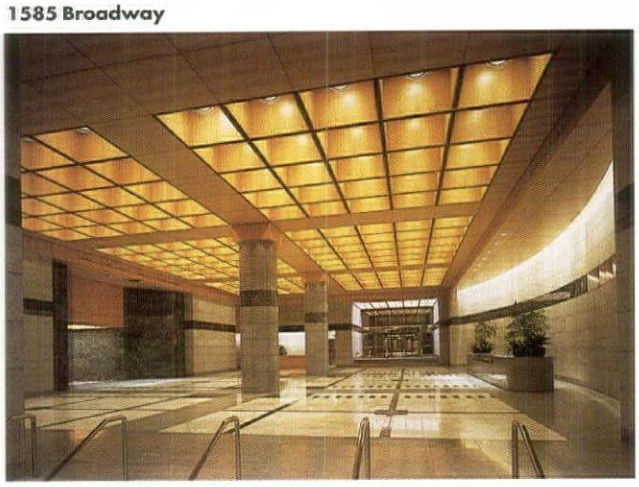
LIGHTING IALD DESIGN AWARDS

Citations

1585 Broadway



1585 BROADWAY

Using standard lighting equipment in unique applications, Cosentini designer Stephen Margulies developed a customized appearance for the tower lobby at 1585 Broadway. The large public space at 1585 Broadway has many unique ceiling designs, as well as rich materials on the wall and floor spaces. A luminous effect is created on the ceiling of the entrance by mounting incandescent downlights with painted white reflectors in the wood coffered ceiling.

The downlights are diffused by decorative etched glass placed below, thus creating a luminous plane on the entire ceiling. This relatively simple technique creates uniform, shadow-free surface lighting in the coffer, with the top color quality of incandescent lamps. The designer replicated this effect in the elevator lobby coffers and the connecting passageway.

One of the main lobby attractions is a curved granite wall illuminated with a combination of fluorescent and incandescent striplights concealed within a built-up cove. Additional accent lights feature the concierge desk.

The combination of fluorescent and incandescent light sources have resulted in an energy efficient design. The incandescent sources are dimmed, extending lamp life and guaranteeing a low-maintenance system.

DETAILS

PROJECT: 1585 BROADWAY, NEW YORK, NY. **OWNER:** SOLOMON EQUITIES. **LIGHTING DESIGNER:** STEPHEN MARGULIES, COSENTINI LIGHTING DESIGN, NEW YORK, NY. **ARCHITECT:** GWATHMEY & SIEGEL. **ENGINEER:** JB & B. **PHOTOGRAPHER:** COPYRIGHT JEFF GOLDBERG/ESTO PHOTOGRAPHICS. **LIGHTING MANUFACTURERS:** EDISON PRICE LIGHTING, LIGHTOLIER, AND C.J. LIGHTING

GRANDEL SQUARE

When the vaudeville and movie houses closed in St. Louis' entertainment district during the 1960s, it appeared the acclaimed neighborhood had drawn its final curtain. But a new production has taken the stage—the Grand Center cultural district renovation, which relies heavily on nighttime illumination for its success. Its most recent addition is the Grandel Square Theatre.

The designers included Randy Burkett and Katherine Abernathy from St. Louis working in collaboration with New York-based Broadway freelancer Peter Kaczorowski. By incorporating an adjacent sculpture, an abandoned movie palace, and an unoccupied house in the lighting project, the designers have heightened theater-goers' sense of safety and security in the area.

The east facade of the theater, a converted 1880s church, is given an on-stage feeling with richly modeled light from a row of 250-watt halogen lights recessed in the ground. The empty bell tower is revealed by 250-watt metal halide floodlights fitted with deep blue filters. Theater signage is highlighted by 250-watt halogen PAR spotlights.

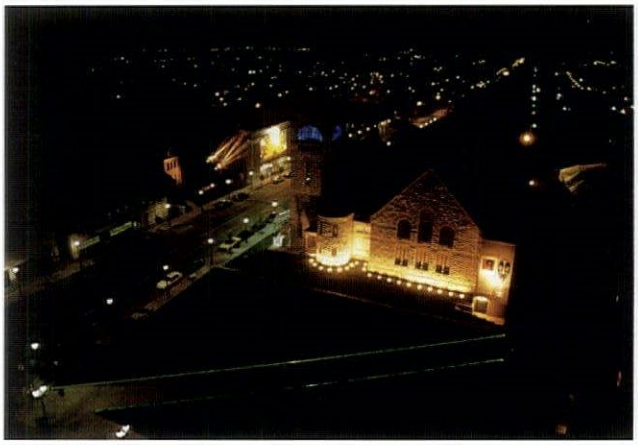
The side-street presentation of two vacant buildings, the Sun Theatre and Block House, is playful and whimsical. Five hundred feet of neon bent in the shape of sun rays rejuvenates the empty show house's facade. Its vacant lobbies are illuminated by spotlights. On east and west facades the designers produced a "film noir" effect of shadow and light patterns with narrow-beam spotlights mounted below the fire escapes. The Block House is made to look mysterious with spotlights backlighting the windows and a single 500-watt spot obliquely grazing its facade.

A sculpture of grass flowing toward Grand Avenue from the Grandel Square Theatre, title "Tilted Planes," receives spill light from nearby historic street lanterns. The diagonal pathway bisecting the sculpture directs pedestrians to parking areas. It is subtly delineated with fiber optic cable, for which metal halide illuminators are buried in vented chambers below the grass. Synchronized color wheels furnish 20-second fades in a series of four colors.

Synchronized time clocks control all project lighting. Long-life halogen lamps are used for several of the lighting effects because their precise control and superior color characteristics allowed the design to fulfill both its aesthetic and energy goals.

DETAILS

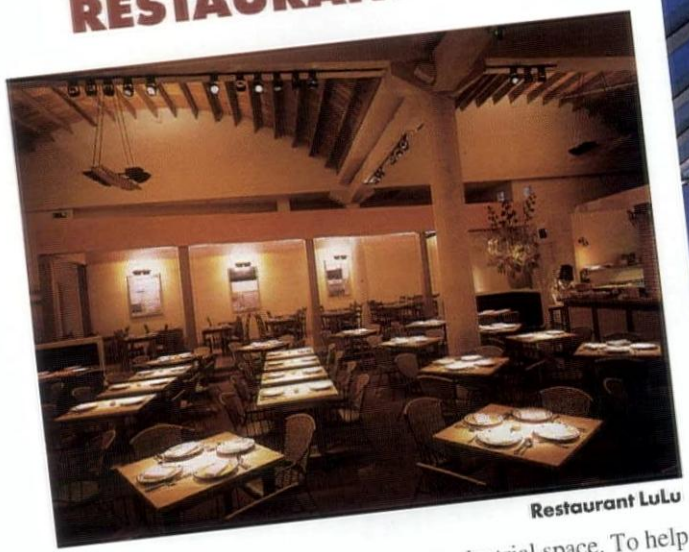
PROJECT: GRANDEL SQUARE, ST. LOUIS MO. **OWNER:** GRAND CENTER, INC. **LIGHTING DESIGNER:** RANDY BURKETT AND



Grandel Square

KATHERINE ABERNATHY, RANDY BURKETT LIGHTING DESIGN, INC., ST. LOUIS, MO AND PETER KACZOROWSKI, NEW YORK, NY. **GRAPHIC DESIGNERS:** KIKU OBATA, TERESA BOLLWERK, HEATHER TESTA, KIKU OBATA & COMPANY. **ARCHITECT:** WEDEMEYER, CERNIK, CARRUBIA, INC. **ENGINEER:** ROBERT DEDEKE, GUARANTEE ELECTRICAL CO. **PHOTOGRAPHER:** PHOTO COPYRIGHT 1992 JANICE BRODERICK, A.G. EDWARDS CORPORATE COMMUNICATIONS. **LIGHTING MANUFACTURERS:** HYDREL—BURIAL AND ACCENT LIGHTS, LUMENYTE—FIBER OPTICS, ABOLITE—RLMS, GE LIGHTNG—LAMPS, THORN—LAMPS, TORK—TIMECLOCK CONTROLS

RESTAURANT LULU



Restaurant LuLu

Restaurant LuLu occupies an old industrial space. To help create visual appeal, a design team was called in that included David Malman, Architectural Lighting Design.

Malman highlighted the four vaulted ceiling bays with suspended custom-designed uplights that provide soft, warm, general light reflected off the wood joists and roof deck. The four halogen fixtures contain two wood beams that pick up the curvature and materials of the roof.

The main dining area is in the central piazza, bounded by a raised dining enclosure on one side and a similar enclosure for the bar on the other side. Louvered black pinspots highlight the dining tables while avoiding any glare or shadows on faces. Custom picture lights with pairs of bronze shades on black-painted arms illuminate paintings in the raised dining area and provide a bright backdrop for the larger main space. At the bar, aluminum wedges are used as louvered downlights and as suspended uplights. Tiny holes were added to the uplights to introduce a hint of sparkle.

Natural finished and black-painted details thematically tie together the custom fixtures throughout the restaurant. By carefully blending reflected uplight with well-shielded accent light, the designer has created a relaxed, warm environment that matches the originality of the cuisine and the cordial family style service.

DETAILS

PROJECT: RESTAURANT LULU, SAN FRANCISCO. **OWNER:** BONIA, INC. **OPERATORS:** REED HEARON AND LOUISE CLEMENT. **LIGHTING DESIGNER:** DAVID MALMAN, ARCHITECTURAL LIGHTING DESIGN, SAN FRANCISCO, CA. **ARCHITECT:** CASS CALDER SMITH, CASS SMITH ARCHITECTURE. **ENGINEER:** VINCENT O'KELLY, O'KELLY AND SCHOENLANK. **PHOTOGRAPHER:** MICHAEL BRUK. **LIGHTING MANUFACTURERS:** KIM—COPPER SPOTLIGHTS; LIGHTOLIER—TRACK LIGHTS; CUSTOM UPLIGHTS, PICTURE LIGHTS, AND BAR LIGHTS DESIGNED BY DAVID MALMAN AND FABRICATED BY SHAPER LIGHTING

SAINSBURY CENTRE

Sainsbury Centre

Designer George Sexton developed innovative daylight reflectors to light underground workshops and conservation laboratories naturally in the new Crescent Wing

of the Sainsbury Centre for Visual Arts in Norwich, England.

For the many work spaces that needed diffused light, Sexton borrowed from technology used to make parabolic reflectors for electrical downlights. A customized spun aluminum reflector of about six feet in diameter pipes in sunlight.

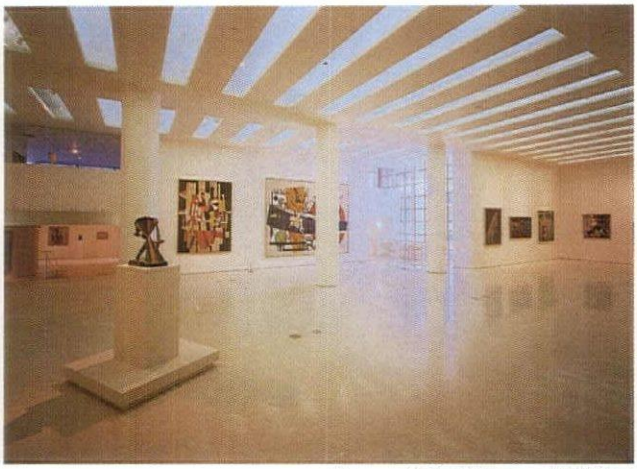
Integrating with architectural elements, providing flexibility, and washing the perimeter walls were principal factors in shaping the system for the galleries. Sexton illuminated those spaces with a "kit of parts:" a series of interchangeable metal ceiling panels that carry a range of lighitng fixtures powered from a track mounted above the panels.

The metal panel assembly is capable of accommodating a variety of lamps and accessories that make the system extremely functional, with the resulting quality of illumination meeting or exceeding museum lighting needs. Sexton met the museum's needs for natural and artificial lighting while respecting the structure's architectural design.

DETAILS

PROJECT: SAINSBURY CENTRE CRESCENT WING, NORWICH, NORFOLK, UK. **OWNER:** UNIVERSITY OF EAST ANGLIA. **LIGHTING DESIGNER:** GEORGE SEXTON, GEORGE SEXTON ASSOCIATES, WASHINGTON, D.C. **ARCHITECT:** SIR NORMAN FOSTER AND PARTNERS. **ENGINEER:** J. ROGER PRESTON & PARTNERS. **PHOTOGRAPHER:** PHOTO COPYRIGHT DENNIS GILBERT. **LIGHTING MANUFACTURERS:** ERCO LIGHTING LTD.—STANDARD AND CUSTOM LIGHT FIXTURES, DAMPA UK LTD.—CEILING AND LIGHT FIXTURE TILE, DAL—CUSTOM EXTERIOR LIGHT FIXTURES, THE FORGE ENGINEERING LTD.—CUSTOM FIBER OPTIC LIGHT HOUSINGS

GUGGENHEIM MUSEUM



Guggenheim Museum Addition

The Solomon R. Guggenheim Museum's frequently changing exhibitions required a flexible lighting system. Unlike any other museum, the Guggenheim's new exhibition spaces in the 10-story annex are connected to the spiral ramps of the original building, creating the need for an integrated transition as one enters the new annex, with its mostly artificial lighting from the richly skylighted original buildng designed by Frank Lloyd Wright.

Light & Space Associates designed a linear trough system for the ceiling that uniquely contains both fluorescent and incandescent fixtures. This combination of indirect/ambient and direct/focused lighting met the criteria of both flexibility and integration with the existing system.

A fluorescent dimming system allows the ambient light to be controlled through a four-scene, preset system down to 5 footcandles, which meets the conservator's low-light criteria for works on paper. The top level of 30 footcandles is available for the display of less light-sensitive media.

The uplights in each gallery are circuited so that they can be controlled in sections, so the museum can partition the space or leave the uplights off in portions of an exhbit. The open plane of the ambient system created by the designer references the skylighting in the original building and melds the qualities of the light environments.

DETAILS

PROJECT: SOLOMON R. GUGGENHEIM MUSEUM RESTORATION AND EXPANSION, NEW YORK, NY. **OWNER:** SOLOMON R. GUGGENHEIM MUSEUM. **LIGHTING DESIGNER:** PETER BARNA, RENEE COOLEY, LIGHT & SPACE ASSOCIATES, BROOKLYN, NY. **ARCHITECT:** CHARLES GWATHMEY, ROBERT SIEGEL, JACOB ALSPECTOR, GWATHMEY SIEGEL & ASSOCIATES, ARCHITECTS. **ENGINEER:** ANDREW SEBOR, HENRY COVER, JOHN ALTIERI CONSULTING ENGINEERS. **PHOTOGRAPHER:** PHOTO BY DAVID HEALD, COPYRIGHT THE SOLOMON R. GUGGENHEIM MUSEUM FOUNDATION. **LIGHTING MANUFACTURERS:** UNAVAILABLE AT PRESS TIME

ONE MONTGOMERY STREET

A 1909 San Francisco landmark, the One Montgomery building houses a prominent California bank's flagship, where light was dim and difficult to maintain. Asked to design a small-scale improvement, the designers Ross De Alessi and Leif Johnson saw instead a massive overhaul was needed. A test mock-up persuaded the bank to approve a completely new lighting system.

Since wires couldn't be routed under marble floors for open-area local task lighting, and lighting from above was complicated by high coffered ceilings and energy constraints, the solution

One Montgomery Street

created involves a system of local directional task light tailored to the needs of employees and customers, supplemented and softened by improved indirect components that also wash the interiors with a golden color. The project complies with California's stringent Title 24 energy code. It features the unusual interior use of high-pressure sodium (HPS) lamps, which are more typically seen in outdoor fixtures and factories.

The old, irregularly spaced metal halide downlights have been replaced with a pattern of smaller halogen downlights. Torcheres and fragile plaster sconces have been refit with custom reflectors designed for high quality "white sodium" HPS lamps. In sconces above some check stands, small incandescent downlights have been installed also.

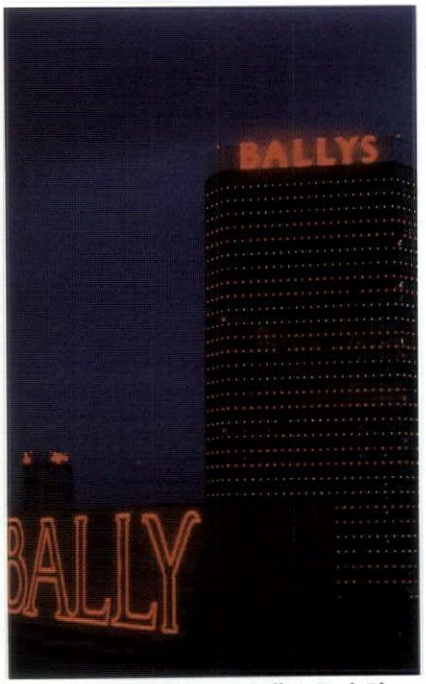
The shallow artificial skylight has been outfitted with a tile reflector to help bounce its lighting out into the room. Warm triphosphor compact fluorescent task lighting works in concert with the other sources to create a warm environment conducive to the historical atmosphere.

DETAILS

PROJECT: ONE MONTGOMERY STREET, SAN FRANCISCO, CA. **OWNER'S REPRESENTATIVE:** BILL ERDMANN, RETAIL FACILITIES MANAGEMENT. **LIGHTING DESIGNER:** ROSS DE ALESSI AND LEIF JOHNSON, LUMINAE SOUTER LIGHTING DESIGN, SAN FRANCISCO, CA. **CONTRACTOR:** MARK S. LYNCH, ROSENDIN ELECTRIC, INC. **PHOTOGRAPHER:** PHOTO COPYRIGHT ROSS DE ALESSI, ROSS DE ALESSI LIGHTING DESIGN. **LIGHTING MANUFACTURERS:** ERIC INDUSTRIES—CUSTOM HID AND INCANDESCENT FIXTURES, CHARLES LOOMIS DESIGN—CUSTOM COMPACT FLUORESCENT FIXTURES, STAFF LIGHTING—INCANDESCENT FIXTURES, KURT VERSEN—INCANDESCENT FIXTURES, GE LIGHTING—LAMPS, OSRAM SYLVANIA—LAMPS, LUTRON—DIMMING SYSTEM

BALLY'S PARK PLACE

Because Bally's outside lamps are all replaced from inside the guest rooms, maintenance is simple. Wheel Gersztoff Friedman Shankar Inc. designers Donald Gersztoff and Allan Leibow mounted the fixtures on a slab concealed in a banquette in each guest room. At night, the lights shine out through the building's glass curtain wall. By day, the reflective glass of the curtain wall renders the fixtures invisible.



Bally's Park Place

Each fixture has one side faced with a clear glass lens and the other side a magenta lens, matching Bally's theme color. Several large facets on the reflector around the lamp allow the filament to be reflected at many angles. Two clear 150-watt incandescent lamps per fixture are used for a high degree of sparkle. Running the 120-volt lamps on 70 volts of power reduces their wattage and increases their expected lifetime to well over 60 times the manufacturer's rating, translating to energy and maintenance savings for the owner.

The three fixtures per guest room are controlled in groups of six lamps, with 24 lamps per circuit. The grouping of lamps on a circuit substantially reduces the cost of the dimming system.

Each pattern adds to a new pattern every 30 seconds. At Christmas, the tower featured a white tree against a background of red bulbs. It can display virtually anything the owners wish to program.

DETAILS

PROJECT: BALLY'S PARK PLACE CASINO HOTEL, ATLANTIC CITY, NJ. **OWNER:** BALLY'S PARK PLACE CASINO. **LIGHTING DESIGNER:** DONALD GERSZTOFF AND ALLAN LEIBOW, WHEEL GERSZTOFF FRIEDMAN SHANKAR INC. LIGHTING DESIGNERS, LOS ANGELES, CA. **ARCHITECT:** DAVID DANN, WILLIAM B. TABLER ARCHITECTS. **ENGINEER:** IMRE BRAUN AND DON DURANG, LEHR ASSOCIATES. **OWNER'S REPRESENTATIVE/DESIGN DIRECTOR:** NICHOLAS FASCIANO, NEW YORK, NY. **PHOTOGRAPHER:** ALLAN LEIBOW. **LIGHTING MANUFACTURERS:** ILLUMINATING CONCEPTS & ENGINEERING — CUSTOM FIXTURES

LIGHTING IALD DESIGN AWARDS

HELLER INTERNATIONAL CORPORATION

Heller International Corporation

Heiler International Corporation's Chicago headquarters cafeteria has a ceiling 28 feet high. Mitchell Kohn sought to provide an even spread of light on the unusually high walls, enhance the use of natural light, and provide enough light for evening events—all while allowing easy access for lighting maintenance during normal operating hours.

Kohn has kept all equipment within easy reach. To light the walls, he selected 12 halogen ellipsoidal fixtures designed primarily for theatrical productions. Each unit produces a very wide beam (approximately 14 feet in diameter at a distance of 20 feet). The possibilities for overlapping elliptical patterns and soft color drama are endless.

The dining area also receives natural light from four sides thruogh clerestory windows. Uplighting at the pedestrian level surrounds the banquet seating, adding texture and light to the silvery-gray walls. An inverted cove built into the top of the booth seating houses a light track for low-voltage fixtures with small MR 16 floodlamps.

Miniature custom sconces at each booth appear as small, glowing squares of frosted glass with stainless steel details that balance the space for intimacy.

DETAILS

PROJECT: HELLER INTERNATIONAL CORPORATION, CHICAGO, IL. **OWNER:** HELLER INTERNATIONAL CORPORATION. **LIGHTING DESIGNER:** MITCHELL KOHN, HIGHLAND PARK, IL. **INTERIOR DESIGNER:** DIANE SCHROEDER, GRISWOLD, HECKEL & KELLY ASSOCIATES, INC. **PHOTOGRAPHER:** JAMIE PADGET, KARANT & ASSOCIATES. **LIGHTING MANUFACTURERS:** FIXTURE USED WAS THEATRICAL ELLIPSOIDAL SPOTLIGHT WITH 500-WATT LAMP—MANUFACTURER NAME UNAVAILABLE AT PRESS TIME

ONE FIFTH AVENUE

One Fifth Avenue was redesigned to reinvigorate the interior, still furnished with items salvaged from the shipwreck of ocean liner S.S. Carolina. The new illumination recalls the restaurant's past as a jazz bar.

A continuous raceway system mounted at the floor illuminates dining room walls. Small spotlights, 50-watt PAR 20 lamps, are spaced 10 inches apart in the raceway. Tables are highlighted by adjustable fixtures recessed in the ceiling. Overlapping beams of light produce uniform illumination on a draped fabric that softens the light before it is reflected through the wall panels.

In the central lounge, the same continuous raceway system runs behind the mirror at the salvaged ocean liner mahogany bar. It illuminates "bubbles" ingeniously etched into the mirror and shines light through liquor bottles and wine glasses. Fiber optics supply light to snack bowls, while a miniature striplight causes flecks of gold leaf on the ceiling to glitter.

"Porthole" fixtures from the S.S. Carolina are fitted with opal glass luminaires to evenly diffuse light. These luminous elements recall a tranquil aquarium or the moonlit sea.

A main feature of the lighting system is ease of maintenance. The PAR 20 lamp is used for 95 percent of the illumination, and all of the lighting equipment is standard.

One Fifth Avenue

DETAILS

PROJECT: ONE FIFTH AVENUE, NEW YORK, NY. **OWNER:** JEROME KRETCHMER, JEFFREY BLISS, ROBERT RATHE, RICHARD RATHE, AND ALFRED PORTALE. **LIGHTING DESIGNER:** GARY GORDON, GARY GORDON ARCHITECTURAL LIGHTING INC., NEW YORK, NY. **ARCHITECT:** JAMES BIBER, PENTAGRAM ARCHITECTURAL SERVICES P.C. **PHOTOGRAPHER:** COPYRIGHT 1993 PETER MAUSS/ESTO PHOTOGRAPHICS. **LIGHTING MANUFACTURERS:** LIGHTOLIER—RECESSED CEILING FIXTURES, LITELAB—RACEWAY FIXTURES, MACRO ELECTRONICS—CONTROLS, ROBERTS STEP LIGHTS—BAR FIXTURES

WETLANDS CENTER

The Wetlands Research Center, which has a stucco central spine with a vaulted metal roof, was designed to be an inviting gathering place for scientists. Daylight enters through high clerestory windows and bounces off the ceiling to light the area

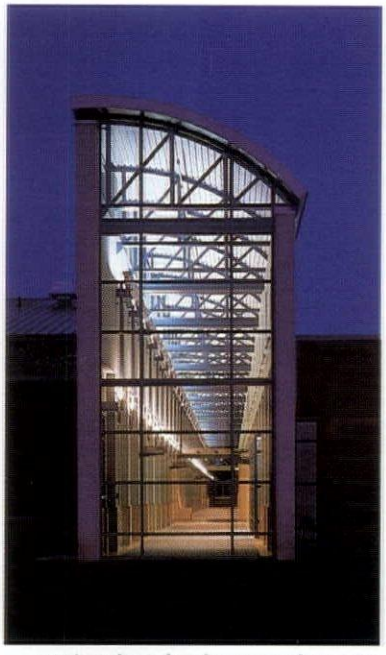
below. Direct daylight also enters small windows punched through masonry walls. As conditions change, the artificial light takes over, and the switch produces a variety of desirable effects.

At night, the fluorescent uplighting designed by Francesca Bettridge and Wendy Ewen of Cline Bettridge Bernstein Lighting Design Inc. is reminiscent of the daylighting effect. For warmth and visual relief, long-life incandescent lamps on dimmers highlight the natural materials and soften the space, glowing from accent fixtures and monumental sconces. The designers created the unique sconces out of simple metal parts that reflect the building's industrial character.

In lab corridors, the fluorescent uplights reappear with perforated housings, while large pipe-mounted pendants make the space seem friendly. All in all, the lighting system utilizes the imagery of the building, responds to the lighting demands of the daily work cycle, and provides a unifying aesthetic theme in a basic laboratory setting.

DETAILS

PROJECT: NATIONAL WETLANDS RESEARCH CENTER, LAFAYETTE, LA. **OWNER:** U.S. FISH AND WILDLIFE SERVICE ENGINEERING CENTER. **LIGHTING DESIGNER:** FRANCESCA BETTRIDGE AND WENDY EWEN, CLINE BETTRIDGE BERNSTEIN LIGHTING DESIGN INC., NEW YORK, NY. **ARCHITECTS:** JOINT VENTURE OF GUIDREY BEAZLEY OSTTEEN/ARCHITECTS, AND ESKEW FISON ARCHITECTS. **ENGINEER:** TERRY GAUDET & ASSOCIATES. **PHOTOGRAPHER:** SHARON RISEDORPH PHOTOGRAPHY. **LIGHTING MANUFACTURERS:** EDISON PRICE LIGHTING—DOWNLIGHTS, ACCENT LIGHTS AND WALL WASHER, ICE—DECORATIVE BRACKETS, LUMEC—DECORATIVE BRACKETS, LOUIS POULSEN—DECORATIVE BRACKETS, PEERLESS LIGHTING—PENDANT-MOUNTED INDIRECT/DIRECT FLUORESCENTS, NUART—UPLIGHT, ZUMTOBEL—PENDANT, BRACKET, SEMI-RECESSED AND BEAM MOUNTED FLUORESCENTS, LSI—BRACKET-MOUNTED ACCENT LIGHT



National Wetlands Research Center

Seamen's Church Institute Chapel

SEAMEN'S INSTITUTE

Located in the South Street Seaport Historic District, the Seamen's Church Institute houses a maritime training facility, meeting rooms, offices, gallery space, and a chapel. The designers, Francesca Bettridge and Wendy Ewen, Cline Bettridge Bernstein Lighting Design Inc., sought balance between artificial and natural light. They also set out to provide a luminous enhancement that is sensitive to the historical neighborhood. Finally, while they chose incandescent lighting for aesthetic reasons, they kept energy use strictly within an allowance of 2.5 watts per square foot.

Viewed form the outside, the facade's jewel-like glow does not overpower the surroundings. Within, the walls of the double-height entrance hall are evenly washed with light, while accent lights draw attention to a figurehead and ship models.

Six floors of galleries exhibit ship models and nautical charts that are ingeniously lit by 75-watt PAR lamps shining through a special patterned glass selected by the lighting designers. In the multipurpose room, decorative fixtures mounted on the facia add sparkle while providing general light. Fluorescent cove uplights provide additional ambient light reflected from the ceiling vault, creating a lantern effect when viewed from outside.

Floodlights on the chapel roof send light through the side skylight. Track fixtures hidden behind crossbeams accent the

altar and podium, while a wallwashing system at the front skylight illuminates a golden wall, providing a glowing backdrop for cross and altar.

DETAILS

PROJECT: SEAMEN'S CHURCH INSTITUTE, NEW YORK, NY. **OWNER:** SEAMEN'S CHURCH INSTITUTE. **LIGHTING DESIGNER:** FRANCESCA BETTRIDGE AND WENDY EWEN, CLINE BETTRIDGE BERNSTEIN LIGHTING DESIGN INC., NEW YORK, NY. **ARCHITECT:** JAMES STEWART POLSHEK AND PARTNERS. **ENGINEER:** JOHN L. ALTIERI CONSULTING ENGINEERS. **PHOTOGRAPHER:** PHOTO COPYRIGHT JEFF GOLDBERG/ESTO PHOTOGRAPHICS. **LIGHTING MANUFACTURERS:** EDISON PRICE LIGHTING—DOWNLIGHTS AND WALL WASHERS, LOUIS POULSEN—DECORATIVE SCONCES, PENDANTS AND CEILING FIXTURES, LIGHTOLIER—RECESSED FLUORESCENTS, WASHLIGHTS AND DOWNLIGHTS, GARDCO—BRACKET FLUORESCENT, L.L.I. INC.—COVE FLUORESCENTS, C.J. LIGHTING—COVE FLUORESCENTS, NATIONAL CATHODE—COLD CATHODE, HARRY GITLIN—PICTURE LIGHT, CAPRI—ACCENT LIGHT, OMEGA—DOWNLIGHT, BEGA—STEPLIGHT, NORBERT BELFER—STEPLIGHT, STONCO—ROOFTOP WINDOW ACCENT LIGHT

EMBANKMENT PLACE

Embankment Place was built under the station platforms of the famous Charing Cross railway station in London. The memorable entrance hall uses a vaulted ceiling, a massive column, and dark green marble to remind visitors of the subway.

The dark, almost nonreflective marble walls could not easily be lit without creating glare from excessive light levels. Designers Jonathan Speirs and Roland Chadwick developed an angled glass cornice with a laminated glass edge to provide shadowless general lighting. The light source in the cornice is cold cathode, a brighter version of neon, which ensures an even spread of light.

The most intriguing lighting feature is a set of transparent "fins" in a water sculpture. The lighting designers persuaded the architect to modify the sculpture to allow illumination of the fins. When the budget had to be cut later in the project, the designers suggested use of acrylic instead of glass. Cold cathode tubing with a pale green phosphor was used to imitate the particular color of glowing edge-lit glass. The result is very convincing, and helps to enliven a potentially severe architectural space.

Embankment Place

DETAILS

PROJECT: EMBANKMENT PLACE ENTRANCE LOBBY, CHARING CROSS, LONDON, UK. **OWNER:** GREYCOAT PLC. **LIGHTING DESIGNER:** JONATHAN SPEIRS AND ROLAND CHADWICK, LIGHTING DESIGN PARTNERSHIP, EDINBURGH, SCOTLAND (SPEIRS IS NOW PRINCIPAL OF JONATHAN SPEIRS & ASSOCIATES, LONDON). **ARCHITECT & INTERIOR DESIGNER:** TERRY FARRELL & COMPANY. **ENGINEER:** OVE ARUP AND PARTNERS. **PHOTOGRAPHER:** DENNIS GILBERT. **LIGHTING MANUFACTURERS:** MAGNUM SIGNS—COLD CATHODE, ERCO—DOWNLIGHTS, PENDANT LIGHTING—CUSTOM METAL HALIDE WALL-WASHING FIXTURES

THE STRATFORD

The Stratford is a high-rise residential facility for senior citizens in San Mateo, CA. Designers Naomi Miller, Richard Osborn, and Laura Seccombe combined direct and indirect lighting to minimize extremes of contrast in the field of view, while providing high task lighting levels and occasional highlights so that the living spaces are never bland. Four-scene preset dimming systems in most areas tailor the system to daylight and the activities taking place.

The entry foyer features a crystal chandelier with low-wattage incandescent lamps dimmed so that they produce a sensation of sparkle, not glare. The gallery area along the main floor corridor is lighted with recessed halogen downlights, a few adjustable MR 16 accent lights for artwork on the walls, and compact fluorescent pendants and wall sconces. The pendants have a downlight built in, which creates an even path of light on the floor, while the reflected glow of uplight works softly to wash out shadows on surfaces and on faces.

The living room combines neon coves with recessed halogen downlights centered in each coffer and recessed adjustable MR 16 downlights to accent the bookcases.

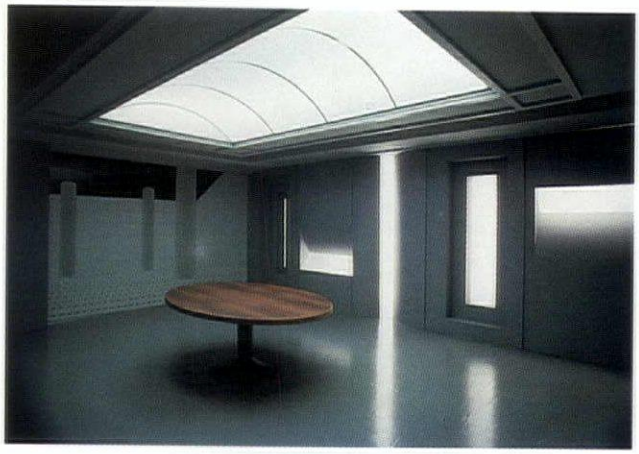
An assisted living area, where nursing care is available, is served by a dining and lounge area lighted with halogen uplight sconces, halogen downlights, and MR 16 accent lights. The dining room utilizes downlights and dimmable, electronically ballasted fluorescent cove uplights. Etched glass partitions are uplighted with neon, and the mural is accented with mirror-trim MR 16 downlights.

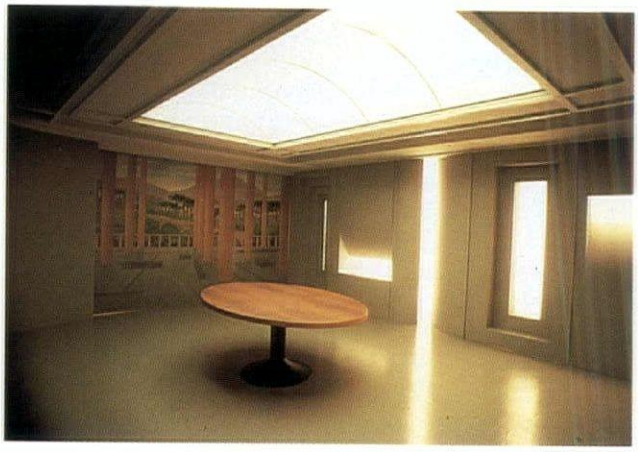
Photos of this project were unavailable at press time.

DETAILS

PROJECT: THE STRATFORD, SAN MATEO, CA. **OWNER:** JOHN AND HELEN RAISER, THE RAISER ORGANIZATION,. **LIGHTING DESIGNER:** NAOMI JOHNSON MILLER, ARCHITECTURAL LIGHTING DESIGN (JOHNSON IS NOW WITH RENSSELAER POLYTECHNIC INSTITUTE); RICHARD OSBORN, LUMINAE SOUTER LIGHTING DESIGN; AND LAURA SECCOMBE,SECCOMBE DESIGN ASSOCIATES, ALL IN SAN FRANCISCO, CA. **INTERIOR DESIGNER:** LAURA SECCOMBE, SECCOMBE DESIGN ASSOCIATES. **LIGHTING MANUFACTURERS:** STAFF LIGHTING—RECESSED LOW-VOLTAGE AND PAR 30 DOWNLIGHTS, SHAPER LIGHTNG—DECORATIVE PENDANTS IN GALLERY, CORRIDORS AND LIVING ROOM, BOYD LIGHTING—LIVING ROOM SCONCES AND FOYER CHANDELIER, PEERLESS LIGHTNG—DINING ROOM COVE UPLIGHTS, AND INTERLUMEN—DINING ROOM WALL SCONCES AND PENDANTS

SIVRA LAB—RECREATING A WINDOWED WORLD





COLOR BY LIGHT: SIVRA simulation laboratory lit by cold (above left) and warm (above right) lights. Vertical lamps are used for studying ways of simulating light apertures in the walls.

SIVRA lab research builds on the premise that natural light plays a richer role than simply that of illuminating space to experiment in developing advanced lighting systems.

BY PIERA SCURI

The SIVRA Laboratory in Recanati, Italy, is dedicated exclusively to the development of lighting systems for use in windowless environments. The design team included myself and Douglas Skene, Spazio Research & Design; Daniele Bedini Architects, in collaboration with Niagara Mohawk Power Corporation and the Lighting Research Center, Rensselaer Polytechnic Institute.

The laboratory is specially equipped to conduct experiments into and take measurements of the color variation (color temperature) and intensity (level of illumination) of light. The aim is to impart to artificial lighting systems those qualities of variability and changeability that are to be found in natural light.

EXPERIMENTATION GOALS

Artificial light conditions our way of perceiving space. In windowless environments, the planning of lighting systems, naturally, cannot be restricted simply to the choice of light sources, the positioning of lights, or to defining parameters for lighting design. Where there is no natural light, there are no windows, thus a fundamental architectural element is missing.

Windows allow us to perceive a deep space, stretching beyond the room, beyond the building itself. To substitute 'the window', it is not enough to paint in an artificial one, although this technique has been tried. Instead, the spatial and lighting characteristics of a window have to be reproduced, using the terms of reference supplied by chronobiology, and by research conducted in confined environments using secondary synchronizers and spatial references.

The presence of a window means the possibility of having natural light inside an environment, of seeing the panorama outside, of having fresh air, of feeling in touch with the outside world...And, at another level, this means mental stimulation, and not feeling isolated. All these are not simply superfluous pleasures which one can do without, but rather they are stimuli-messages of fundamental importance for the equilibrium of the organism. Planning the lighting of a windowless environment is a task that must be undertaken along with detailed planning of the space.

CREATING A "WINDOW"

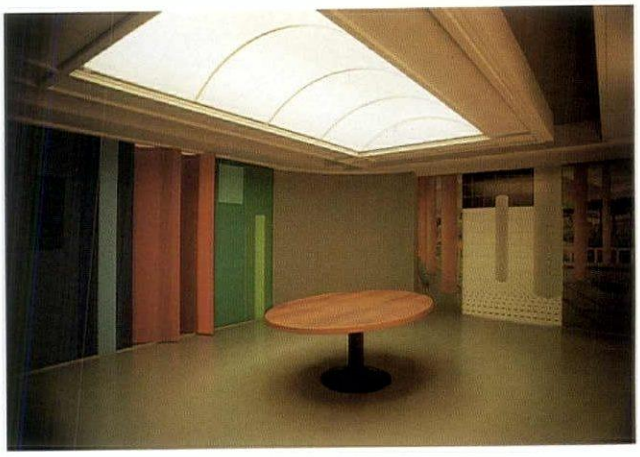
Normally, the laboratories used for experimenting with light are of a totally uniform white or grey color. The shape of the SIVRA laboratory instead shows certain variations that should be employed in the planning of windowless environments. In the absence of natural light, what is required above all are wide spaces and high ceilings, in order to counter feelings of claustrophobia. In a small, enclosed space, representations may be used (affording the same type of pleasure as the photograph of a loved one in his or her absence gives).

In order to give the illusion of more space, one wall was decorated with a large trompe l'oeil painting, interchangeable with a similarly sized geometric perspective design, this time realized in ceramic tiles. The floor has a three-dimensional pattern which gives it extra depth. The ceiling and walls of the hall

have an irregular surface made up of a series of oblique panels painted in different tonalities of grey.

Instead of being emitted by lamps or by other objects, light comes from a series of horizontal and vertical openings in the ceiling and walls. One wall is covered in differently colored panels ranging from cold tones on one side to warm tones on the other. These are used to study the effect of different combinations of light sources on different colors. The light spectrum perceived by our eyes is not produced solely by the light source, but by the combination of direct light and light reflected off the walls. The colors and surfaces of an environment are therefore very important.

As stated previously, the absence of stimuli produced by natural light and 'windows' has to be compensated for by a series of contrivances introduced in the planning stages. These contrivances affect both small details, as well as the more important elements of the environment. The textures of the materials making up our surroundings are important for stimulating our senses. For this reason, inside the SIVRA laboratory, the surfaces of walls and furnishings have been treated in such a way as to give them a "peach skin" texture that is slightly soft to the touch.



The aim of the research conducted at the SIVRA laboratory, it has to be emphasized, is not to initiate a mass building program of windowless structures, but to create more advanced lighting systems, starting from the premise that natural light plays a richer and more complex role than simply that of illuminating space. It is hoped that, when these studies are completed and the experimental phase is over, an entirely new system of lighting can be produced.

A SIVRA Laboratory also exists at the Lighting Research Center, Rensselaer Polytechnic Institute in Troy, New York, in which experiments are being conducted on the effects of light on human productivity.

Piera Scuri is an architect with Spazio Research & Design headquartered in Milan, Italy, and part of the design team that created the SIVRA Laboratory.

(Top right) The panels are painted on either side of the room with warm and cold colors, allowing the light color temperature of the laboratory to be studied. The metal sheet and plaster ceiling is painted in three shades of grey and constructed on three different levels to emphasize the sense of depth. To stimulate depth perception, two trompe l'oeil were drawn, one reproducing a landscape by Lucia Goj and the other made with ceramic tiles by Bardelli.

(Above) Wide angle view of the SIVRA Lighting Laboratory.

ORNATE RESTORATION: (Below) Ornate lobby chandeliers and sconces have been relamped, cleaned and upgraded. Photography by Farrington Dion Studio.

BOSTON EDISON'S PARTNERSHIP WITH WANG CENTER

When the Boston building that's known today as the Wang Center for the Performing Arts opened in 1925, it was called the Metropolitan Theater and was marked by lavish, richly surfaced interiors. Through the years, though the theater remained in operation and was renamed the Music Hall, time and neglect took its toll on its beauty.

In the late 1970s, the theater had to be closed for several months when a portion of the roof caved in over the orchestra pit. Patrons complained of poor sight lines, acoustics and uncomfortable surroundings, and it was clear the building systems needed modernization.

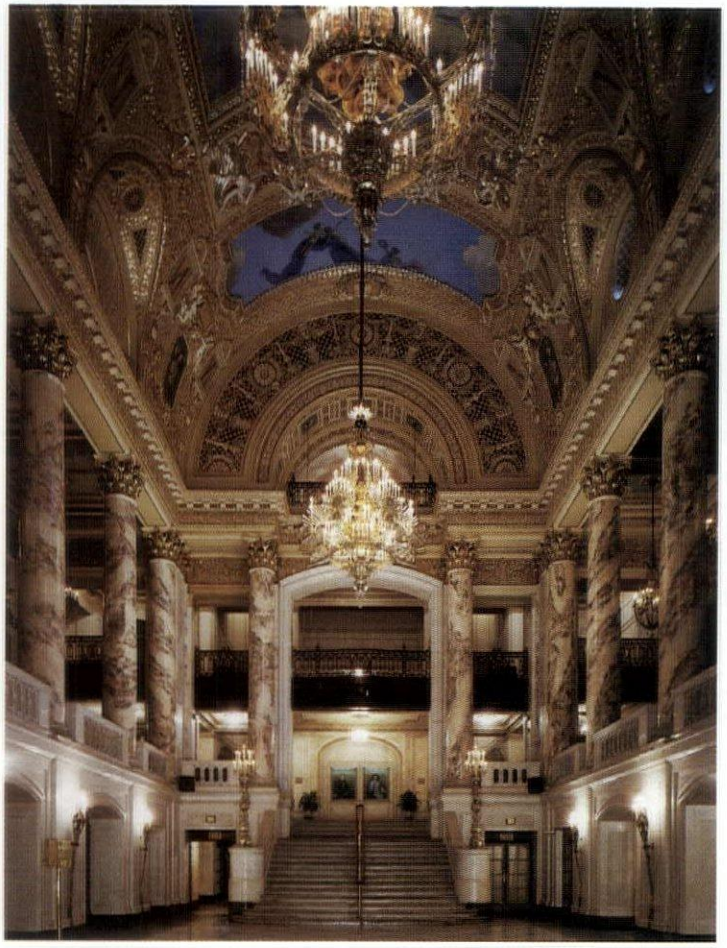
In the late 1980s, the Wang Center's Board of Directors began addressing these problems. A $10 million capital campaign for its restoration was announced to restore it to its original Art Deco opulence.

The less visible improvements were more problematic for fund-raisers. "We knew it would be difficult to interest potential donors in funding things like wiring or cooling systems they can't see," says Josiah Spaulding, president and general manager of the Wang Center. That's where Boston Edison's Energy Efficiency Partnership Program came in.

Working in conjunction with architect Notter Finegold + Alexander Inc., the lighting design firm Fisher Marantz Renfro Stone Inc., and project engineer Ralph Gifford, R.G. Vanderweil Engineers, Boston Edison not only restored the theater to its original beauty, but improved the energy efficiency through the installation of a secondary lighting system.

The ornate lobby chandeliers and sconces have been relamped, cleaned and upgraded during restoration so patrons can enjoy the richness of the surroundings, as well as the theatrical production. This incandescent lighting system uses 155 kilowatts, however, and had been used in the past for rehearsals and daily operations as well as performances. "They used to operate the chandeliers during rehearsals. Since they are incandescent, they consumed a lot of energy. The incandescent system also included fixtures positioned around inserts in the ceilings and to light up murals, and they used it all the time," says Kathy Therrien, Boston Edison design services manager for the Wang Center project (currently executive assistant to the executive vice president), who worked with division manager, Frank Hendrigan.

The lighting designer and Boston Edison saw the opportunity to save energy by incorporating an energy-efficient secondary lighting system for everyday on-peak use. The general contractor, Walsh Brothers, unobtrusively placed the 123 metal halide fixtures, lamped with 100-watt to 400-watt lamps, in the center of plaster rosettes of the grand dome, and in other locations throughout the theater, including the lobby.



Though the metal halide fixtures are virtually invisible to the audience, they represent a 90 percent reduction in lighting usage during day to day, non-performance operations and rehearsals. Therrien says "With the secondary system, less fixtures are needed to provide the same lighting level. And the metal halide lamps don't need to be replaced as frequently." A significant concern due to the high ceilings of the structure.

"The rebate check came close to $500,000 with about $130,000 for the lighting system," Therrien says. "We installed a metering sys-

HIDDEN HALIDES: (Below) Metal halide fixtures have been unobtrusively inserted into gold-leafed rosettes to form a secondary lighting system for use during rehearsals and building maintenance operations. Photography by Farrington Dion Studio.

tem that measured when the house lights were on—the chandelier and the old system—and when the secondary system was on. The savings were monitored over a 30-day period, and they actually achieved more savings than they had projected."

THE COOLING SYSTEM

A significant portion of the rebate check also came from changes to the theater's cooling system. Cooling the 160,000 square foot interior before a performance had taken three days with too-small conventional chillers. When the 3,600 patrons filled the auditorium, the temperature couldn't be sustained.

"The old system was substantially undersized and old. They would run it up until show time and turn it off, and basically let the house warm up over a performance," says Therrien. "They never could operate during the summer—they had few performances, and this year they were very excited to be able to have the *Phantom of the Opera* come in during the summer because of the cooling system."

A system incorporating cool storage was installed, so that the chillers, which are noisy, could be turned off during a performance, and the cool air could be kept coming via the storage system. Of benefit energywise is the fact that the cool storage system uses most of the electricity to make ice during off-peak times at a lower rate, as opposed to conventional chillers which operate during peak hours.

The new system uses 19 sealed Calmac storage tanks, each 8 feet in diameter by 8 feet high, in the existing chiller room beneath the lobby. The new system can cool the whole theater in 20 minutes, and keep a comfortable temperature even on days with both matinee and evening performances. Along with this comes improved humidity control that enhances acoustics and protects the restored interior.

Other improvements to the interior included: raising the last rows of seats to improve sight lines, redesigning the orchestra pit to eliminate trapping sound by the stage overhang, and a new speaker system. Murals and statues were repaired, repainted and regilt.

ENERGY EFFICIENCY PARTNERSHIP PROGRAM

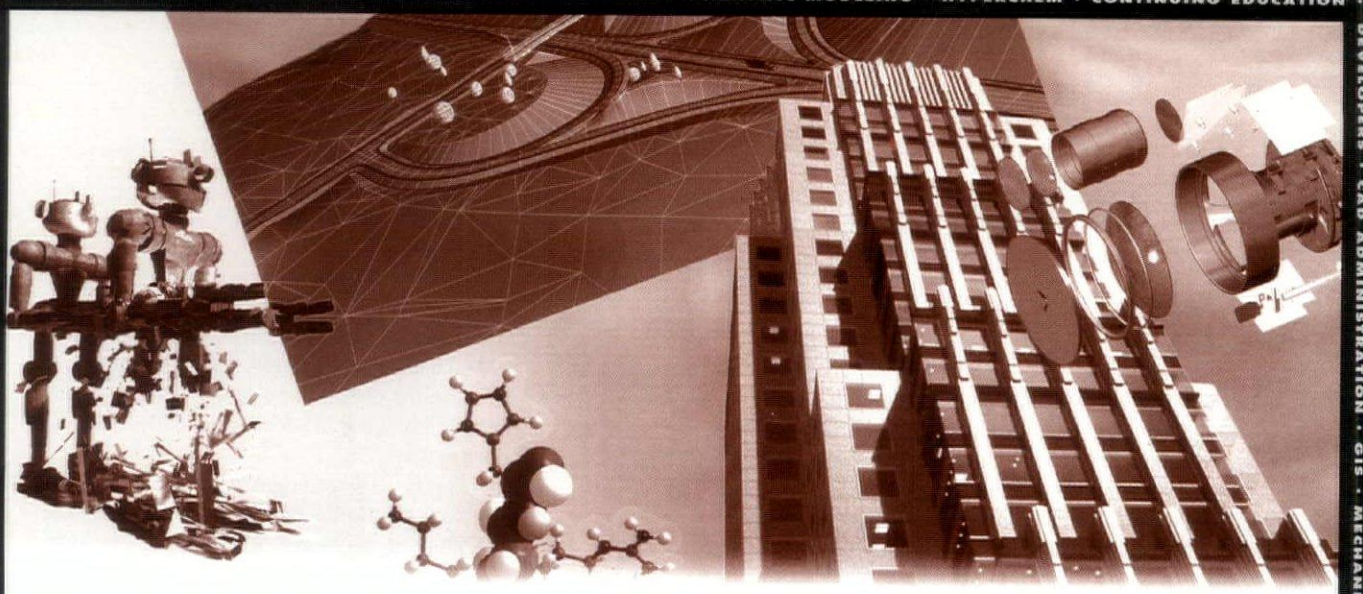
The Energy Efficiency Partnership Program's goals include providing immediate cost savings, as well as benefitting the environment. The long-range goal is to reduce Boston Edison customers' electricity usage by about 800 million kilowatthours annually through implementing energy efficient measures. Hopefully, this will result in a 7 percent reduction in summer peak demand by 1995.

The process begins with an assessment and audit of the customer's facilities, and a presentation of the range of energy saving opportunties available. Customers later submit proposals for specific measures, which are reviewed by Boston Edison. Using a competitive bid process, customers select a design firm to handle the project design, construction oversight and verification.

"We do require customers to use a firm that we have qualified. In this case, the engineering firm they were already working with was one of our qualified firms. We would consider qualifying people, too, but we like to use professionals with whom we have done business," says Therrien.

After the work is completed, Boston Edison performs quality checks to ensure proper installation. It assists customers by reviewing operation and maintenance procedures and exploring contractor service agreements to assure long-lasting energy savings.

The Energy Efficiency Partnership Program began in early 1990, although demand side management programs have been in place at Boston Edison since 1986. Boston Edison holds an Energy Efficiency Partnership Awards Ceremony each year to recognize customers for their excellence in energy efficiency and for contributing to the achievement of demand-side management goals. The Wang Center for the Performing Arts was honored with an award.



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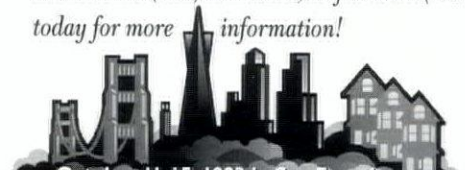

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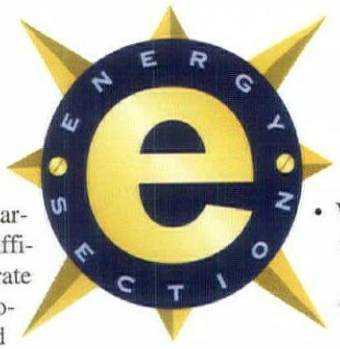

BY GARY MARKOWITZ

There are so many new products hitting the market today that some manufacturers find it difficult to keep their catalogs up to date. Yet accurate evaluation of the capabilities, and results produced by the interaction of lamps, ballasts and fixtures are more important than ever in light of the ever-tightening parameters set by the increasing complexity of energy legislation. The following are guidelines on how to answer the question, "What exactly am I buying for my client?". This could help protect your project from turning into a lighting disaster.

BUYER BEWARE

It is too widespread an occurrence that many lighting-related professionals are specifying fixtures simply by considering aesthetics primarily, then looking in the product catalog and believing everything presented there in black and white. Because of the complexity of fixture components, and the potential for misapplication of them, any professional who specifies lighting must go beyond passively accepting only the material that is presented by the manufacturer and the manufacturer's representative, and actively ask the questions and solicit the answers that will guarantee the selection of the best equipment for the job. Like the ads for the Syms' retailer state, "An educated consumer is our best customer." This rationale applies to all industries.

A first step is to request from the manufacturer's representative the engineering catalog. It will impart important information that the "glossy" brochure will not.

Though there are many qualified and knowledgeable manufacturer's representatives, there are also those whose role is essentially that of wholesaler, who may be more interested in quick quantity sales than in explaining the fine points of what makes that particular manufacturer's products different from those of others. It is your responsibility as the specifier to ask for the information you need to make an informed judgment.

Many companies, such as Lithonia, Lightolier, Columbia, Edison Price Lighting, Staff Lighting, and Prescolite, publish engineering catalogs specifically created to address what you need to know about a fixture. They supply answers to questions that include:

- What does the fixture look like?
- What kind of lamp does it take?
- Will the fixture give you the rated lamp output, and the ballast life?
- What's the lamp position—top or side mounted?
- How much of the lamp is physically pointing out into the Alzak reflector?
- What ballast does it use?
- Where is the ballast positioned?
- Is the ballast vented or enclosed? (Will there be heat and insulation problems after installation?)
- What are the candlepower distributions?
- What are the photometric data? Have they been supplied by an accredited independent testing laboratory?
- What is the rated ambient operating temperature of the ballast, versus the ambient operating temperature of the ballast in the fixture you have selected?
- Are the electronic ballast and the magnetic ballast equal in terms of the lamp light output they help to provide?

Deal only with reliable companies that publish data based on independent testing. Even if the manufacturer has a sophisticated in-house laboratory, it should use an established independent testing laboratory to verify the results of its own in-house experiments. If the company publishes only data produced from its own in-house testing laboratory, don't specify the equipment.

Test data is meant to be studied and interpreted—not swallowed whole, undigested. Many times, test results are based on averages and the numbers are meant to serve only as guidelines, so the possibility of field operation fluctuations and ranges need to be taken into account before specifying.

Although many lessons can only be learned by specifying fixtures and seeing how they perform in a real-world installation, first-hand examination of a sample fixture is essential—even to the extent of mounting it in a mock ceiling to observe how it peforms.

Compact fluorescents, for example, are now making an impact all the way up to 40 watts. A 2 x 2 fixture fitted with three 40-watt compact fluorescent lamps can produce a tremendous package of light, and the lumens per watt exceed some of the metal halide systems available in terms of efficiency (efficacy). But if the specified fixture goes unexamined before specification, and its unequal light distribution is noted only after installation, who would you blame but yourself?

IMPROVING THE FUTURE

Though there are prescribed standardized methods of testing, they are not mandatory. One way to insure the maintainence of industry standards of excellence is to work for the mandating of independent testing of lamps, ballasts and fixtures in the future. Lighting specifiers can take a stand by specifying only independently tested equipment on any project.

Finally, bear in mind that all lamps, ballasts and fixtures are not alike. Each manufacturer has built in features that make its product different from others. Though "packaging" is a popular concept today, it is perhaps wiser to choose the best components from what each manufacturer has to offer.

Gary Markowitz is with Raytheon Company, Missile Systems Laboratories, Tewksbury, MA, and is a member of the ARCHITECTURAL LIGHTING Editorial Advisory Board.

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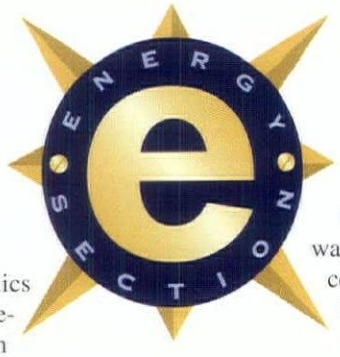

BY WANDA JANKOWSKI
EDITOR-IN-CHIEF

Thanks to these experts at Lutron Electronics Co., Inc., Coopersburg, PA—Paul H. Trively, specification sales vice president; Jim Yorgey, manager, national accounts; and Rick Shuett, residential systems manager—for providing all the information contained in this article.

Available lighting controls run the gamut from manual switches, to timers and motion sensors, and highly sophisticated preset and programmable systems. An understanding of the basic roles of controls can be achieved by grouping them into two categories that reflect their primary purposes: energy management controls, and architectural lighting controls.

Energy management controls are controls that save and utilize energy wisely by providing light in a space only when it is needed. For example, the controls system can include occupancy sensors and time clocks that turn off the lights when no one is in the space, or adjust the amount of electric lighting in the space depending upon the amount of daylight available.

Architectural lighting controls are controls that are used to achieve aesthetic goals, as well as satisfy functional task requirements. In a boardroom, for example, a series of preset scenes can allow the lighting systems to be adjusted to create a comfortable and pleasing space suitable for a variety of activities— an audiovisual presentation, a general meeting, dining, or speaker presentations with overhead projector.

The increasing emphasis on energy conservation brings with it a corollary that saving energy should not eliminate good quality lighting design that enables tasks to be performed in comfort. Controls play a significant role in both conserving energy, and providing the occupants with flexibility to use the space to its best advantage. Though some form of controls use is already required by Title 24 and ASHRAE Standard 90.1 1989, the level of sophistication of what is required will only increase in the future with the next generation of standards. Consequently, there is an ever-expanding grey area in which the two concepts of energy management and architectural controls are combined.

DESIGN CONSIDERATIONS FOR LIGHTING CONTROLS SYSTEMS

1. **What functions/events occur in each area/room of the project?**
2. **Who uses, works, occupies, cleans or would be in each area?**
3. **Who must/may have access to lighting controls systems in each area?**
4. **What sources are being controlled?**
5. **Other considerations:**
   Interface with other equipment (audiovisual, building automation); aesthetic consideration (appearance of remote controls); aesthetic appearance of the space (ex. corporate personality); emergency lighting; and energy usage
6. **What is the budget for the equipment?**
   People cost (salaries cost per area vs. benefit of good lighting and lighting control design). Does the lighting control improve productivity?
   Cost of process, ex. control room lighting
   Critical tasks, ex. lighting in hospital operating room

EFFECTS ON LAMPS

Controls affect different light sources in different ways. Controls increase the lamp life of incandescent and low-voltage incandescent light sources. Generally, for all other light sources, a reputable control system will neither increase nor decrease lamp life. (There are some who claim that by using controls the manufacturer's published longer ten-hour start fluorescent lamp life can be achieved instead of the stated three-hour start life.)

Controls do cause color shift in many types of light sources. As an incandescent lamp dims, the color shifts toward the red portion of the spectrum, to produce a warmer, yellower light. Depending upon the architectural application, this side-effect can be used to enhance a space. High-intensity discharge lamps do color shift with controls as well, the resulting color depending on what lamp is used. Controls do not affect the color of fluorescent lamps.

The design and specification process for lighting controls (see tables in this article for more details) should begin with a thorough understanding of: the limitations of the space; the client's goal, personality or image; and the needs of all the individuals who will use the room.

Controls systems in corporate spaces, for example, often must be designed to fulfill a range of needs from the simple to the complex. In a conference room, perhaps the chairman of the corporation may not want to deal with a lot of complicated switches and buttons. But the vice president of sales and marketing, who has to make presentations regularly, needs a pushbutton system that will automatically close the drapes, adjust the lighting, open the wall that exposes the rear projection screen, and turn on the audiovisual equipment. Then there's the nighttime security guard who has to quickly check the room and prefers a simple, handy on/off switch.

VALUE OF A REP

A knowledgeable, well-trained manufacturer's representative can help the specifier to sort out what products are best suited to the particular project. A good manufacturer's representative can supply the needed interfacing between the lighting controls manufacturer and related vendors whose systems also interface with it. *(continued on page 54)*

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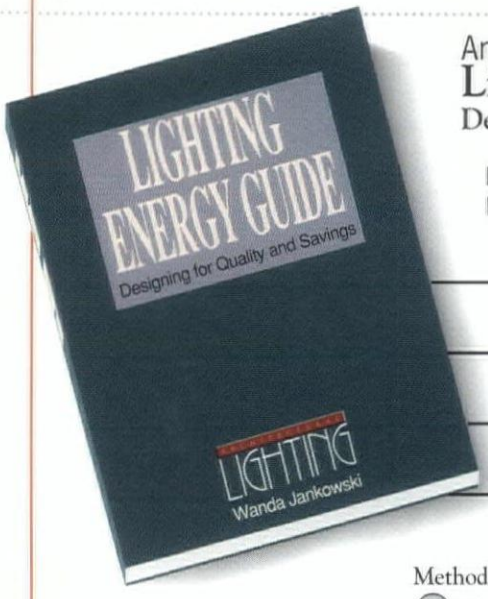

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ALI

One project in which Lutron was recently involved illustrates the far-reaching effects controls can have in building operation. The five-storey courthouse included two floors of courtrooms, offices and a cafeteria. Preset lighting controls were installed in the courtroom areas, offices and cafeteria, with additional photocell controls in the corridors that adjusted electric illumination to balance with available daylight.

The controls system was also linked with a fire alarm system. In an alarm condition, the zoned controls would illuminate an exit pathway out of the building, indicating with light that there was a fire condition, even if the occupants could not hear the alarm bells or smell the smoke. The controls were also linked into the security system—anytime someone would enter a room and turn on the lights, a message indicating occupancy would be transmitted to the central building control room. The security personnel could then check their records to see if the room was supposed to be occupied at that time, and if not, dispatch a guard to check out the situation.

The controls also tied into the emergency life safety system. In the event power was lost, it could be transferred to a standby generator that would turn groups of light back on.

Because of the far-reaching effects controls can have, often clients aren't aware of all that controls can do and it's the role of the specifier to educate them. That education should involve not only finding out on the client's behalf what can and can't be done and how, but just as importantly, what the tradeoffs involved are in choosing one system over another based on budget restrictions, complexity, etc., so informed decisions can be made.

BUDGETS & TRADEOFFS

There are clients who make decisions based on budget limitations, for example, and opt to live with less than they originally planned. The biggest problem with settling for less is that often clients don't realize what "less" is going to mean for them. They know it costs less, but don't understand what conveniences and options they are giving up. And in some cases, what they're giving up is the whole reason to have the controls system in the first place, whether it be for lighting, audiovisual capabilities, or security.

This potential disappointment with an installed controls system can be avoided by comprehensive discussion between the specifier and the manufacturer early on in the design process, so alternatives can be established and explained to the client before a controls system selection is made.

FUTURE TRENDS

As controls become more sophisticated and complex, clients are demanding more sophisticated functions be performed more simply. For example, pressing one pushbutton in a conference room, instead of several, that would activate a complex sequence of events to prepare the room for an audiovisual presentation.

Integration and interfacing with other building systems and functions is also a growing trend.

Aesthetic considerations are gaining in priority—what do the controls look like on the walls? Or should they even be on the walls? Should they be visible or concealed? Specified in a standard finish, or brass or bronze? There is not only a growing emphasis on how control stations should look, but on achieving aesthetically pleasing interfaces among varied types of controls.

Time of day controls that, for example, turn off all the lights in a building at night, as well as daylighting controls will become necessities instead of luxuries in the future.

Refinements in fluorescent dimming will continue to be made as lamp manufacturers develop more and better fluorescent lamps in an even larger variety of configurations.

In public spaces, there will be automated controls and fewer functionsaccessed directly by lobby personnel.

In the home, consumers will want sophisticated programming accessed simply, along with the option of manual override. But the driving forces for increased use of controls in residential spaces will continue to be added convenience, flexibility, enhanced security, and contribution to mood and aesthetics of space.

Finally, the experts at Lutron see the pendulum swinging away from value engineered substitutions to specifiers who are increasingly concerned with seeing products installed in projects that they believe are best suited to accomplish the individual needs of a particular space.

SPECIFICATION CONSIDERATIONS FOR LIGHTING CONTROLS SYSTEMS

1. **Functionally group the lighting fixtures into control zones.**
2. **Determine all the locations from where the lighting must be controlled.**
3. **Who operates the lighting at each location? What are the functions required (preset vs. manual)?**
4. **Factor in specialized functions (automated drapes, blinds or screens; sequences; wireless remote; programming the lighting; time clock control; audiovisual equipment interface; building automation interface).**
5. **Visualize walking through the area as each user will.**
6. **Determine graphics (engraving and finishes required for each control).**
7. **Select fixture to be used for emergency lighting.**
8. **Select equipment.**
9. **Produce contract documents: load schedule, one-line diagram, specifications.**

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