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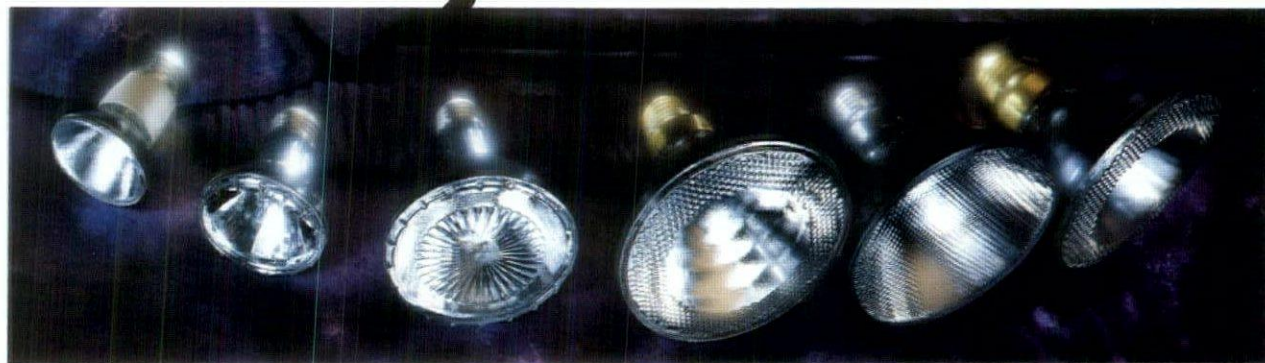
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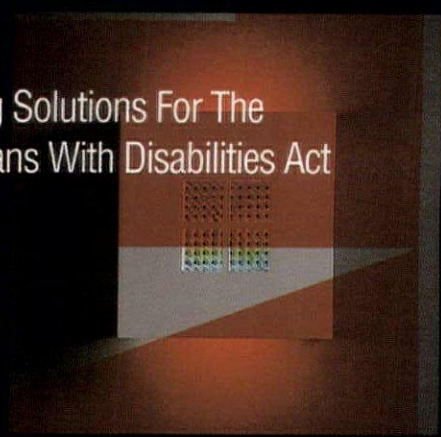
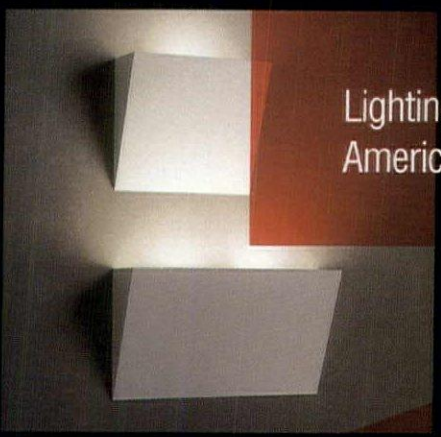
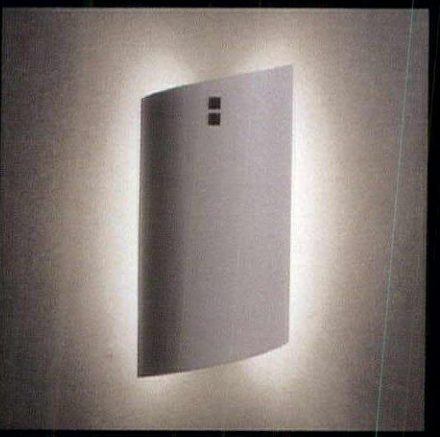
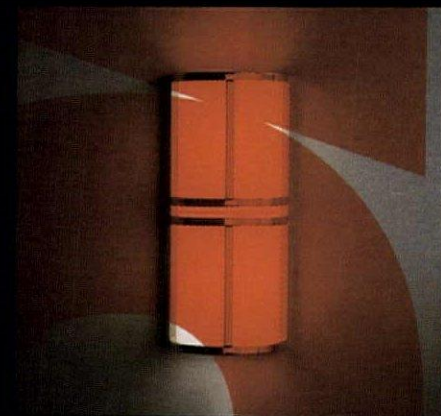
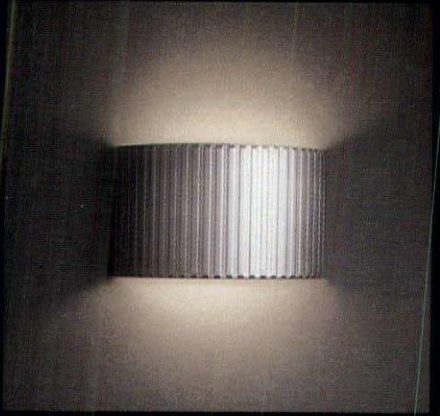
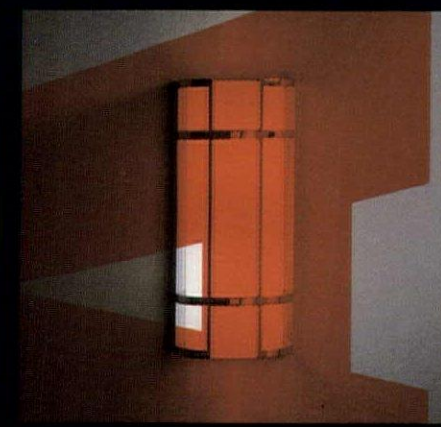
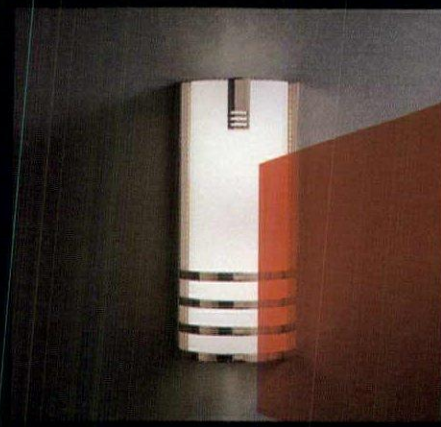
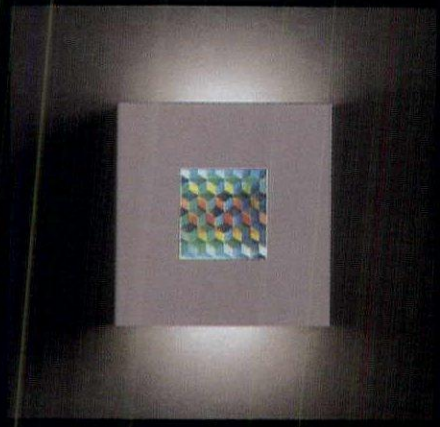


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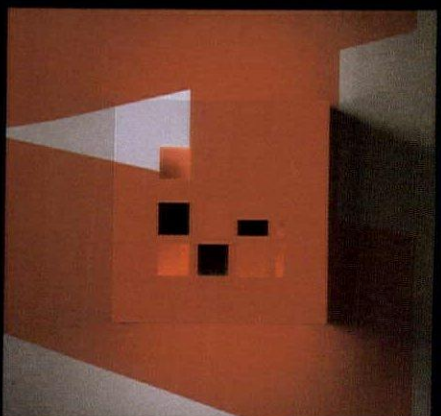
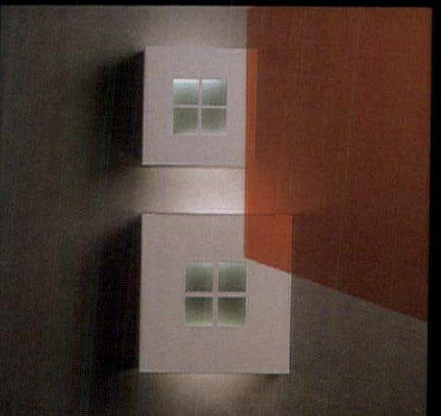
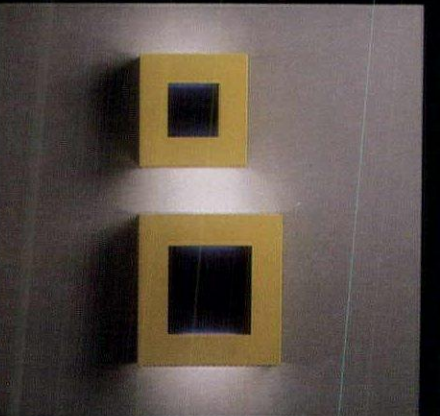
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Cover Photo by Robert Miller

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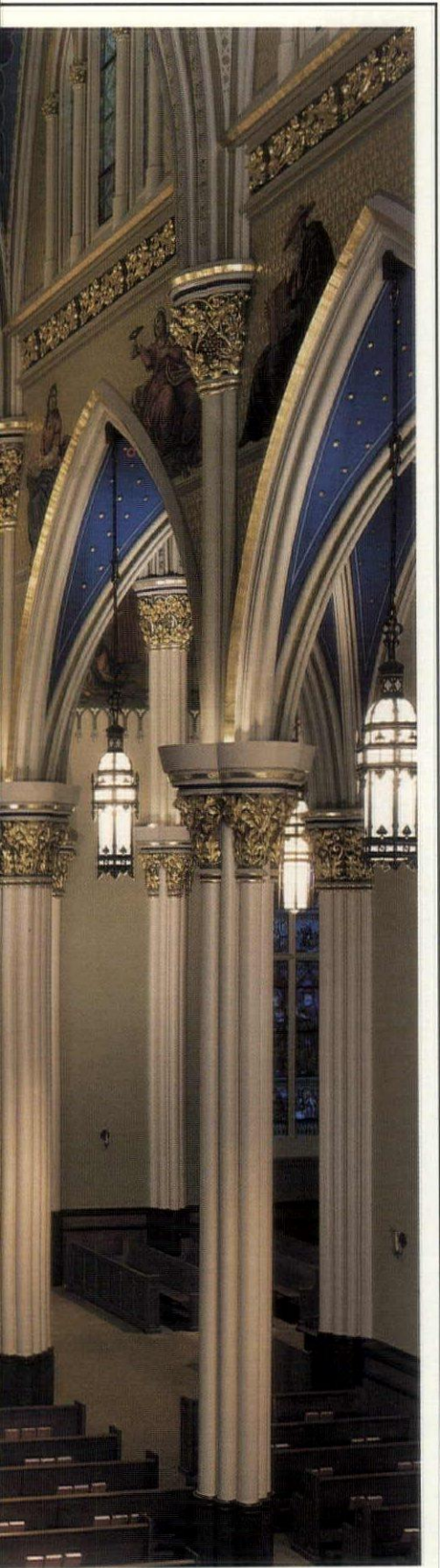
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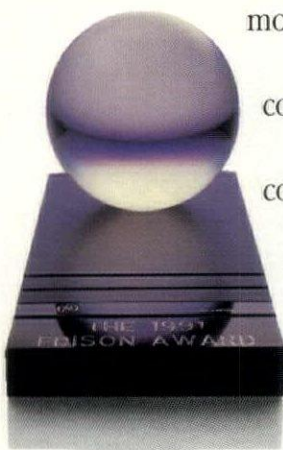
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LEON MOVES IN; RUSSO MOVES UP

The Commercial Design Network, which includes ARCHITECTURAL LIGHTING, CONTRACT DESIGN, and FACILITIES DESIGN & MANAGEMENT, is pleased to welcome Donald Leon at its National Sales Manager. Mr. Leon has over 10 years experience in the publishing field. Before literally moving down the hall to join the Network magazines, he was the Northeast Regional Sales Manager for Miller Freeman sister publication, KITCHEN & BATH BUSINESS. Mr. Leon says he is enthusiastically looking forward to helping ARCHITECTURAL LIGHTING "maintain its leadership position in the industry."

(For those of you who are wondering what happened to Douglas Cheney, the former National Sales Manager for the Net-



(Left) ARCHITECTURAL LIGHTING'S National Sales Manager Don Leon; (right) Associate Publisher/Marketing Director Phillip Russo

work, we are pleased to announce that he is still a valuable asset to Miller Freeman Inc. He is now publisher of SPORTING GOODS BUSINESS magazine, also based in New York City).

Other good news for the Commercial Design Network is the promotion of Phillip Russo from Marketing Manager to Associate Publisher/Marketing Director. Mr. Russo is a 12-year veteran in the publishing industry, and has been a member of the Network staff for over four years. Mr. Russo's goal is, "To take the Network to the next logical level, which is to become true marketing partners with our advertisers, and provide services that go far beyond those typically associated with magazines."

LIGHTFAIR INTERNATIONAL 1993

The 1993 LightFair International will be held May 10-12 at the Moscone Center in San Francisco, CA. The seminar program tracks and topics include:

- Track 1—Human Factors in Lighting: Potential Harmful Effects of Lighting Equipment—Rumor vs. Reality; The Relationship of Lighting to Ergonomics; The Physiological Effects of Lighting; Safety, Security, and Identification

through Lighting; Light Beyond Function: The Inspirational, Evocative, Entertaining and Exciting Quality of Light.

- Track 2—Energy: Lighting Energy Legislation Today and Tomorrow; Environmental Impact of Disposal of Lamps and Ballasts; Demand Side Management (DSM)—What Is It?
- Track 3—Technology: The Truth about Electronic Ballasts; Controls: Devices and Systems; Lighting Retrofit: Products and Their Proper Application.
- Track 4—Exterior Lighting Design: Building Floodlighting; How to Highlight Your Foliage from Ground Cover to Redwoods; Outdoor Lighting Workshop.
- Track 5—Lighting for the Workplace: VDT Lighting: Should the Light Go Up or Down?; The Forgotten Private Office; Lighting for High Tech Manufacturing Facilities.
- Track 6—Lighting Hardware: How to Compare Luminaire Performance; Why Do They Make It That Way?
- Track 7—Residential Lighting: Luminaire Evaluation for the Home—For the Rich, the Not-So-Rich, and the Energy Conscious; Innovative Techniques for Lighting the Custom Home Environment. Also CEU course on Residential Lighting.

Fees are: Full Conference—\$250; Any One Session—\$30; Any Two Sessions—\$50; Any Four Sessions—\$ 80; CEU Course—\$100, Exhibit Hall Only—\$15.

Two tours will be offered on Sunday, May 9. One is a Napa Valley Wine Tour. This excursion will wend its way through vineyards and orchards to two wineries. Lunch is on one's own. Cost is \$40 per person and it lasts from 9:00 a.m. to 4:30 p.m.

The second tour will be San Francisco Inside and Out, and will encompass all the famous neighborhoods and attractions of the city. Included in this guided coach trip will be Cliff House, Seal Rocks and some of the most distinctive architecture in San Francisco. Cost is \$19 per person and it lasts from 9:00 a.m. to 12:30 p.m.

The annual IALD Awards Reception and Banquet will be held on Tuesday, May 11. The site has not yet been determined.

LightFair is sponsored by the Illuminating Engineering Society of North America (IESNA) and the International Association of Lighting Designers (IALD). West coast sponsors for the 1993 show are the Western Committee, IALD, and the Golden Gate Section, IESNA. The show is produced and managed by AMC Trade Shows, a division of the Portman Companies. For more information, contact Carole Carley at 404-220-2115.

LIGHTING EFFICIENCY CONGRESS SET FOR APRIL '93

Globalcon Energy & Environmental Event has been expanded for 1993. Globalcon, sponsored by the Association of Energy Engineers (AEE), will be held at the Anaheim Convention Center April 21-22, 1993. Globalcon is a four shows in one event that includes the "Lighting Efficiency Congress" in

addition to the "HVAC & Building Systems Congress," "Power Generation & DSM Congress," and the "Environmental Management Congress."

Sessions include:

Wednesday, April 21, 3-5:00 p.m.: "Lighting Efficiency Strategies Forum," in which a panel of experts will address major issues of lighting efficiency, including the impact of demand side management, EPA's Green Lights Program, shortages of products, and what changes need to be implemented to help the industry reach its potential.

Thursday, April 22, 8:30-10:30 a.m.: "Efficient Lighting Technology Update." Speakers representing the utility, end user and research perspectives will address issues such as application performance of compact fluorescent lamps, achieving energy effectiveness in industrial illumination systems, and end user retrofit case studies.

Also on April 22, there will be a Tour of Exhibit Hall and Keynote luncheon from 10:30 a.m.-2:30 p.m. The luncheon topic will be "The New National Energy Strategy," given by John P. Millhone, USDOE.

On Thursday, April 22, afternoon, "Upgrading Lighting

Systems for Efficiency Improvement." Topics include: "EPA's Green Lights Program—Success To Date," from 2:30-3:00 p.m.; "Calculating Economics of Environmental Benefits," 3:00-3:30 p.m.; "Utility Support Programs—Lighting Retrofits," 3:30-4:00 p.m.; "The Lighting Audit—Pitfalls to Avoid," 4-4:30 p.m.

Also available are two-day seminars to be held on April 21 and 22, including "Fundamentals of Lighting Efficiency," presented by John Fetters, CEM, senior engineer for energy management and lighting consultant for the AT&T Columbus Works in Columbus, OH.

For more information, contact registrar, Association of Energy Engineers, 4025 Pleasantdale Road, Suite 420, Atlanta, GA 30340, 404-447-5083.

1992 IIDA AWARDS ANNOUNCED

The 1992 International Illumination Design Awards (IIDA) of the Illuminating Engineering Society of North America (IESNA) were announced at the IIDA luncheon during the IESNA Annual Conference, held August 6-10 at the Sheraton



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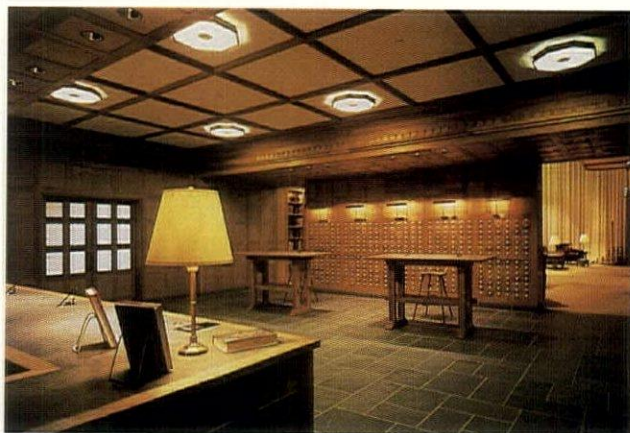
(Below) The Ohrstrom Library at St. Paul's School with lighting by Carroll Cline and Francesca Bettridge, Cline Bettridge Bernstein Lighting Design Inc., captured an IIDA Edwin F. Guth Memorial Special Citation.

Harbor Island in San Diego, CA.

The IIDA program provides the opportunity for recognition of ingenuity in lighting design and is unique in that projects are judged individually on their own merits and not against each other. Following are recipients of the 1992 awards:

Edwin F. Guth Memorial Award of Excellence: Carolina Place Mall, Pineville, designer: Carrie Welker, W.L. Thompson, CEI.

Edwin F. Guth Memorial Special Citations: Amtrak 30th Street Station, designers: Alfred R. Borden IV, The Lighting Practice and Dan Peter Kopple and Sherman Aronson, Dan Peter Kopple & Associates; Cascade Plaza Dome, Baniff, Alberta, designer: Lori Garcia, Falcon Engineering Ltd.; Ohrstrom Library at St. Paul's School, designers: Carroll Cline and Francesca Bettridge, Cline Bettridge Bernstein Lighting Design Inc.; St. Matthews Church, designers: Anthony T. Grice, Grice Maskell Engineering, and Chris Pekar, TIR Systems Ltd.; 3M Building 275, designers: Bill Blanski and Lauri Treddinick, HGA Architects and Engineering, and John Rundquist, 3M Facilities Engineers.



Paul Waterbury Awards of Excellence for Outdoor Lighting: Albert Bridge London, designer: Michael Simpson, Philips Lighting; Stardust Hotel & Casino, designers: John Renton Young, John Renton Young Lighting, and Harry Griffin, Vegas Lighting; Toyota Auto Salon, Amlux, designers: Akihiko Miura, Yasuhiko Kitani, Kouichi Kaihou, and Takaharu Anzo, Nikken Sekkei Ltd.

Paul Waterbury Special Citations for Outdoor Lighting: 1992 St. Paul Winter Carnival Ice Palace, designers: Steven Frattalone, Frattalone & Associates, and Richard Messbarger, Hunt Electric Corporation; Tokyo Harumi Passenger Terminal, designers: Minoru Takeyama, Minoru Takeyama Architect & U/A Tatsuya Iwai and Miho Mizukami, TL Yamagiwa Laboratory, Inc.

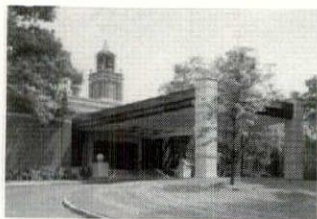
Awards of Excellence for Energy Efficiency in Lighting for Commercial Buildings: Boogies Diner NYC, designer: Mark D. Kruger; Health Park Hospital, designers: Craig A. Roeder and Robert Oakes, Craig A. Roeder Associates, Inc.

The judges for the 1992 IIDA awards were Ross De Alessi, Luminae Souter; Michael Hooker, Michael Hooker Associates; George Lucas, Kurt Versen Co.; Sara Schragger, Sara Schragger Lighting Consultants; Bill Warren, The Lighting Group; and Leslie Wheel, Wheel, Gersztzoff, Friedman, Shankar.

The awards program is administered through its IIDA committee which includes chairman Robert Carlson, Lithonia Lighting; John Bos, Lighting Associates; Sidney Feltman, Sidney Feltman Associates, Inc.; John Harpest, Heapy Engineering; William T. Hiron, Guild Electric Ltd.; Michael Janicek, C.M. Kling & Associates; Gloria Koch; Howard Kosowsky, Power and Lighting Systems; Frank LaGiusa, Illuminations Plus Inc.; Robert A. McCully, Sim-Kar; Donald Newquist, T.J. Krob Consulting Engineers; Tony Novo, Tony Novo Lighting Consultant; Mary Tatum, Genlyte; Jerry W. White, ECI Group.

The IIDA program is open to all professionals in the lighting community. Obtain entry forms from the IESNA, 345 East 47 Street, New York 10017-2377, tel. 212-705-7920.

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Mayline Company, Inc.

McGraw-Hill, Sweets Group
Meridian, Inc.

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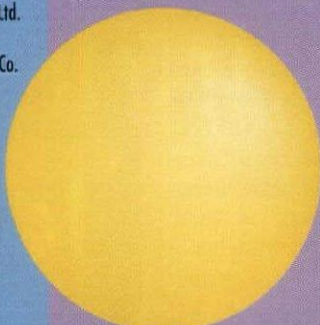
Waldmann Lighting
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Westin Nielsen
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White Office Systems
Willow Tex Inc.

Winona Studio of Lighting
Wood Artisans

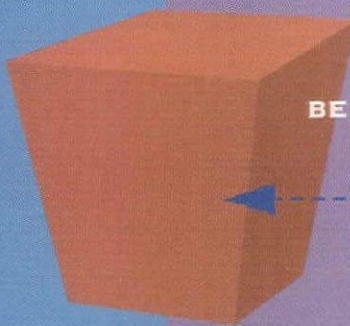
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UNEARTHING GOLD NUGGETS FROM LIGHTFAIR

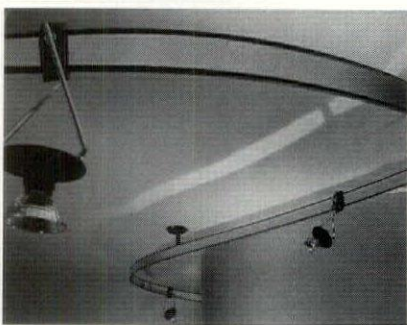
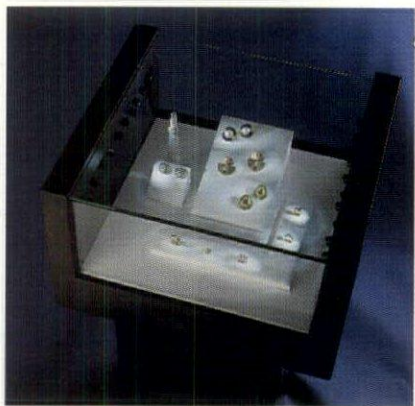
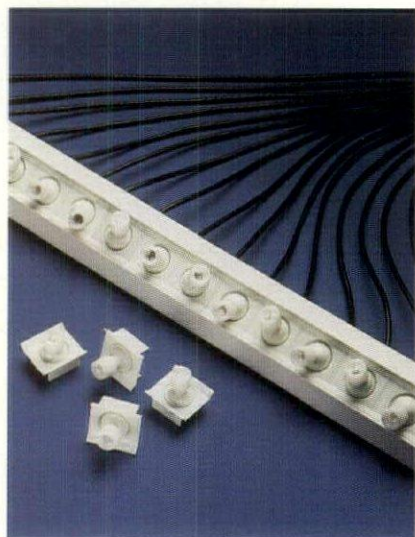
BY GARY MARKOWITZ

LightFair '93 will soon be upon us—it is scheduled for May 10-12 at the Moscone Convention Center in San Francisco. Perhaps it is worth a look back at LightFair '92 for some gold nuggets that might have been missed in the hecticness of showtime. Despite the difficulties this author had in dodging the literally hundreds of manufacturers' representatives who seemed to scurry from booth to booth, hoping to get a "leg-up" on their competition, there were enough examples of innovative new product to hold anyone's interest.

Many of the major the product lines did demonstrate some subtle changes from previous years, but the most notable change was in the niche market products—those intentionally destined for a particular type of application or sector of the market. This is where some of the most notable changes occurred with particular emphasis upon product destined for the energy conservation market:

- Improvements in the aesthetic blending of motion sensors was a welcome relief as indicated by introductions from Lightolier and Watt Stopper.
- The marketing blitz of the fluorescent reflector insert was not ever-present as in past LightFair shows. This was a welcome change as there were just too many of these vendors offering the same product in the past. Perhaps Charles Darwin's theory of the "survival of the fittest" applies here.
- Electronic ballasts seemed to continue to penetrate the market with improvements in reliability and a broadening in applications including the introduction of the T-8/F96 lamp line. NOTE OF INTEREST: The efficiency of the fluorescent system has been constantly improved since its invention. The introduction of this T-8 ("Octic") system is a welcome improvement as efficacy of the fluorescent system approaches (and may even equal) that of many multi-vapor lamp/ballast combinations.

Booths that housed the lesser-known start-up manufactur-



(Photo just above) Helix flexible track and spot system from Lucifer Lighting, San Antonio, TX.

(Top two photos) Fiberoptic eyeball system from Pinpoint Fiberoptics Ltd., New York City, and Beverly Hills, CA.

ers offered some of the more innovative technologies with multiple applications. The most innovative products offered were from manufacturers who tread on the cutting edge. The clip-on lighting presented by Lucifer Lighting is perhaps the most innovative design I observed in the area of low-voltage, flexible display track lighting systems. The applications for this technology should prove to be quite numerous as the versatility of the product was demonstrated at the display booth. Due to the compactness, the need for larger (higher wattage) display lamps can be decreased with this type of product. There are also energy conservation implications in many of its applications over ceiling-mounted high-wattage display lighting systems.

The retail display lighting industry has certainly been deserving of innovative revival. The choices of MR 16, MR 11, PAR, miniature fluorescent, quartz, tungsten-halogen, and high-wattage flood/spot incandescents, etc. were certainly adequate, and met the needs of most designers. The confined choices in illumination systems for this type of application resulted in exceptions being written into many of the rigorous energy codes in many states such as to provide for allowances where display illumination was required to attract and motivate the target customers.

A breakthrough in display lighting was introduced at LightFair '92—a new method of display lighting which contributes no heat to the interior of the display case, and allows for the direct focus of illumination upon the desired target object (adjustable aperture). The most impressive of the features involves the operating economics: a single lamp to illuminate product display cases in place of as many as six to eight lamps that were previously required to illuminate the same case. This single lamp also costs less to maintain: one extended life HID

lamp to change in an easily accessible location, versus several lamps needing relamping in track or recessed ceiling fixtures.

Fiberoptic lighting is a practicable and readily available technology for application to the display lighting market. The

General Electric "Light-Engine," and the Pinpoint Fiberoptics, Ltd. fiberoptic lighting system (Pinpoint 'Fiberoptics, LTD also offers a projection lighting mechanism as a part of their product) are only two of several fiberoptic displays that drew varying interest during my extended visits to these booths.

The fiberoptics lighting system is made up of a high-output lighting source such as: high efficiency tungsten halogen, multi-vapor, or white high-pressure sodium, where the lumen output is directed in a beam through an aperture much in the way a slide projector will focus its light to the target. The size of the aperture determines the actual light output from the projection unit's light source. The Pinpoint Fiberoptics, LTD. unit comes with a 150-watt metal halide lamp that can punch light into the associated fiberoptic network of shrouded cable for distances of up to 15 feet (in the cable) to the lensed miniature eye-ball projectors. Up to 60 cables/eye-balls can be operated off one projector. The object is to optimize the number of eye-ball projectors to the lumens you intend to fall upon the target, and the distance to the target. Through some basic optics, the eye-balls can be adjusted from a spot to a narrow spot.

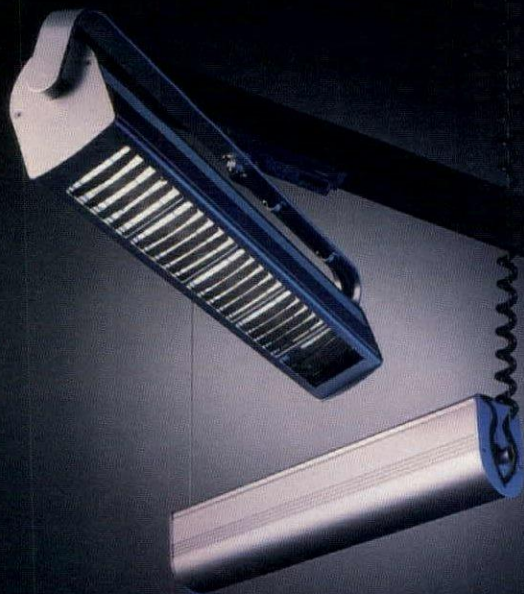
This patented technology has deep impact upon energy and maintenance costs. For a display case of eight feet, the typical MR-16 array consists of 10 50-watt lamps. With line-voltage (the transformer losses for the low voltage system have been incorporated) the old system uses 500 watts, and requires relamping every 2,000 hours. The fiberoptic system with 20 eyeball projectors only consumers 170 watts and requires relamping every 10,000 hours. The store operates seven days per week which equates to an annual operating time of 4,500 hours per year.

Using an MR-16 system would cost \$502.50 the first year to maintain per display case (\$300 per year @ \$15 per lamp change + \$202.50 @ \$0.09 per Kwh). A fiberoptic system would cost only \$77.88 per year to maintain (no lamp changes the first year + \$70.88 @ \$0.09 per Kwh).

The economics are fairly good justification to opt for this type of system, and the financial incentive that may be available from the local electrical utility company could make this system even more difficult to ignore.

The LightFair '92 show offered a lot of the "more of the same" for many attendees. This may have lulled them to sleep to a point where the "diamond in the rough" technologies and ideas might have been overlooked. I'll be keeping my eyes opened for the new and wonderful with all of you who will be attending LightFair '93. For those of you who can't attend the show, this column will be presenting more gold nuggets in upcoming issues.

Gary Markowitz is with Raytheon Company, Missile Systems Division, Bedford, MA and is a member of the ARCHITECTURAL LIGHTING Editorial Advisory Board. Opinions expressed in this column are those of the author.



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PHILIPS ACQUIRES ELECTRONIC BALLAST TECHNOLOGY

Philips has acquired a majority share interest in Electronic Ballast Technology, Inc. (EBT). EBT, established over a decade ago by Peter S. Shen, its president, specializes in electronic ballasts that employ high-frequency solid-state circuit technology for use with fluorescent lamps.

Philips Lighting Group consists of Philips Lighting Company, based in Somerset, NJ, and Advance Transformer Co., based in Rosemont, IL. Philips Lighting Group is part of North American Philips Corp., which in turn is part of Philips Electronics N.V. of The Netherlands.

EIMU EXHIBITION

The seventh Esposizione Internazionale Biennale Mobili Ufficio (EIMU), the international biennial office furniture exhibition, the second largest office furniture show in Europe, will be held in Milan September 15-19, 1993. In addition to office furniture, the show will feature lighting, security systems, accessories, and services. In addition to products currently available, as of next year the show will highlight upcoming trends likely to impact the way European office scenarios

develop. For information, contact Cosmit 20123 Milano, corso Magenta 96, Italy, telephone 02/48008716 or fax 02/4813580 in Milan, Italy.

INTERNATIONAL LIGHTING EXPOSITION

The International Lighting Exposition (ILE) will be held at the Metro Toronto Convention Centre in Toronto, Ontario, Canada on June 21, 22 and 23, 1993. Exhibitors will be demonstrating new products and techniques to national and international interior designers, architects, specifiers, lighting designers, consulting engineers and others.

The Illuminating Engineering Society of North America, Toronto Section, will be hosting the Canadian Regional Conference in conjunction with ILE. The Conference includes seminars and a series of special luncheons that will appeal to the seasoned professional and lighting novice.

Recognizing the importance of the growing international lighting market, Metropolitan Toronto Chairman Alan Tonks has proclaimed the week of June 20-25, 1993 "Lighting Week" in honor of the ILE. For information, write ILE, 395 Matheson Blvd., East, Mississauga, Ontario L4Z 2H2, Canada, telephone (416) 890-1846, fax (416) 890-5769.



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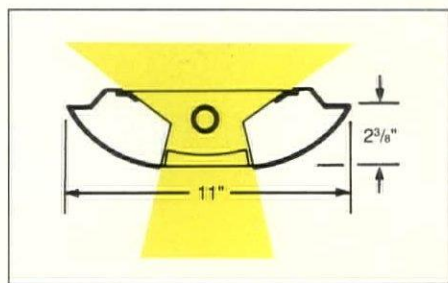
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INTERNATIONAL INTRIGUE

The globalization of the lighting industry that began several years ago—with both designers and manufacturers reaching across the continents—is in full bloom. In this issue of ARCHITECTURAL LIGHTING, we're devoting a Special Section to the international scene.

Leading off the section is a study in contrasting interiors: an Australian/U.S. design team has created a sophisticated, conservative environment for the Myer Store in Adelaide, Australia, and bold, beachy interiors for the Myer Store in the resort town of Surfers' Paradise—each store reflecting the clientele and city in which it is located.

The Palm Hills Golf Clubhouse is the result of a U.S./Japanese collaborative effort. The facility

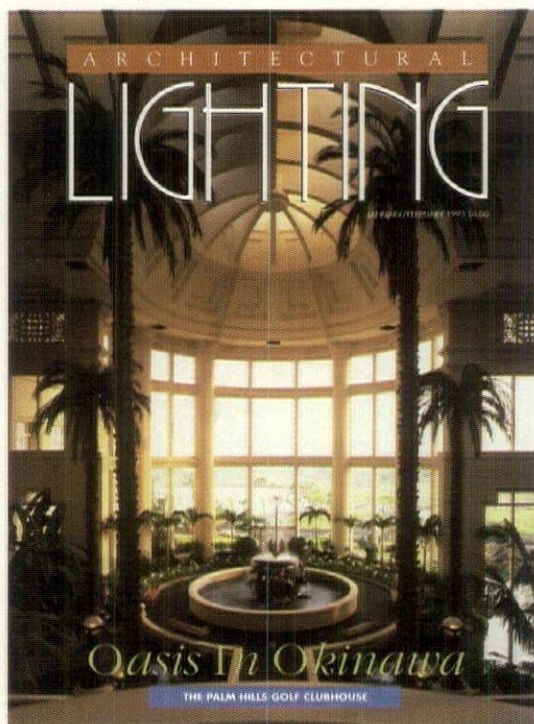
responds to the client's demand for a world class golf resort that blends Mediterranean, Oriental and Southern Californian styles.

The smaller the world seems to become, the more concern and interest there will be in developing uniform lighting standards and manufacturing requirements. In this issue, we present a detailed examination of the International Standard Organization's 9000 Series Standards and how they are administered by Underwriters Laboratories.

CLOSER TO HOME

Outdoor lighting manufacturers were exhibiting in full force at the American Society of Landscape Architect's (ASLA) Conference and Exhibition held in Washington, D.C. from November 8-10, 1992. In 1993, ARCHITECTURAL LIGHTING will be increasing coverage of the growing outdoor and landscape market.

And kudos to the Electrical Association of Philadelphia for '92 Light Touches, the Regional Lighting Industry Expo, which took place on December 1-2, 1992 in Philadelphia. The seminar program was developed by the Philadelphia Section of the Illuminating Engineering Society of North America. The conference program was timely, the exhibits were well done, and attendance seemed brisk. In fact, I haven't been to such a happy show, where exhibitors were so uniformly pleased, in a long time. The Philly show runs every two years—so catch it in '94 if you can!

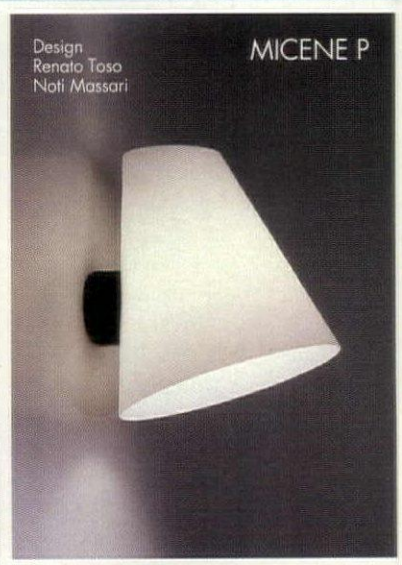
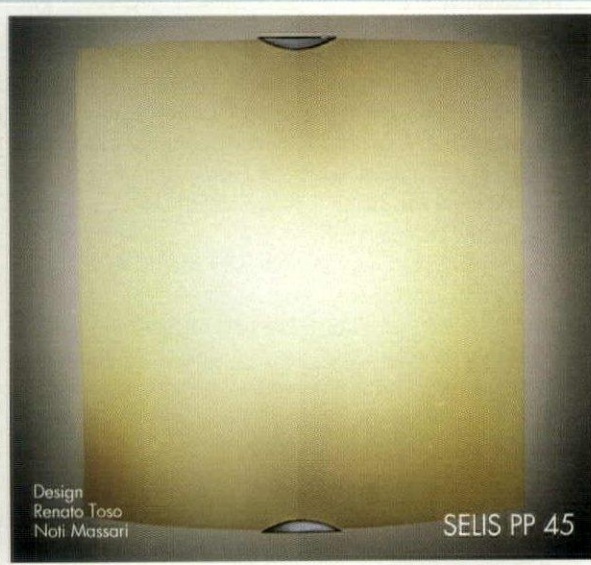
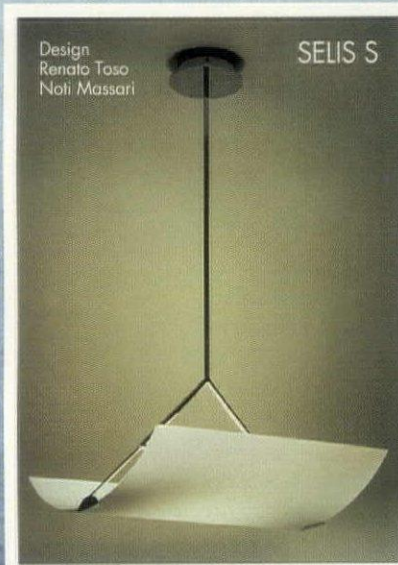


WANDA JANKOWSKI
EDITOR-IN-CHIEF

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Designing *Down Under*

MYER STORES IN ADELAIDE AND SURFERS' PARADISE, AUSTRALIA, REFLECT THE VARIED CLIENTELE THEY ATTRACT AND THE CONTRASTING CHARACTER OF THE CITIES IN WHICH THEY ARE LOCATED

BY WANDA JANKOWSKI
EDITOR-IN-CHIEF

Three years ago Australian retail giant Myer Stores turned to U.S. design firm HTI/Space Design International for help in creating two new department stores. The client wanted the stores, located in Adelaide and Surfers' Paradise, to incorporate the latest retail design and planning trends from around the world. "One of the highest priorities was developing sparkling, stylish lighting designs which would showcase Myer's extensive merchandise offerings and complement the different interior designs we created for the two stores," says David Apfel, IALD, vice president/director of lighting design at HTI/Space Design International.

According to Apfel, Australia doesn't have the variety of department stores that exist in the U.S. "Myer is the largest fashion department store in Australia and has succeeded in being everything to everybody. So you'll find categories that appeal all across the economic spectrum," says Apfel.

The challenge for the design teams included not only creating a quality image for Myer, but

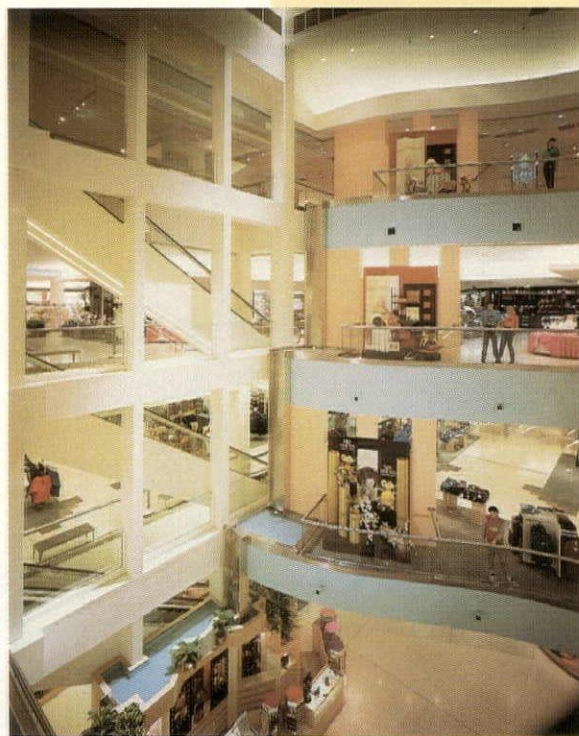
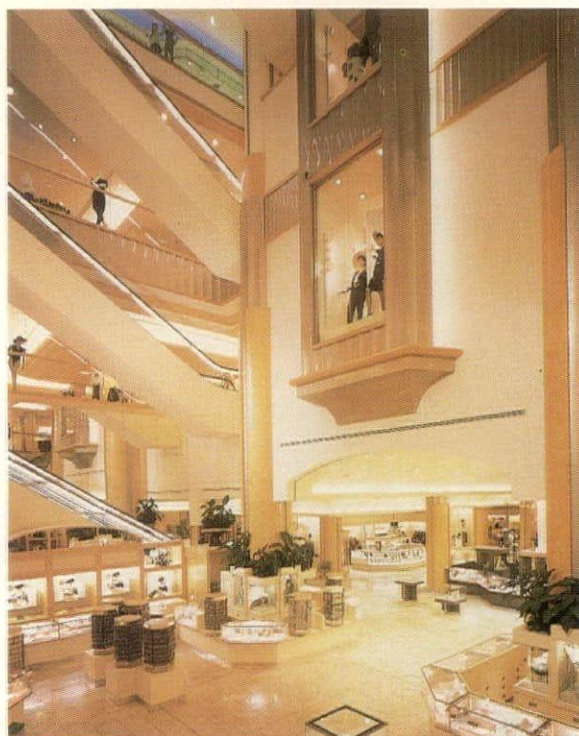
designing the stores to suit the clientele and the character of the surrounding locales, which vary greatly from Adelaide to Surfer's Paradise.

To emphasize the contrast between the traditional, conservative Myer store in the Rundle Mall/Adelaide, and the bolder, more loosely flowing design elements of the Myer store in the Pacific Fair Shopping Center/Surfers' Paradise, photos of the same departments from each store have been paired in this article.

RUNDLE MALL/ADELAIDE'S MYER STORE

Adelaide is a conservative city in the southern part of Australia—"wine producing country," says Apfel. "It is unique and in some ways, isolated, but the downtown section is cosmopolitan, and any westerner would be very comfortable in Adelaide."

The 320,000 square foot store is part of Rundle Mall, on a pedestrian shopping street closed off from vehicular traffic. Other stores in the mall can



CORE ATRIUMS

be accessed from inside the Myer store. The interior of the Myer store resembles high-quality stores in the U.S. and western Europe, with its openness and wide circulation paths. Each floor of the six-level store is organized around the escalator well. The layout on all six levels is similar to encourage customers' familiarity with the store.

The store is designed in a traditional, conservative style to appeal to local Australian patrons, who are the bulk of its customers. The conservatism is reflected in the use of traditional forms, such as columns adorned with fluted details reminiscent of classical Greek and Roman columns, and fluted metal trims on reveals and display window borders.

The extensive use of marble, warm woods (the oaks and ashes are indigenous to Australia), and the soft color palette of off-whites and beiges create a comfortable, yet rich atmosphere without the need of excessive ornamentation.

Though Australia does not have strict energy requirements, both the Myer stores have been designed so as not to waste energy, and are efficient enough to meet U.S. standards. A great deal of fluorescent has been used throughout the stores.

In the Rundle Mall/Adelaide store, linear indirect fluorescent cove lighting reinforces the grand scale of higher-ceilinged main passageways, and provides direction for customers through the lower-ceilinged circulation areas of the individual departments. Downlights

for general illumination are fitted with four 9-watt vertically, or three 18-watt, horizontally mounted, compact fluorescent lamps, depending on the location.

Accent lighting includes 90-watt, 120-volt PAR lamps, installed with transformers to convert the 240-volt current to 120 volts. "This store had been designed before suitable 240-volt PAR lamps were available in Australia," says Apfel. "We did not want to use 12-volt MR 16s, which would have been the only other choice. The lower wattages of MR 16 lamps, which were the only ones available could not generate enough visual impact in higher ceilinged—13 feet—areas."

The 12-volt MR 16 accent lighting fixtures have been used in display cases, for example, where they are in closer proximity to the merchandise.

PACIFIC FAIR/SURFERS' PARADISE MYER

By contrast, the Myer store at the Pacific Fair Shopping Center is located in Surfers' Paradise, a tourist resort area on the ocean south of Brisbane. "It has a climate similar to Miami Beach—semi-tropical year-round," Apfel says. The city attracts many foreign tourists, particularly from Japan.

"It's also very western in feeling. If you were to blink your eyes while you were in Brisbane or Surfer's Paradise, you'd swear you were in some Southern California town between Los Angeles

RUNDLE MALL: (Above left) Shoppers can reach the escalator well in the center core from the primary store entrance in the cosmetics area. The traditional styling of this Myer store is reflected in the use of conservative, rich materials: the marble floor tiles, fluted borders on columns and vertical surfaces, and wood trims. The basic color scheme is a blending of neutral off-whites and beiges. The framed-doorway type display is backlit with fluorescents to visually float it away from the wall.

PACIFIC FAIR: (Above right) The bolder statement here is set with a more varied color palette—blues and peaches. The terrazzo floor tiles, the waterfall that cascades down one corner from level to level (turned off in the photo), and the curved floor levels embody the beach motif that fits in with the store's location in Surfers' Paradise, an oceanside resort town. The 1,000-watt metal halide spots create a sense of bright sunlight shining into the atrium.



COSMETICS

RUNDLE MALL: (Above left) Straight-lined coves, illuminated with fluorescent tubes, flank the barreled ceiling. The wood columns with fluted trims set the conservative tone. General illumination also comes from downlights fitted with four 9-watt compact fluorescents.

PACIFIC FAIR: (Above right) The columns here juxtapose the rectilinear with curvilinear. The fluorescent-lit coves are wavy and serpentine, leading the eye from the main entrance into the heart of the store. Ancillary curves are undulating as well. Downlights are lamped with two 26-watt compact fluorescents, and recessed accent lights contain 90-watt, 120-volt PAR spot lamps with transformers.

and San Diego," says Apfel. So the store in the Pacific Fair Shopping Center had to be designed to provide a fun atmosphere reflective of its oceanside surrounding, along with a world-class styling to meet the expectations of foreign travelers.

This store is also 320,000 square feet, but contained on four levels. Tropical blues and peaches have been incorporated into the furnishings and surfaces. The terrazzo tile flooring is adorned with turquoise and peach patterns.

In the atrium, the floor levels represent abstract waves connected on one side by a narrow waterfall that cascades from one floor to the next and culminates in a small pool at the ground floor level. Wave patterns also are incised into the flat, clerestory ceiling, which is uplit and grazed with high-pressure sodium floodlights at night to produce a sunset effect.

The atrium is 48 feet high by 48 feet long and 40 feet wide. The traffic pattern consists of a large loop aisle on each floor, off of which runs wide aisles that lead to departments.

The beach motif is continued in the cove lighting throughout the store. Unlike the straight and angular coves in the Rundle Mall/Adelaide store, here the fluorescent coves are undulating and wave-like.

General illumination comes from a variety of 600 mm square and 300 mm square parabolic fluorescents, each with three or four 18-watt linear or compact

fluorescent lamps supplied by Philips Lighting. Additional general lighting is provided by round aperture compact fluorescent downlights, each with two 26-watt lamps as well as 90- and 150-watt, 120-volt PAR 38 lamps. In addition, 12-volt, 100-watt OT 12 lamps with integral transformers and reflectors provided by the luminaire manufacturers are used to provide punch and visual variety.

Each store took 12 to 18 months to design and construct. Both U.S. and European lighting products have been used.

DESIGNING WITH EUROPEAN FIXTURES

"Australia is a market that Europe has exported to for many years," says Apfel. "Their voltages are close—230 volts in Europe and 240 volts in Australia—as well as their electrical codes and criteria.

"While Europeans have led when it comes to the look of fixtures, the U.S. has led in photometrics, glare control and overall performance," says Apfel. "Europeans are a little out front when it comes to energy conserving criteria. They embrace high-pressure sodium and metal halide more than the U.S. and broke the ground with compact fluorescents, with the U.S. following.

"Fixtures in the U.S. are built to meet UL criteria and are, perhaps, overdesigned for other parts of the world. The Europeans can produce a fixture at a



RUNDLE MALL: (Left) In Australia, stores are a social center where friends shop and often stop to enjoy a meal together. The department store restaurant is still a profit-making entity in that country, unlike in the U.S. where many stores have phased profit-less restaurants out. There are three restaurants in the Adelaide Myer store. This one is designed to reflect the atmosphere of an Italian cafe—dramatic, sparkling, and shining.

RESTAURANTS

small percentage of our costs because they don't have to put as much into it. The typical U.S. fixture is not cost-competitive in the global market because of this," Apfel says.

"The real challenge for an American designing with European fixtures is with accent and incandescent lighting," says Apfel. "Lumen output for the stated wattage of fluorescent and HID sources in Europe, Asia and Australia is similar to U.S. standards. The biax family, for example, tends to be universal among Japan, the U.S. and Europe—about 3000

lumens from 36-40 watt lamps, although lamp life varies greatly.

"Incandescent lighting differs. In the U.S. power is delivered at 120 volts, unlike the 230- and 240-volt systems abroad. We use incandescent lighting 'right out of the tap,' without transformers," says Apfel. "At 120 volts, filaments and reflectors can be designed in a way that makes incandescent lighting very effective, especially PAR lamps. Tight beams, down to 10 degrees and widened out to 60 degrees, can be created without going to low voltage.

PACIFIC FAIR: (Below) By contrast, the restaurant here has almost a cabana look to it, continuing the oceanside motif evident throughout the rest of the store. The windows are equipped with custom-designed louvered blinds to shield shoppers from the direct sunlight cast in through the windows at certain times of the day. The curvilinear/rectilinear juxtapositioning is repeated in the curved chair backs with punched square designs, the curved ceiling soffit, the curved bar, and the yellow and white striped wallcovering.





HOUSEWARES

RUNDLE MALL: (Above left) Indirect fluorescent coves, and wood trims and display pieces reflect a formal, balanced style. Square downlights contain three 18-watt compact fluorescents mounted horizontally. Some of the downlights are recessed adjustable accent lights that use 90-watt, 120-volt PAR spot lamps with transformers.

PACIFIC FAIR: (Above right) Modified standard prismatic pendant fixtures provide both direct downlight, and indirect uplight. The fixtures have a medium screw base and are lamped with 250-watt tubular quartz tungsten incandescents supplied by Osram. Additional, adjustable accent fixtures have been clamped onto the series of white-painted pipe structures that create the atmosphere of an open warehouse.



"My understanding is a good filament can't be designed for 230-volt system power delivery—the filament and the reflectors have to be larger, and hinder the production of good line voltage accent lighting. So when 12-volt accent lighting was introduced, it gained universal acceptance outside the U.S., even though a transformer is required," Apfel explains.

Another difference Apfel notes is the tendency for European manufacturers to build the reflector into the fixture, and not the lamp, so only the halogen lamp needs to be replaced. With PAR lamps manufactured in the U.S., you throw away the entire optical system along with the burned-out lamp, Apfel notes.

DETAILS

PROJECTS: MYER STORES

LOCATIONS: RUNDLE MALL, ADELAIDE and PACIFIC FAIR SHOPPING CENTRE, SURFERS' PARADISE, AUSTRALIA

Adelaide Store

ARCHITECTURE AND INTERIOR DESIGN: HTI/SPACE DESIGN INTERNATIONAL TEAM: EDWARD HAMBRECHT, principal-in-charge; JAMES TERRELL, MARTIN ANDERSON, and BRYAN GAILEY, designers; DEBRA ROBUSTO and LESLIE LARM HARALSON, colors, products & materials; GEORGE BONET, planner; TONY CUZZELL, project manager; and DAVID APFEL, lighting designer. MYER STORES TEAM: MOHAMED MANSOUR, conceptual designer; IAN MASTERMAN and JAN O'CONNOR, merchandising & fixturing; DALLAS KING, documentation; MAYLOU PAINO, colors &

materials; and FIONA NEWMAN, kitchen, offices & support area

PHOTOGRAPHER: DON DUBROFF

LIGHTING MANUFACTURERS: ERCO (Germany), CONCORD LIGHTING LIMITED (England), STAFF LIGHTING (Germany), ZUMTOBEL (Austria), MARLIN LIGHTING (England), PHILIPS LIGHTING (The Netherlands), SIEMENS (Germany), GENERAL ELECTRIC (U.S.) and SPECTRA LIGHTING (Australia)

Pacific Fair Store

ARCHITECTURE AND INTERIOR DESIGN:

HTI/SPACE DESIGN INTERNATIONAL TEAM: EDWARD HAMBRECHT, principal-in-charge; MARTIN ANDERSON, designer; LESLIE LARM HARALSON, color, products & materials; GEORGE BONET, planner; MIKE GNECCO, job captain; RAY NUYTKENS, project manager; and DAVID APFEL, lighting designer. MYER STORES TEAM: MOHAMED MANSOUR, conceptual designer; IAN MASTERMAN, manager merchandising/fixturing/lighting; JAN MESSNER, manager color & materials; DALLAS KING, documentation & quality control; JAN O'CONNOR, merchandising; and FIONA NEWMAN, support services/back of house/restaurant & coffee shops

PHOTOGRAPHER: MARK WILSON

LIGHTING MANUFACTURERS: ERCO (Germany), CONCORD LIGHTING LIMITED (England), STAFF LIGHTING (Germany), MARLIN LIGHTING (England), SPECTRA LIGHTING (Australia), BALDINGER ARCHITECTURAL LIGHTING (U.S.), PHILIPS LIGHTING (The Netherlands), SIEMENS (Germany), GENERAL ELECTRIC (U.S.), THORN LIGHTING (England), and HOLOPHANE (U.S.)



RUNDLE MALL: (Top left) Video screens, catwalks, oversized graphics, industrial-style fluorescent fixtures, and theatrical accent lights have been installed to create excitement and appeal to the MTV generation. The ceiling has been lowered in the center, but remains exposed to the right and left of the curved core.

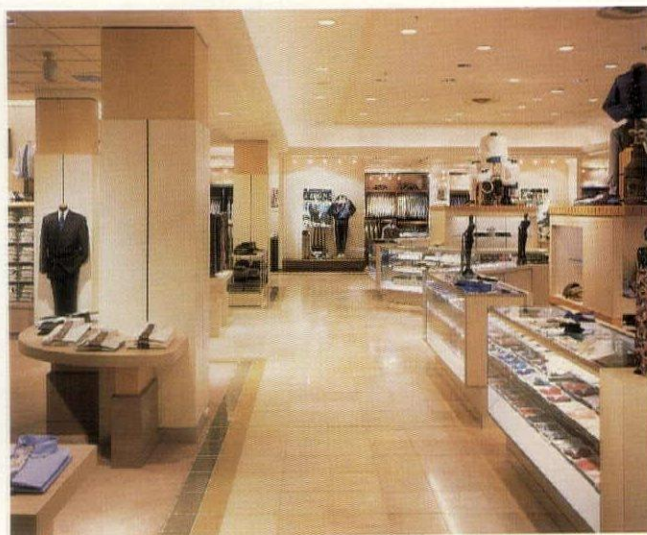


PACIFIC FAIR: (Below left) General illumination is provided by 250-watt halogen lamps. The excitement is provided by fixtures permanently fitted with glass filters that relate to a particular color range. For example, a 100-watt fixture fitted with a red filter range will include pink, orange and red filters that can be used singly or in combination. "Usually, if you give the store staff a fixture that takes a portable color filter, after six months nobody knows where they are," says Apfel. This fixture eliminates that problem.

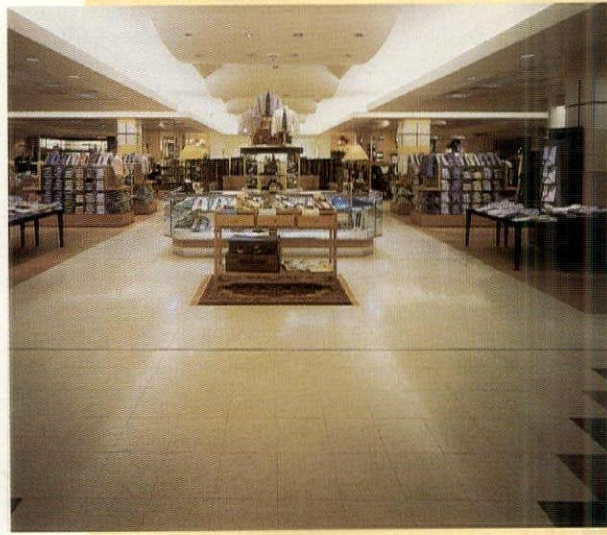
MISS SHOP (JUNIORS)

MEN'S DEPARTMENT

RUNDLE MALL: (Below left) The clean, architectural presentation of columns and built-in displays, is reinforced with straight lines of indirect cove lighting and accent lighting of vertical displays. The display cases are lit with fluorescent fixtures.



PACIFIC FAIR: (Below right) Here is a freer presentation than in the Rundle Mall store. The wave forms in the ceiling are emphasized with the fluorescent backlighting. The curvilinear waves play against the rectilinear grids on the columns.





“Golf is a passion with the Japanese,” says John Grinnell, senior designer at Hirsch/Bedner and Associates, Santa Monica, CA, “and it is becoming more and more difficult to play on the main island, so people come down to Okinawa. And they will spend two weeks playing nothing but golf every day.” Okinawa, the largest of Japan’s Ryukyu island chain, enjoys a temperate climate and the many existing beachside resorts serve vacationing Japanese from up north.

Mr. Koichi Takakura, president of the Takakura Corporation, decided to build an exclusive, world class golf club on Okinawa, and selected an experienced design team to do the job that included both Japanese and American firms—Helber Hastert & Kumura, Planners, WATG, Tong, Clarke & Mechler, BAU Architect & Associates, Sakurai Setsubi Sekki Systems Co. Ltd., Hirsch/Bedner and Associates, PHA Lighting Design Inc., and Ronald Fream Design Group, Ltd. The design team was charged with developing an environment that would embody the best of and improvements on existing facilities of this type.

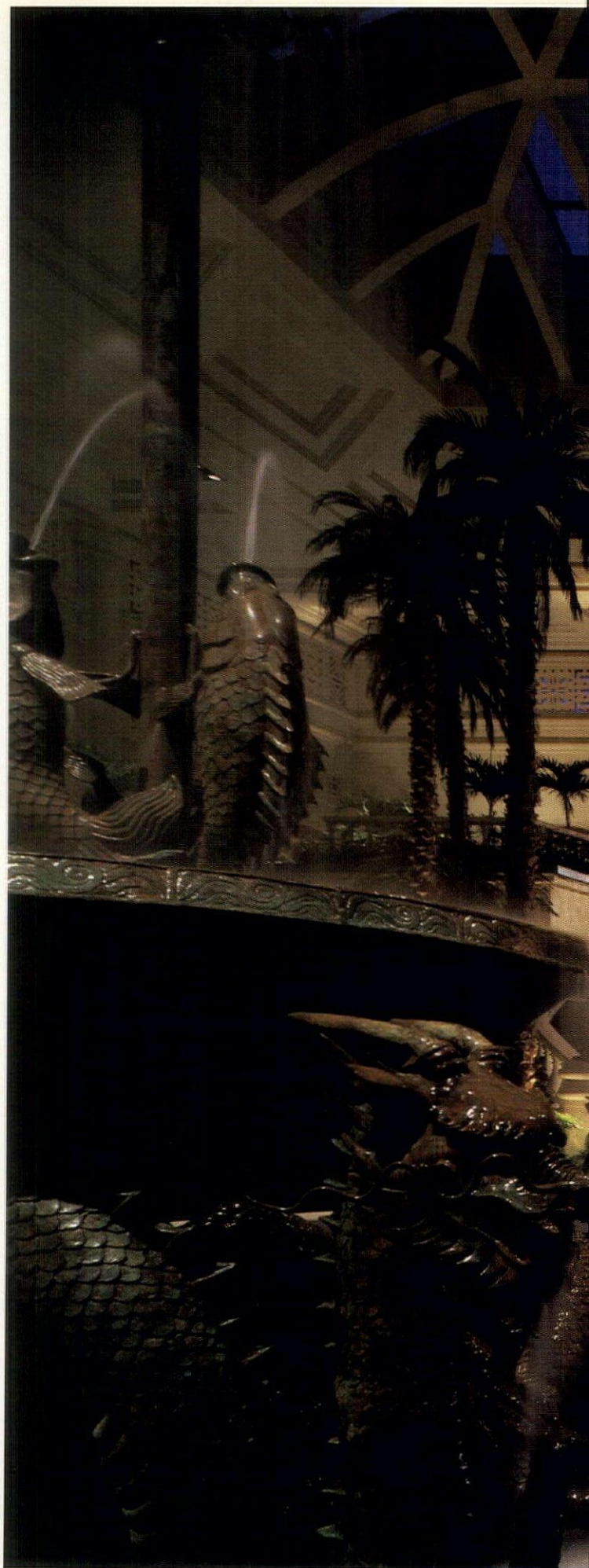
The resulting Palm Hills Golf Clubhouse golf resort is in the countryside, about an hour’s drive from the island’s largest city of Naha. The clubhouse contains about 50,000 square feet of public areas, in addition to the storage and employee facilities, and other back-of-house spaces.

COURTYARD

Most striking is the courtyard/atrium enclosed by multi-windowed walls, a skylighted ceiling, and richly detailed moldings and support beams. The design style requested by the client includes a mixture of California and Mediterranean elements, reflected especially in the tall palm trees, the plantings, and the stonework that create an indoor garden environment.

Oriental elements also are evident in the ornate rectangular pierced screen designs around the perimeter of the ceiling, which also conceal air-conditioning vents. The fountain sculptures depict dragons and dolphins, and a number of ancient Okinawan textile designs have been used in some of the carpet patterns throughout the clubhouse. Mr. Takakura, an avid art collector and world traveller, also purchased artworks from India, Southeast Asia, and Thailand that are displayed in the clubhouse.


When it came to lighting the large courtyard, Paul Helms, PHA Lighting Design Incorporated, put into practice the same philosophy he brings to all his work. “We feel that the ceiling plane should receive the same amount of attention when it comes to detail as any other interior surface, and often that’s not the case,” says Helms. “Lighting designers many times put the light where it’s functionally most appropriate, and if that



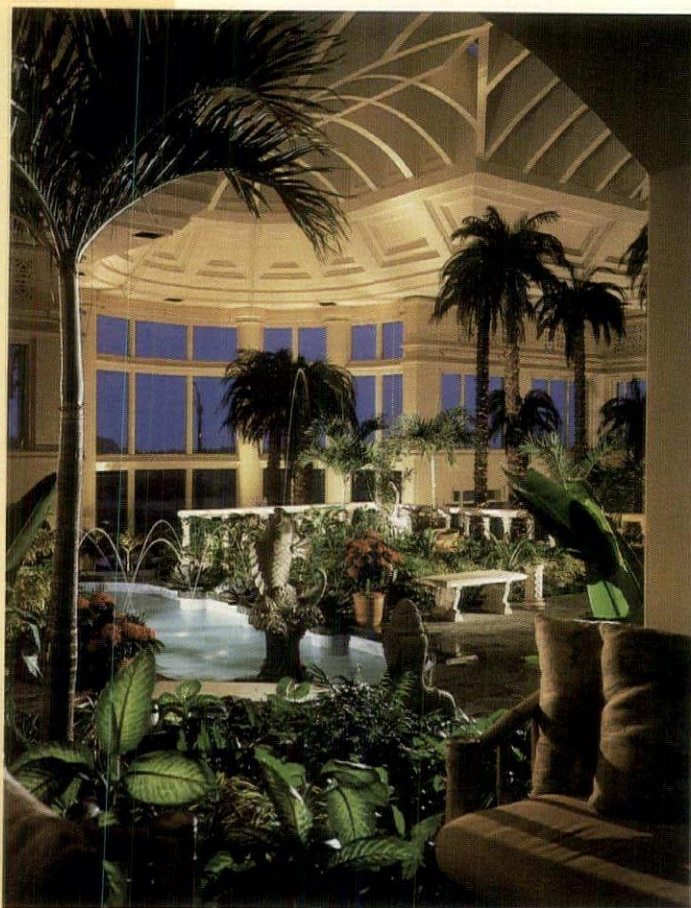
Okinawa Oasis

DECORATIVE AND SUBTLY CONCEALED FIXTURES ENHANCE THE LUSH PALM HILLS GOLF CLUBHOUSE IN JAPAN

BY WANDA JANKOWSKI
EDITOR-IN-CHIEF

A large, ornate indoor atrium with a grand staircase, palm trees, and a fountain. The space is filled with lush tropical plants and features a high, vaulted ceiling with a grid of structural beams. The lighting is warm and ambient, highlighting the architectural details and the natural elements.

GRAND STAIR: Custom-designed, pole-mounted globe luminaires mark the top and bottom of the staircase. The majority of the lighting comes from fixtures concealed in square "windows" at the perimeter of the lowered ceiling.



MOOD OF THE TROPICS: (Right) Concealed downlights and uplights illuminate the plantings and ponds.

Fig. 1 (Below left)
Courtyard Accent Fixture Cavity Location

Fig. 2 (Below right)
Detail of Courtyard Fixture Cavity

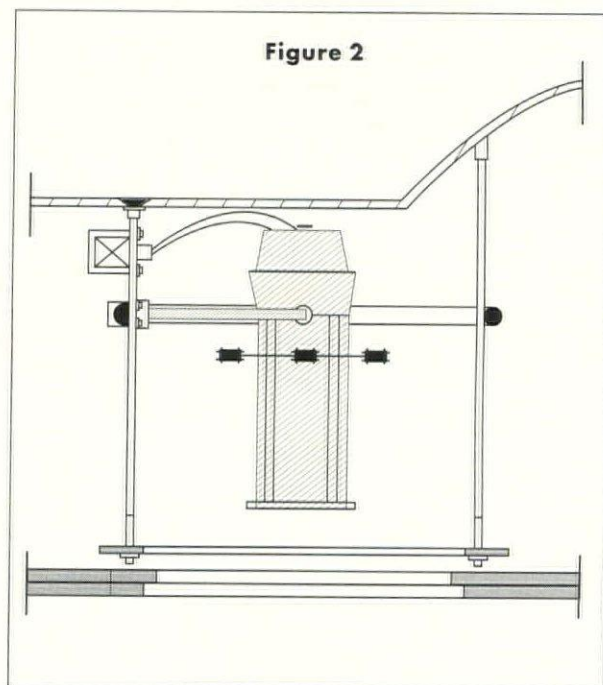
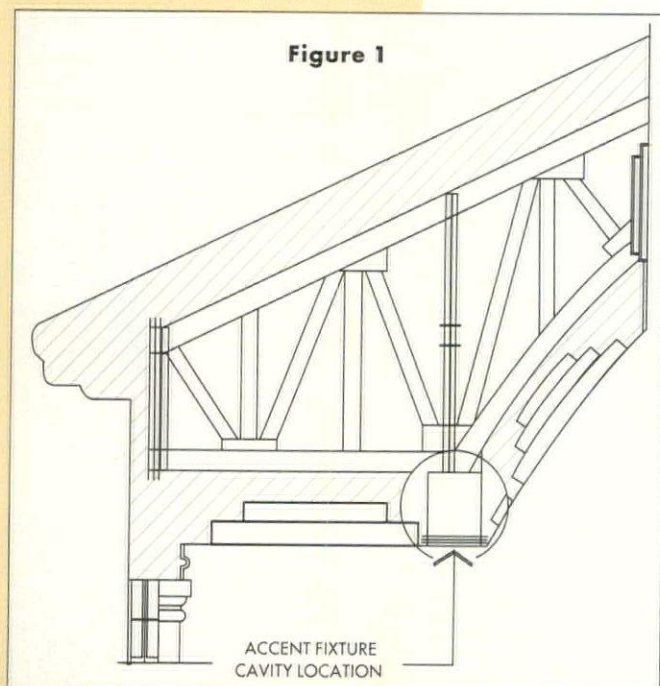
happens to work out with the architecture of the ceiling, that's a plus, but sometimes it doesn't. We'd rather array the lighting fixtures so they work with the ceiling architecture, and then see if the functions can be performed from those locations, because generally they can." This design approach has contributed to the ordered and unobtrusive lighting sys-

tem evident in the courtyard.

The majority of the general and accent illumination comes from small "windows" punched into a kind of soffit that runs around the perimeter of the roof structure. In addition to mechanical equipment, the window-like cavities house one or two lighting fixtures: zoom ellipsoidals and/or PAR 56 lampholders. The zoom ellipsoidals fitted with 1,000-watt T-lamps are used primarily for illuminating sculpture and art objects museum style with hard-edged, finely focused light. Plant materials are treated with softer-edged accent lighting from the 500-watt PAR 56 fixtures. Because the fixtures are concealed within the "windows," the effects of the light on objects below are perceived, but the visitors are unaware of where the light is coming from.

Pole-mounted globes, designed by John Grinnell, are installed at the top and bottom of the curving grand staircase and are always on to emit a constant glow. They are intended to function primarily as visual focal points, and secondarily as light sources. The lighting control system adjusts the amount of illumination provided, depending on the amount of sunlight available.

The control system not only extends lamp life, but helps to keep the lighting design intact. "Preset lighting controls are a U.S. bias," says Helms. "There



isn't as extensive a use of incandescent sources abroad as there is in the U.S., due in part to high energy costs. Fluorescent is used everywhere—it is an ingrained habit, and so dimming and controls are not normally considered. But in this project, the use of low voltage and tungsten sources were justified to produce a variety of textural qualities."

The control system, by synchronizing the accent and general lighting with daylight, creates "a sort of theater in that interior space, but in a way that's rational," says Helms. The soft mood light that permeates the courtyard during the day culminates at dusk's "blue hour" when the lighting system's most dramatic effects are enriched against the vividness of diminished daylight from the saturated deep blue of the sky.

FUROS

Directly reflective of elements of the Japanese culture is the inclusion of the furo. Furo is the Japanese word for bath. The men's and women's furos are similar in design, and contain several water areas. There is a steeping pool encircled with rock formations and plantings for relaxing.

Bathing for cleansing purposes, however, is conducted along the perimeter of the room where individual showers are located, each with its own waterproof light fixture. Bathers perform their ministrations primarily in a sitting position and so each station has been equipped with an upturned plastic bucket on which to sit. The shower controls have been placed so they can be used while the bather is seated, and there is a small shelf for supplies.

A few enclosed shower stalls have been included for western visitors or Japanese who prefer that style of bathing.

The pools of water within the circular, temple-like structures are actually whirlpools—an added western idea. "They had been uncertain for a time as to whether or not they were going to include that or not," says Grinnell.

Waterproof, indirect tungsten fixtures concealed in the structure's column-supported ring are all aimed upward at the ceiling to create a pool of light focused over the top of the structure. "We didn't want to light the entire space," says Helms, "but instead let the light fall on the major architectural details." Waterproof fixtures have also been recessed in the whirlpools.

The open center of the furo enjoys spill light from other interior areas, and



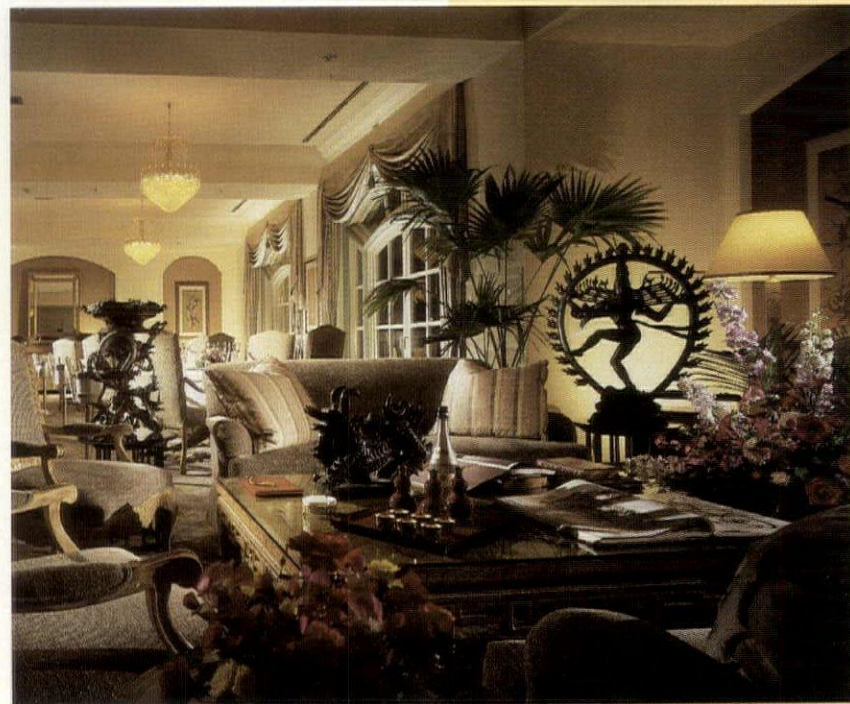
OUTSIDE IN: (above) The illuminated exterior plantings bring a sense of the outdoors inside the women's furo. Ambient illumination comes from fluorescents mounted above the wooden lockers.

from the highlighting of the landscaping via cast bronze fixtures fitted with PAR lamps in the privately walled outdoor gardens visible through the glass walls.

The women's furo is organized in the same way as the men's, except there is one whirlpool instead of two.

In the locker rooms, fluorescent strip lights with diffusers are mounted on top of the wood lockers behind the millwork detail. "The fixtures are mounted forward toward the interior of the room, to avoid high brightness on the back surfaces," says Helms. "The lamp is protected with a diffuser, so if something gets tossed up there, like a gym bag, it won't break."

CHANDELIERS PLUS: (Below) Small and subtle downlights illuminate key areas in the dining room without distracting from the impression that the light is coming from the ornate chandeliers and table lamps.



ISLAND RETREAT:
(Below) A skylighted roof and ample windows and window walls provide abundant sunlight during the day. The lighting control system allows the interior lighting system to be adjusted appropriately.

Fluorescent lamps concealed behind a valance detail illuminate the vanity area in the women's furo.

DINING ROOM

In the members' dining room, the custom chandeliers have been designed by Hirsch/Bedner Associates. The additional architectural downlighting and accent lighting by PHA Lighting Design Inc. is intentionally sparing, and is carefully organized in the ceiling plane. The A-lamp downlights provide soft ambient light; focused light is provided by fixtures fitted with tungsten lamps.

"Mr. Takakura turned heaven and earth to make this place outstanding in

DETAILS

PROJECT: PALM HILLS GOLF CLUBHOUSE

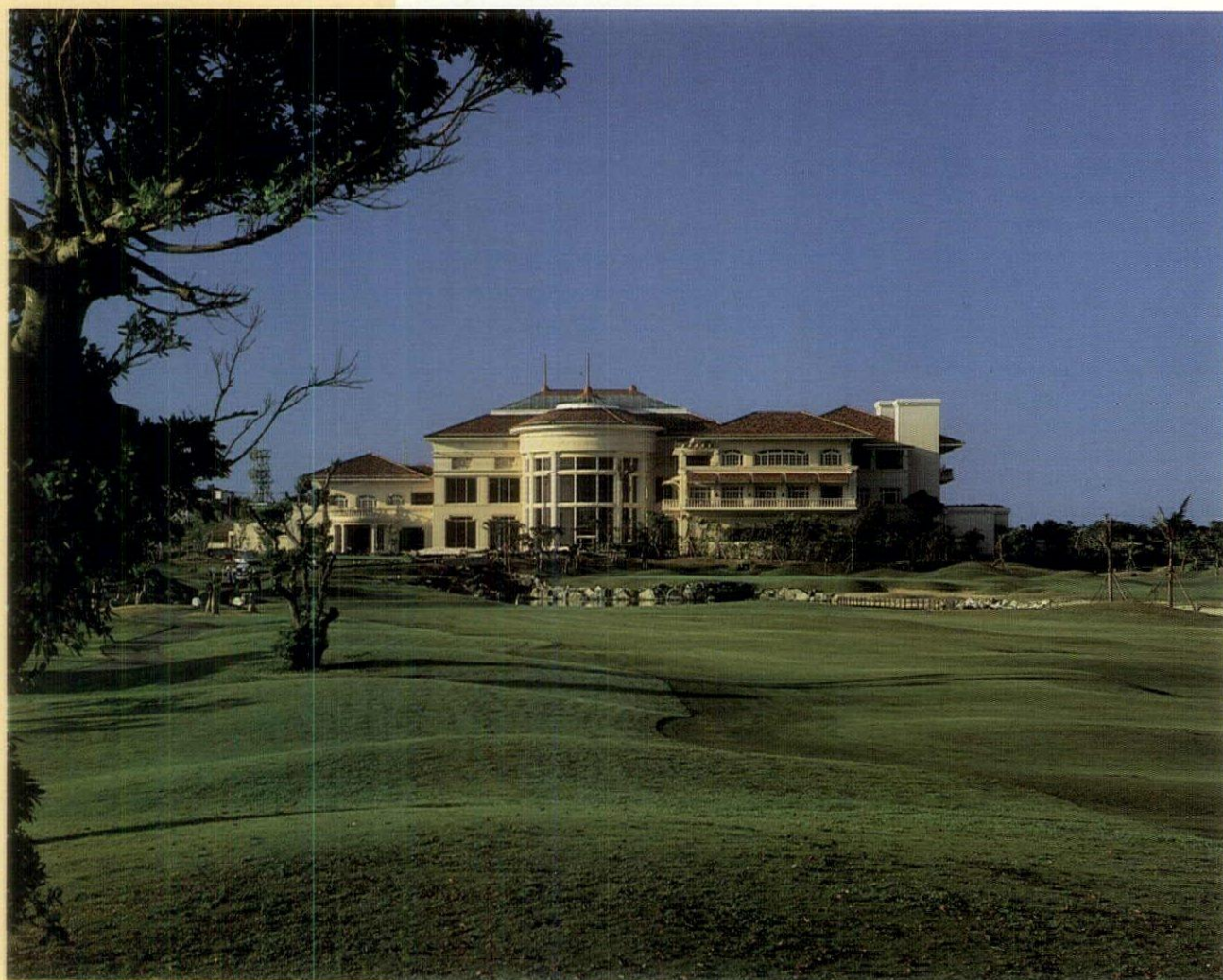
LOCATION: OKINAWA, JAPAN

OWNER: KOICHI TAKAKURA, president & CEO; JAN D. STENSLAND, director interior design; KIYOTO YONAMINE, manager, golf man. dept.; SOKEN URA, manager, golf develop. dept.; CARLOS AKAMINE, chief secretary of affairs dept., TAKAKURA CORPORATION

PLANNERS: GLENN KIMURA, project coordinator; and MICHELLE MASUDA, assistant; HELBER HASTERT & KIMURA, PLANNERS

ARCHITECT (US): JON PHARIS, associate architect; WIMBERLY ALLISON TONG & GOO (WATG)

ARCHITECT (JAPAN): EIJI UCHIDA, president;



every respect. The club was basically sold out before they even started construction," says Grinnell, who reports it was a challenge for Mr. Takakura to assemble the land for the several hundred acre golf course. "The island is not exactly sparsely populated," says Grinnell. "There are no remote areas, because the island isn't that big." Much of it is either under cultivation or inhabited.

BAU ARCHITECT & ASSOCIATES

LANDSCAPE ARCHITECT: ALAN CLARKE, president; and PETER IMRIK, landscape architect; TONG, CLARKE & MECHLER

COURSE ARCHITECT: THOMAS NOE, RONALD FREEM DESIGN GROUP, LTD.

LIGHTING DESIGNER: PAUL HELMS, and DOUG JANKOWSKI, PHA LIGHTING DESIGN INCORPORATED

LIGHTING LIAISONS: YUTAKA MURAI,

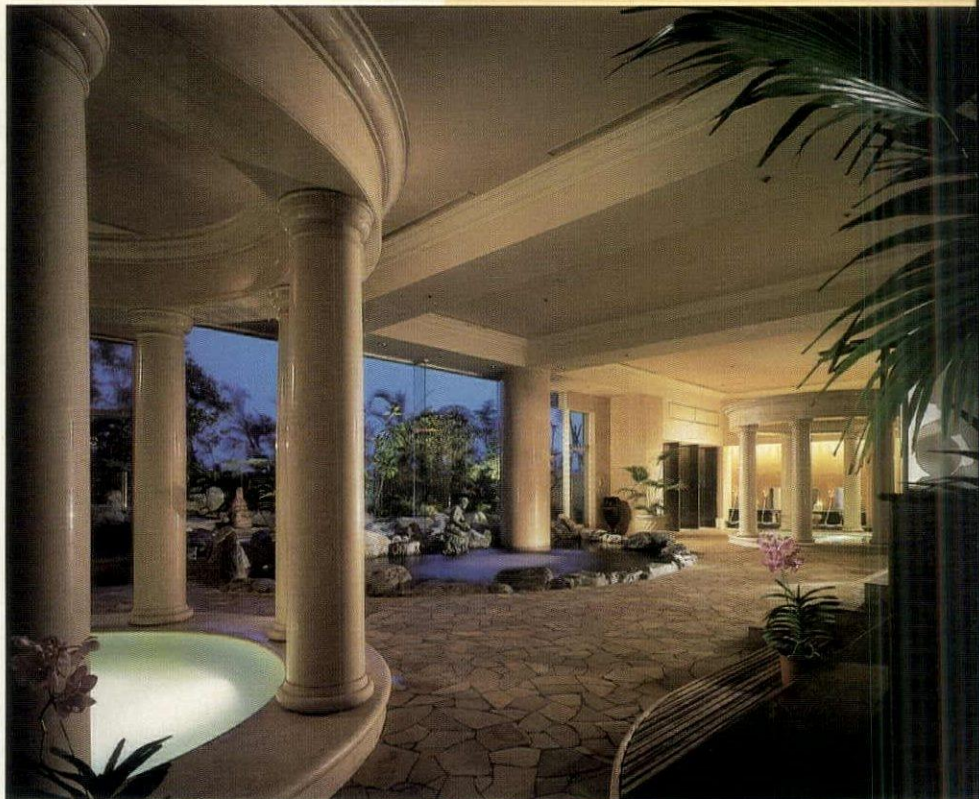
president ADVANCE TECHNOLOGY INC. in Tokyo, Japan, representing COLORTRAN, HYDREL and others; and PAUL SHERBO, vice president/international sales, COLORTRAN
ELECTRICAL CONSULTANTS: TADAKAYSU TAMAKI, engineer, SAKURAI SETSUBI SEKKI SYSTEM CO. LTD.

PHOTOGRAPHER: ROBERT MILLER

MILLWORK: CEDERQUIST

LIGHTING MANUFACTURERS:

COLORTRAN—1,000-watt T4 15-35 degree zoom ellipsoidal theatrical fixture; medium flood multi-purpose, 1,000-watt PAR 64 fixture; and lighting control system for club interior and courtyard; THORN LIGHTING—lamps; GTE SYLVANIA—lamps; HYDREL—direct burial 9100 Series 250-watt T4 quartz fixture; and ground mounted 150-watt PAR 38 fixture for interior uplighting and exterior landscape lighting; LIGHTOLIER—ellipsoidal reflector/reduced aperture fixtures for 250-watt T4 and 150-watt A lamps; low-voltage, adjustable 75-watt MR 16 fixtures in restaurant and other club interiors; NORBERT BELFER—incandescent strips with T10 lamps for interior cove lighting; ELA—custom pole-mounted globe fixtures in the courtyard



SIDE LIGHTS ON MULTI-CULTURAL DESIGN TEAMS

The design team included members from both sides of the Pacific: Helber Hastert & Kumura, Planners, WATG, architect, and Tong, Clarke & Mechler landscape architects based in Honolulu; BAU Architect & Associates architects, and electrical consultants Sakurai Setsubi Sekki Systems Co. Ltd. located in Naha City on Okinawa; the interior designer—Hirsch/Bedner and Associates, and PHA Lighting Design Inc. working from Santa Monica, CA; the course architects, Ronald Fream Design Group, Ltd. in Santa Rosa, CA; and the Takakura Corporation in Naha City, Okinawa.

There were considerations and adjustments that had to be made by this multi-cultural design team, that included, and went beyond the language barrier.

- *Language Barriers.* Since many professionals involved in the project did not speak both English and Japanese, translators were hired. The difficulty arose in that, says Paul Helms, "The design and construction vocabulary doesn't fully translate into Japanese. Much clarification is needed, and so explanations had to be offered not only on concepts, but regarding the specifics as well." Dur-

ing the project, Helms' office carried on almost daily communication with Japanese firms involved via lengthy faxes.

- *Business Methods.* The Japanese, according to Helms, view design and construction as one entity. "They are not handled by separate teams as they are in the U.S.," says Helms. Consequently, the contractor feels as much a participant in the design process as the architects.

- *Pacing.* "They don't like to come to a meeting at 10 a.m. and reach decisions by 11," says Grinnell of the Japanese. "The decisions would be made a couple of days later, away from you, and then they would come back and tell you what they've decided to do. So it's a slower process."

- *Importing Materials and Equipment.* The project used not only high quality materials and workmanship, but significant expense was involved importing materials. The stones—marbles, granites—came from Italy and Germany. The millwork—all the trims, moldings, doorcasings, counters—were manufactured in Southern California and shipped to Japan. "The Japanese are more likely to explore the worldwide marketplace and plug into it. We explored the local vendors as well and this added to the complexity," says Grinnell.

MEN'S FURO:
(Above) Individual showers, each with its own waterproof light fixture, line the perimeter of the space. Uplights are recessed into the architectural "ring" supported by the circular columns.

INSIDE THE WORKINGS OF THE ISO STANDARDS

The ISO 9000 Standards are comparable to the American National Standards Institute (ANSI)/American Society for Quality Control (ASQC) Q-90 Series in the United States, British Standard (BS) 5750 in the United Kingdom, the European Norm (EN) 29000 Series in the European Community and equivalent national standards adopted by other countries.

The ISO 9000 Series are international quality assurance standards developed by the Geneva-based International Organization for Standardization (ISO), which represents the national standards organizations of 90 countries. The actual basis of the ISO Standards are the standards of the British Standards Institution (BSI).

The ISO 9000 Series has five parts: ISO 9000 describes and clarifies quality concepts and provides guidelines for the selection and use of a series of international standards on quality systems. ISO 9004 examines each of the quality system elements in ISO 9000, helping manufacturers understand the entire operation in sufficient detail to select the appropriate elements in designing a quality system.

ISO 9001, 9002, and 9003 identify three distinct quality system models based on the functional and organizational capability required of a supplier for a product or service. ISO 9001 covers the broad spectrum of design, development, production, installation and servicing. ISO 9002 examines the supplier's capabilities in production and installation. ISO 9003 focuses on final inspection and testing.

UL'S ISO REGISTRATION PROGRAM

In the United States, Underwriters Laboratories Inc. is one of several organizations empowered to administer the ISO 9000 Registration Program. The UL Program assists clients in all phases of the registration process, from decisions about which standards should be applied, to the assessment of facilities selected by the manufacturer. Once the standards and sites are determined, UL's Quality and Reliability department makes an initial facility evaluation at each site.

When a facility meets the standard to which it is being assessed, it is granted a Certificate of Registration and the right to use the UL Registered Firm Mark in advertising and other printed matter. Under the provisions of Memoranda of Understanding, UL and other certification organizations, such as BSI, may coregister facilities without duplicating assessments. That means manufacturers with facilities registered to the ISO 9000 Series Standards may request dual or multiple registration.

To maintain its registration, a facility must undergo at least two surveillance visits annually and show ongoing conformance to the standards to which it is registered. This system of counter-checking conformance is similar to UL's other Follow-Up Services programs.

REASONS FOR REGISTERING

Access to world markets and market acceptance are facilitated by the recognition that products are manufactured in compliance with international quality assurance standards. Improvement or maintenance of a manufacturer's quality assurance system is reflected in the high quality of the manufacturer's products, creating a competitive advantage in any marketplace.

Lutron Electronics Co. in Coopersburg, PA, is one of the lighting manufacturing companies registered under the 9001 standards. Michael Pessina, manufacturing manager at Lutron, says the company did it, "for several reasons.

We saw it as something the international market may want down the road. The second reason is that it is a process for us to benchmark ourselves against and to develop continuous improvements. "The process is like taking an exam," says Pessina. "Preparing for the exam takes you up to the next level of understanding." The registration process took 12-18 months.

As the ISO 9000 Series Standards gradually become the international benchmark for quality assurance systems, facility registration to those standards is increasingly important to manufacturers as a means of gaining access to, and national acceptance in, Europe and other markets around the world. The ISO 9000 Series Standards are well on their way to being broadly adopted by the European Community as a requirement for many industries doing business in Europe after 1992.

ISO 9000

An organization's quality system is, to a large extent, dependent upon the organization's objectives, practices, and its products or services. The purposes of ISO 9000 are to:

- clarify the differences and interrelationships between the primary quality concepts, and
- provide guidelines for the selection and use of a series of international quality system standards that can be used for both internal and external quality management purposes.

A firm should seek to meet three objectives concerning quality:

- achieve and sustain the quality of the product or service so that it can continually meet the purchaser's stated or implied needs;
- provide confidence to its own management that the intended quality is being achieved and sustained, and;
- provide confidence to the purchaser that the intended quality is, or will be, achieved in the delivered product or service. This provision may involve agreed demonstration requirements.

ISO 9001

This Standard covers firms whose quality systems can be used for external quality assurance purposes. ISO 9001 is used when conformance to specified requirements is to be assured



by the supplier during several stages. These stages could include design/development, production, installation and servicing.

This Standard sets requirements for a quality system when a supplier is required to demonstrate the capability to design and supply a product. The Standard's requirements are mainly aimed at preventing non-conformity at all stages, from design through servicing. ISO 9001 applies to situations in which:

- the supplier is specifically involved in the design effort, and the product requirements either are stated primarily in performance terms or the requirements need to be established, or;
- customer confidence in product conformance can be established by adequate demonstration of a supplier's capabilities in design, development, production, installation and servicing.

ISO 9002

Quality systems covered by this Standard have been evaluated for conformance to specified requirements which must be assured by the supplier during production and installation. ISO 9002 sets quality system requirements for use when a supplier is required to demonstrate capability to control the processes that determine the acceptability of the products supplied.

The purpose of these requirements is to prevent and detect any non-conformity during production and installation, and to implement safeguards to prevent recurrences in this area. This Standard applies to situations in which:

- product requirements are stated in terms of an established design or specification, and;
- customer confidence in product conformance can be established by adequate demonstration of a supplier's production and installation capabilities.

ISO 9003

This Standard applies to firms evaluated for conformance to specific requirements that are to be assured by the supplier solely at final inspection and test. The Standard contains quality system requirements for use when a supplier is required to demonstrate capability to detect and control the disposition of any product non-conformity during final inspection and test.

ISO 9003 applies to situations in which

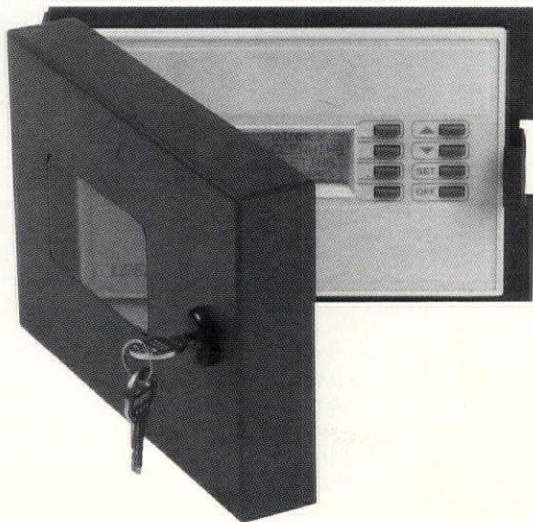
product conformance to the specified requirements can be shown and where, on completion, certain supplier inspection and testing capabilities of the product can be satisfactorily demonstrated.

Although ISO 9000 is generally recognized internationally as a minimum benchmark for quality, it is important to note that ISO 9000 registration by any registrar does not as yet guarantee product acceptance in the European community or elsewhere.

The majority of the information in this article was provided by Underwriters Laboratories Inc. To obtain application materials for UL's ISO 9000 Registration Program, or additional information about it and other UL quality assurance programs, contact the Quality and Reliability department and ask for the ISO 9000 Coordinator at one of UL's four laboratories in the United States: Underwriters Laboratories Inc., 333 Plingsten Road, Northbrook IL 60062, Tel. 708-272-8800; Underwriters Laboratories Inc., 1655 Scott Boulevard, Santa Clara, CA 95050, Tel. 408-985-2400; Underwriters Laboratories Inc., 1285 Walt Whitman Road, Melville, NY 11747, Tel. 516-271-6200; Underwriters Laboratories Inc., 12 Laboratory Drive, Research Triangle Park, NC 27709, Tel. 919-549-1400.

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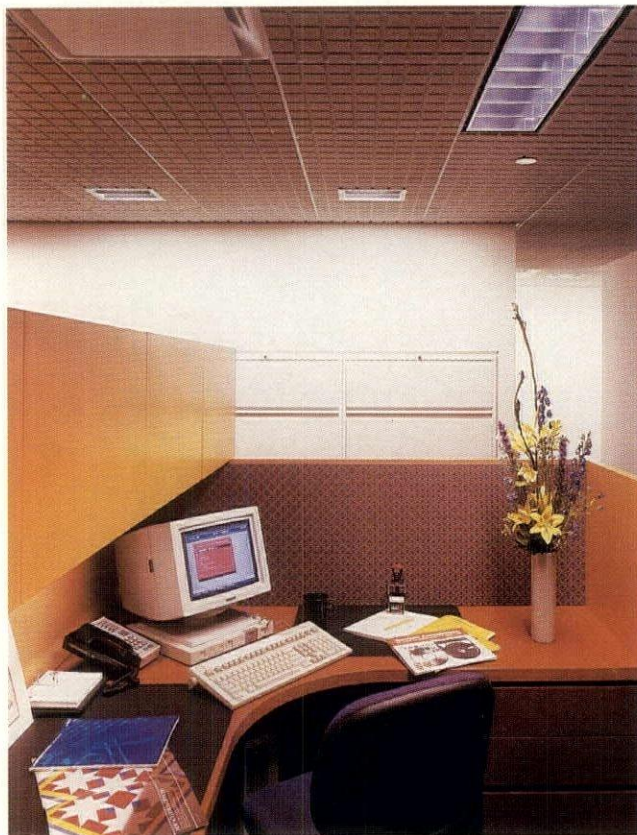
MacArthur's Makeover

A DETAILED CASE STUDY OF HOW THE MACARTHUR FOUNDATION'S LIGHTING SYSTEM HAS BEEN REDESIGNED TO PROVIDE REDUCED ENERGY USAGE AND IMPROVED LIGHT QUALITY

BY GARY R. STEFFY, IES, IALD

The MacArthur Foundation is one of the six largest private foundations in the world. Founded in 1978, the John D. and Catherine T. MacArthur Foundation supports programs in mental health, peace and international cooperation, environment, the arts, and population. The Foundation owns and is headquartered in Chicago's first million-dollar building (completed in 1894), The Marquette Building, designed by Holabird and Roche.

With its aggressive support of work on the environment, The Foundation sought to exemplify prudent use of resources in its own facilities and to take the Environmental Protection Agency's (EPA's) Green Lights Program challenge. In early 1991, plans were underway for the Foundation to reconfigure existing floors to maximize space use and productivity. At the same time, a lighting review and redesign was commissioned.



(Above) Low-brightness of the one-lamp, 1 by 4 parabolic luminaire is evident by directly viewing the luminaire and the screen. Horizontal illuminances in the workstation are 30 to 35 footcandles without under-binder-bin task lighting energized, and 45 footcandles with the task light on the "low" setting. Illuminances on the wall (vertically) range from 8 to 35 footcandles, providing a rather uniform wash and not too harsh compared to the VDT-screen and paper tasks.

EXISTING CONDITIONS

Pre-retrofit lighting conditions at The MacArthur Foundation accounted for a connected load of nearly 3.1 w/sf (this includes all lighting—ambient, task, and fill lighting). And the existing systems did not meet guidelines for electronic offices and resulted in delamping, relamping, disconnecting lamps, and adding incandescent task lights. The pre-retrofit lighting was not earth/environment-friendly nor particularly user-friendly.

Whether new construction, renovation, or retrofit, an appreciation for the existing conditions under which users work is paramount and should at least involve a review of the existing facility. For The MacArthur Foundation, a lighting survey was undertaken. More encompassing than an energy audit (which essentially counts connected load watts, control points, control methods, and illuminances), a lighting survey should cover the following issues:

- daylight availability/windows, their locations/orientations, treatment, position of treatment
- sky conditions
- ambient lighting conditions, including luminaires and their optics, lamps, ballasts, controls, and hours of operation
- task lighting conditions
- accent/architectural lighting conditions
- visual tasks, including reading, writing, facial recognition, video displays, etc.
- workstation conditions, including configuration, colors, reflectances
- illuminances, including primary and secondary worksurface horizontal, and vertical (for example, VDT screen)
- luminances, including worksurfaces, tasks, VDTs, windows, ceilings, walls, luminaires, partitions, partitions under binder bins, binder bins, etc.
- controls, including methods (manual, automatic), locations (convenience), and discretization (zoning)
- power (watts per square foot)

A lighting survey form, when used in conjunction with architectural reflected ceiling plans and electrical plans, should provide the information outlined above. From this survey information, a reasonable estimate can be made of existing lighting loads. Additionally, a summary of existing lighting conditions can be developed as reference base for proceeding with lighting criteria, resolution options and ultimately lighting recommendations.

RECOMMENDED LIGHTING CRITERIA

A variety of references, along with experience, are used to establish appropriate lighting criteria. Specifically, documents in the "Bibliography" that follows served as information and criteria resources. The following recommendations were used as design targets on The MacArthur Foundation Headquarters.

- *Illuminances.* Ambient or general lighting levels should be about 30 footcandles average maintained at worksurface height. Lighting levels for paperwork (the illuminance at the work area) should be no higher than 75 footcandles average maintained at worksurface height, and preferably should be about 50 footcandles to minimize contrast between the paper and VDT tasks. If dark-background VDT's are used, then consider the low-end of the 50-to-75 footcandle range for paperwork light levels. If light-background VDT's are used, then the high-end of the 50-to-75 footcandle range is acceptable.

In order to maintain visual consistency and avoid transient adaptation effects throughout a space or series of spaces, it is suggested that minimum light levels be no less than 15 footcandles average maintained at worksurface height. Additionally, in order to minimize washout of VDT screen images, vertical illuminances (light levels) on screens should be less than 20 footcandles.

- *Luminances.* Luminances (measured brightnesses) and luminance ratios (contrasts) are criti-

cal to developing appropriately lighted tasks and environments for people doing VDT-based work. Maximum initial luminance of any surface in the environment should be less than 250 footLamberts and preferably 150 footLamberts. This can be controlled by following both ambient illuminance level and surface reflectance value criteria targets. Additionally, care must be taken in selecting luminaires which do not exceed the 250 footLambert limit; and in controlling daylight.

- *Luminance Ratios.* Zero contrast (luminance ratios of 1:1, that is, one surface has the same measured brightness as another) in a space would provide the best viewing conditions for VDT's. Admittedly, such a space would be quite bland in appearance. Therefore, recognizing the need for some visual variety, the luminance ratios should be 10:1 or less between two different surfaces or two different areas of the same surface (e.g., one ceiling tile to another). In fact, experience shows that luminance ratios of 5:1 or less from area-to-area or surface-to-surface particularly with respect to ceilings,

(Below) Lighter-than-normal wall finishes were key to providing an environment which appears appropriately lighted, while minimizing energy consumption. Also, where circulation space occurs, compact fluorescent, rapid-start, electronically-ballasted 1 by 1 parabolic luminaires are used for better visual cueing to circulation, better scale, and improved efficiency (as compared to compact fluorescent downlights using instant-start lamps on electromagnetic ballasts). Side offices with open doors exhibit daylighting and electric lighting contribution. No fill light is used.)





(Above) A photo taken at the same angle as seated eye-height illustrates the high clarity/visibility of the VDT screen under The Foundation's low-energy lighting system. The use of color and fabric detail are enhanced by the triphosphor lamps and are an important way to avoid the "vanilla" look of luminance-balanced VDT environments.

walls, open-plan partitions, and windows are much more satisfactory in reducing unwanted glare and reflections in VDT screens. Since the brightest area should be no more than five times the brightness of the dimmest area, light level uniformity is important, as is range in value of surface finishes.

- *Surface Reflectances.* In order to attain the luminance and luminance ratio limits previously discussed, surface reflectances should be similar in value from one surface to another. Wild variations in surface reflectance over relatively large areas should be avoided (e.g., a black workstation

partition or binder bin and a white worksurface). All surfaces need to be matte to avoid glary reflections. Ceiling reflectance should be about 70 percent. Wall reflectances should be in the range of 30 percent to 50 percent. Floor reflectances should be near 20 percent. Worksurface reflectances should be between 20 percent and 40 percent. Where extreme color or value contrast is desired architecturally, then these surfaces or areas should be highlighted or accented in order to balance these darker-surface luminances with those of nearby, non-highlighted, lighter-surface luminances.

- *Luminaires.* Initial luminances of direct luminaires should be limited to less than 250, 100, and 50 footLamberts at cutoff angles of 55, 65, and 75 degrees, respectively. This will minimize reflected glare images from VDT screens.

Desk-mounted or binder-bin mounted task lights need to be used specifically to light the paper document area and must not be glary. The freestanding desk-mounted lights should be easily adjustable (tilted, moved) by the worker, and yet must be shielded so as not to influence nearby workers. Consideration should be given to multi-level switched or dimmable task lighting under binder bins.

Luminaire ballasts offer a significant opportunity for energy savings and for improving the viewing conditions of VDT's by workers. Electronic ballasts are noiseless and flickerless. Also, electronic ballasts are about 20 percent more efficient than standard energy-saving electromagnetic ballasts.

- *Power Budget.* The ASHRAE/IES 90.1-1989 Standard indicates that for typical open office areas power budgets should not exceed 1.87 watts per square foot (w/sf). Interpretation of the California Non-Residential Standard indicates that the power budget should not exceed 1.5 w/sf for typical office areas (aggregate, including open and private offices). Experience indicates that power budgets as low as 1.0 w/sf are achievable in open offices with low-to-moderate ceiling heights.

- *Psychological Aspects.* Some wall lighting or accent lighting is generally recommended to avoid a gloomy, hazy, bland appearance. Studies done in the mid-'70s at Penn State indicate that such wall lighting can also help to improve impressions of spaciousness. Accent lighting of artwork can help provide distinct distant visual focus points for workers performing extensive close reading or writing work (eye muscle relax-

ation is enhanced if a distant focus is available for viewing from time-to-time). Additionally, wall and accent lighting help to promote a less harsh, institutional setting.

The color of light also seems to influence space and color perceptions. The newer, triphosphor fluorescent lamps offer a broader spectral distribution of light, thereby rendering skin tones, clothing colors and architectural finishes in a "truer" or "more natural" fashion. Experience indicates that perceived truer colors result in an impression of increased brightness. In spaces where warm-toned lamps are used, a softer, less tense and less formal perception is prevalent. Lamps with high color rendering and warm-toned color should be considered.

• *Conclusions.* The criteria were used as a benchmark in the analysis of the lighting survey information and in the next phase of the lighting study for The MacArthur Foundation: problem resolution. Based on the review of existing lighting conditions and the established criteria, the following conclusions were made regarding The MacArthur Foundation Headquarters lighting:

- light levels at most tasks were acceptable (with all task lights on)
- light levels on VDT screens in private offices were too high
- light levels on VDT screens in open offices were acceptable, but this had been achieved by delamping overhead luminaires or switching off overhead luminaires to prevent washout and glare
- luminances (brightnesses) were too low, particularly on surrounding vertical surfaces
- luminance ratios, particularly where windows were present, were too high
- luminaires were inefficient and concentrated too much light downward
- power budgets were high given the resulting lighting conditions, and could be significantly improved.

In short, while the premise for the study was energy reduction, it appeared that energy consumption was not the only lighting criteria to be improved. A double-dip in energy reduction was possible—reduce the connected load and increase the chances of improved performance with better quality lighting.

LIGHTING ALTERNATIVES & RECOMMENDATIONS

The "problem resolution" effort included the review of a variety of hardware and design combinations. Before narrowing the design efforts to five schemes, available lamp, ballast, luminaire and control techniques were identified and reviewed with The Foundation. To assure that all viable and reasonable energy efficient technologies were considered, James Benya of Luminae Souter Inc., San Francisco, was retained to review the analysis. This "second opinion" reinforced the proposed premise of considering both user needs and earth-environment issues.

Five basic alternative lighting schemes were

reviewed, falling in the following categories:

- four completely new schemes using state-of-the-art improved color/efficiency lamps, ballasts, luminaires and control devices
- one retrofit scheme, retrofitting the existing luminaires with efficient lamps, ballasts and reflectors/louvers

These schemes were designed and evaluated on their compliance with the lighting criteria. With relatively low ceilings (8 feet up to a maximum of 8 feet, 6 inches), and due to limited wall area and furniture-mounting options, direct lighting systems were seen as most promising. Nevertheless, one pendant-mounted direct/indirect lighting system was considered to better know how well such a system might fare under such low ceiling conditions.

There are many potential high-quality, low-energy direct lighting systems available. Limiting alternatives is difficult, but after some experience, it became easier to dismiss those systems which would likely fail by a wide margin in at least one of the criteria categories. For example, small-cell, paracube louver luminaires are typically relatively inefficient (not readily meeting efficiency requirements). Using 40-watt, compact fluorescent lamps in large-cell parabolic louvered luminaires generally results in very high luminaire luminances (exceeding criteria). Using large-area luminaires (e.g., 2-foot by 4-foot), typically yields too much light—both downward intensity, so that vertical illuminances are too high on VDT screens which happen to fall directly underneath, and high-angle luminance so that luminance limits of 250 foot-Lamberts cannot be honored.

Five basic fluorescent luminaire types were reviewed: parabolic 2 by 2, parabolic 1 by 4, parabolic 2 by 4 retrofit (using existing layout/luminaire chassis), parabolic 1 by 1, and 8-inch wide, 3-inch deep direct/indirect pendant with bottom suspended 7 feet, 3 inches AFF.

A variety of lamp and ballast combinations were reviewed within each of these basic luminaire types, including T12, T8 and compact triphosphor fluorescent lamps. Additionally, there are various luminaire reflector finishes and configurations available which were also reviewed. This resulted in a review of 22 separate lighting systems for each general space type: open office, large private, and small private office.

Each system was analyzed on its ability to meet the lighting criteria, while minimizing energy use. The more promising systems were reviewed in detail, with complete layouts and cost analyses. In each of the five luminaire types, the more promising systems were:

- parabolic 2 by 2 with three-F17T8 triphosphor lamps and electronic ballasts
- parabolic 1 by 4 with one-F32T8 triphosphor lamp and electronic ballasts (one ballast operating multiple lamps)
- parabolic 2 by 4 retrofit with two-F32T8 triphosphor lamps and electronic ballasts
- parabolic 1 by 1 with two F18BX triphosphor



compact lamps and electronic ballasts

- 8-inch wide, 3-inch deep direct/indirect pendant with bottom suspended 7-foot, 3-inch AFF; with one-F 32T8 triphosphor lamp and electronic ballasts (one ballast operating multiple lamps).

FINDINGS

OPEN OFFICE LIGHTING

All of the systems which were reviewed offered annual energy reductions of at least 29 percent from existing conditions. Only one system—the parabolic 1 by 4—met all of the other lighting criteria and offered an annual energy reduction of at least 46 percent (depending on the specific luminaire/lamp/ballast configuration) from the existing conditions.

Specifically, the following combination of lighting equipment meets the previously established criteria for The MacArthur Foundation Headquarters:

A highly-engineered, low-brightness, VDT-sensitive parabolic 1 by 4 system with the triphosphor T8 fluorescent lamp along with instant-start electronic ballasts (one ballast per two luminaires) for the ambient lighting; a rather generic, low-brightness parabolic 1 by 1 system with the triphosphor compact lamp and instant-start electronic ballasts (one ballast per one luminaire)

for architectural fill lighting in circulation areas; an 8-inch by 12-inch high-efficiency parabolic-reflector luminaire for architectural fill

lighting/task lighting at file banks and circulation areas (where these luminaires double as art accents) all combined yield a connected load of 0.74 watts per square foot for ambient and architectural fill lighting. A low-brightness, three-levels-of-light luminaire mounted under binder bins provides task lighting for paperwork (for a total connected load of 1.18 w/sf with task lighting included). This system is both earth/environment- and user-friendly. The triphosphor lamp provides excellent color of light to render surface finishes and skin tones “truer.”

The parabolic 1 by 4 luminaires, each equipped with one lamp, provide excellent glare control when compared to their multi-lamp counterparts. Recognize that all of the other ambient lighting systems met most criteria, but no other ambient lighting systems met the luminaire luminance criteria. Luminance is directly related to glare and VDT-screen reflections. The parabolic 1 by 4, one-lamp luminaire effectively meets this important criteria.

The electronic ballasts yield significant energy savings while eliminating annoying ballast hum and flicker.

SMALL PRIVATE OFFICE LIGHTING

Again, the parabolic 1 by 4 system meets nearly all criteria. Only maximum vertical illuminance is exceeded and this only occurs in one location/orientation. If the VDT is slightly reoriented away from this orientation, providing it is ever positioned in such a location/orientation, this criteria limit can be avoided. The parabolic 1 by 4 system offers an annual energy reduction of at least 65 percent (at least 81 percent with daylight and occupant sensors) from the existing conditions. This parabolic luminaire uses the same lamping and ballasting as in the open office version, yielding a connected load of 1.0 w/sf (for a total connected load of 1.28 w/sf including task lighting, where used), with excellent, “truer” color, excellent glare control, no hum and no flicker.

CONFERENCE ROOM LIGHTING

For both demonstrative and visual variety reasons, conference room ceilings were raised and materials changed from the open and closed office ceilings. A variation in lighting was also deemed desirable—to demonstrate other efficient lighting techniques and to introduce visual variety. On the other hand, extreme variation could be detrimental, leading to a “grass-is-greener” syndrome. Therefore, luminance issues were still deemed important.

A direct/indirect lighting approach is quite efficient, yet differentiates the conference room ceiling height and the conference setting from the offices. Wallwashing was achieved with a T8/electronic-ballast-strip-light-in-a-slot approach. Again, comparatively, energy reductions of 61 percent were achieved in conference rooms (at least 78 percent with daylight and occupant sensors).

(Above) While luminances are well controlled, the higher ceiling luminance enhances the greater ceiling height and visual variation from the offices. Again, saturated colors are complemented by the triphosphor fluorescent lamps.

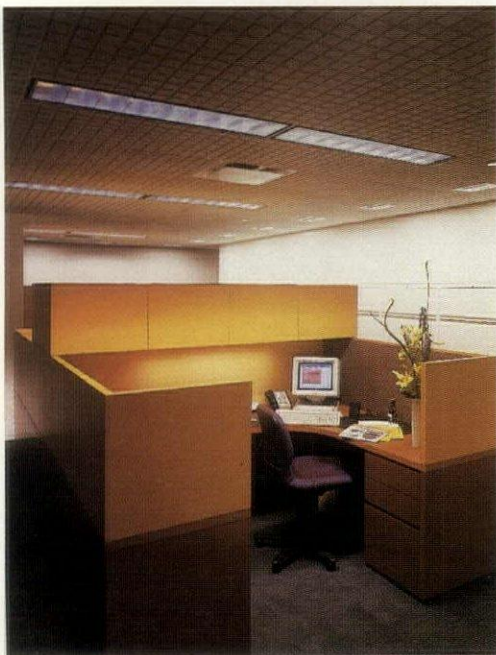
Using the daylight sensor/dimmable ballast has the added feature of providing full-range dimming in the conference room. As with the open offices,

(Below) The new lighting system has a total raw connected load of 1.2 w/sf, including all task, ambient, fill and art lighting. The benefits to the environment while, at the same time, providing a pleasing, comfortable work atmosphere exemplifies the intent of EPA's Green Lights Program.

Figure 5 illustrates the effectiveness of the triphosphor lamp's color rendering properties (all photos exhibit no fill light; with minimal lens gel for an "as seen by human eye" appearance).

The lighting criteria were used to develop a new lighting system. Lighter-than-normal finishes were used to comply with criteria. Colorful finishes in conjunction with high color rendering lamps provide visual interest without harsh contrasts.

The new lighting system has an aggregate total "raw" connected lighting load of 1.2 watts per square foot, including all task, ambient, fill and art lighting. In other words, over just 34,000 square feet of retrofitted space, The Foundation will reduce carbon dioxide emissions by 273,000 pounds a year; and will save 29 tons of coal a year, while simultaneously improving the office environment. This exemplifies the very intent of EPA's Green Lights Program.



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DETAILS

PROJECT: THE MACARTHUR FOUNDATION HEADQUARTERS

LOCATION: CHICAGO, IL

OWNER: THE JOHN D. AND CATHERINE T. MACARTHUR FOUNDATION

INTERIOR ARCHITECT: POWELL/KLEINSCHMIDT

ELECTRICAL ENGINEER: MCGUIRE ENGINEERS

LIGHTING DESIGNER: GARY STEFFY LIGHTING DESIGN INC.

PHOTOGRAPHER: ROBERT J. EOVALDI, courtesy of LITHONIA LIGHTING

LIGHTING MANUFACTURERS: GE LIGHTING:

triphosphor T8 and double compact fluorescent lamps; MAGNETEK TRIAD, ROBERTSON, and ADVANCE TRANSFORMER—ballasts; LITHONIA LIGHTING—parabolic fixtures; COLUMBIA—wallwash system; ALKCO—binder bin task system; and NEORAY—conference room pendants

Mr. Steffy is president of Gary Steffy Lighting Design Inc., Ann Arbor, MI, and a member of the ARCHITECTURAL LIGHTING Editorial Advisory Board.



SKYLINE BEAUTY:
The pyramidal roof structure is connected visually to the rest of the building by shafts of light shooting up the reentrant corners.

Landmark Centre

PROCESSION OF LIGHT: (Right) The torchieres are illuminated with uplight from garden fixtures concealed in the granite bases.



REPEATED ROTATED SQUARE AND PYRAMIDAL MOTIFS VISUALLY INTEGRATE THE LIGHTING AND ARCHITECTURE OF THIS DOWNTOWN TAMPA, FL OFFICE TOWER

BY WANDA JANKOWSKI
EDITOR-IN-CHIEF

Commuters driving along Tampa's expressways won't wonder anymore where in the darkness the downtown section of the city is. Due to the exterior lighting of the Landmark Centre office building, the stunning architecture so evident in the skyline by day now has an enhancing nighttime image that makes it a landmark in its own special way.

The truly collaborative efforts of architects Cooper Carry & Associates, Inc., lighting designers Fisher Marantz Renfro Stone, and custom manufacturer Cornelius Architectural Products have developed a lighting scheme that reinforces the impact of the building's architecture.

To understand the rationale of the lighting, it is appropriate to examine first the architectural concept. The building, which is situated on a 200 foot by 200 foot city block, is the first in Tampa to have another office tower next to it on an adjacent block.

"The structure is a contemporary expression of

classical building elements: a base, containing the ground floor lobby and parking levels; a middle, containing the office floors; and a top, developed with two penthouse office floors and the ziggurat roof," says Steven M. Berberich, AIA, Cooper Carry & Associates, Inc. "As a good citizen to the city, the base as experienced at the pedestrian level, and the top as viewed from a distance, are oriented to respect and reinforce the urban planning and street grid. Office floors are rotated 45 degrees to provide vistas from within of Tampa Bay and the downtown past the adjacent high-rise building."

The materials used in the building suit its location adjacent to Tampa Bay. The light-colored stones and blue glass transform it into a representation of a modern-day lighthouse.

"By day or by night the building, like a lighthouse, serves as a reference point on the skyline. Before the building was completed, night travelers

on the interstate system were unaware of the Tampa downtown. With the addition of Landmark Centre, there is no missing the downtown, as the building glows and reflects off adjacent glass office towers, as visible from many distant communities," says Berberich.

The ziggurat roof structure is illuminated with

leading to the entrance between two sunken, landscaped public park areas.

"The torchieres are a good example of how light and architecture can work together," says Renfro. The aluminum torchieres are distinguished by pyramidal acrylic and aluminum tops which mimic the building's roof structure. The



fluorescents positioned all around the base of each of the steps. The building owner has the option of fitting the fluorescent tubes with filters to mark holidays and special occasions.

The circles of light that line the perimeter of the top of each rotated section of the building are "jelly jars" with aluminum caps that prevent direct view of the filament. What the viewer actually sees is the light reflecting off the caps back onto the precast concrete walls.

"Many buildings are illuminated as a market-driven after-thought," says Berberich. "The success of Landmark Centre began as a collaborative effort during schematic design. Often a building will have only the roof illuminated, visually creating a 'floating' roof. We intentionally developed small roof areas at lower levels of the building to provide locations in which to place vertical accents of light at the reentrant corners. This lighting reinforces the design which is evident by day. It also visually ties the building elements together, from the top of the building to the ground."

TOWERING TORCHIERES

"In an urban context a building has two primary views: the pedestrian view, and the distant view as part of the skyline," says Richard Renfro, Fisher Marantz Renfro Stone Lighting Design. The lighting elements viewed by pedestrians at the front entrance are totally integrated with the distant, skyline image of the building. A procession of eight torchieres (four on each side) flank the path

torchieres are uplit by metal halide garden fixtures concealed in the square, 2 1/2 foot-high granite bases. The uplight not only allows the top of the torchiere to appear self-illuminating, but it casts a glow of spill light onto pathway and park areas.

Renfro says, "The imagery of the pathway between the garden areas as a bridge leading to the building struck me, and led to the concept of the torchieres as a procession of markers across the bridge that bring you to the front door."

"There were special requirements to be considered in creating the torchieres," explains Mark Rothert, Cornelius Architectural Products. "We had the choice of either cutting the vertical legs from solid plate or fabricating them from tube. We chose to fabricate the parts from 1 1/2 by 2 inch rectangular tubing.

"The three vertical pieces in each leg of the fixture are tied together with square metal sections that depict a large square formed by a pattern of four smaller ones. We couldn't have any plastic adhesives or bodyfiller showing where the pieces had been joined. Everything had to be welded and ground flush because people could walk right up to these and touch them," say Rothert.

The four vertical legs culminate in a pyramid at the top underscored by three levels of acrylic that appear to be panels intersecting the vertical legs. Actually the 1-inch thick, sandblasted acrylic has been cut into four L-shaped pieces that have been set into an aluminum frame to hold them in place.

Cornelius Architectural Products was already

LOBBY SCNCES:
(Above left) The pyramid motif is repeated in the caps and bases of the custom designed lobby sconces.

MAIN ELEVATOR BANKS:
(Above right) The stepped ceiling and etched glass pendants continue the pyramid and rotated square themes embodied in the building's architecture.

involved in the project manufacturing ornate railings, signage, building directories, and other architectural elements. Renfro points out, "Usually, if a project requires specialized custom fixture work, this can limit the field of who can do the work quickly. The torchieres didn't require special internal wiring. The idea here is that the custom lighting fixtures can be part of the architectural metal package and that can make for more competitive bidding."

At the same time, the city of Tampa had put into effect an ordinance that requires a percentage of the building to be dedicated to art. "Although the Landmark Centre project was begun before that ordinance took effect, we felt we wanted to contribute to the spirit of it and these torchieres do that, because they are artful sculptural elements," says Berberich.

LOBBY & ELEVATOR BANKS

The pyramidal theme is continued in four column-mounted interior lobby sconces. The custom fixtures, mounted at a height of about 10 feet, house 40-watt A-15 lamps. The bottom of each sconce is fitted with an inverted pyramid held in place with pyramid-shaped bolts. "We had to build the up-turned pyramid with layers of tubing," says Rothert. "Code requirements dictated that the inspectors had to be able to field verify the wiring connections, so one of the challenges we faced was to build the fixture and be able to get into it after it was installed."

The marble-clad lobby is decorated with variations on the rotated square motif. To further illuminate the space, ceiling recessed downlights and wallwashers with Q 250-watt lamps have been installed, but with a twist.

"Typically in a high-ceilinged lobby, downlights cast light on the floor and leave the ceiling in shadow or darkness, detracting from the sense of the space," says Berberich. For Landmark Centre's arcade, Richard Renfro designed small, square plates with circular holes in them that are suspended about four inches below the ceiling. Some of the light from the ceiling-recessed downlights is caught by the plates and bounced back up to illuminate the ceiling plane. At the same time, the bulk of the light is cast through the holes to illuminate the ground plane. A cavern feeling is avoided, and a sense of the true volume of the space is revealed.

In the elevator bank of the main lobby, four custom upright pendant fixtures are suspended about 2 feet, 6 inches below the stepped ceiling. Sandblasted into the glass diffuser is the squares-within-a-square pattern used throughout the building.

The tenant elevator banks carry a variation on the rotating squares theme, with a series of glass and polished stainless steel fixtures mounted slightly below the ceiling coffers that surround them.

This project could not have been successful without painstaking attention to detail by all members of the design team, such as the sharpness of the metal edges on fixture pyramids, the accurately sandblasted square patterns in the glass, welding and blemish-free painting of the torchieres, and the seamless integration of concepts among the architecture, the lighting scheme and the interior materials used.

Rothert notes some behind-the-scene details in the fabrication and installation of the lighting fixtures. "Cornelius Architectural Products is a full-service company. We not only manufacture, but deliver and install, so we design our processes with all those aspects considered. For example, we had to ship the torchieres from our facility in Pittsburgh, PA, to Tampa, which is some distance, by truck in an economical way. We fabricated bracketry installed in the truck to hold the torchiere elements.

"Another example involves painting the torchiere's vertical members. A lot of sharp edges had to be covered because of the intricate patterns. One of our craftsmen came up with a device that operated like a spit and turned the torchiere legs until they were completely painted," says Rothert.

Perhaps other office towers, through envy of Landmark Centre's striking nighttime image, may opt to design nightlighting schemes of their own. But for now, Landmark Centre remains the one and only high-lighthouse in Tampa.

DETAILS

PROJECT: LANDMARK CENTRE

LOCATION: TAMPA, FL

DEVELOPER: THE LANDMARKS GROUP, ATLANTA, GA: BART ABSTEIN, senior vice president of development, and GARY MINOR, project manager

ARCHITECT: COOPER CAREY ARCHITECTS: KEVIN CANTLEY, design director, and STEVEN M. BERBERICH, project architect

LIGHTING DESIGNER: FISHER MARANTZ RENFRO STONE
LIGHTING DESIGN: RICHARD RENFRO, design principal and MELANIE FREUNDLICH, project manager

PHOTOGRAPHER: ALAN MCGEE

LIGHTING MANUFACTURER: CORNELIUS ARCHITECTURAL PRODUCTS, MARK ROTHERT, project manager

TENANT ELEVATOR BANKS:
(Below) Pyramid shaped caps and bolts keep the stainless and sandblasted glass panels in place.



DURABLE LANDSCAPE FIXTURE MATERIALS

Today's technology has enabled materials to be created for use in landscape fixtures that not only allow for attractive designs, but embody qualities of durability and weather-resistance. Two products are featured here that use two different kinds of materials: ceramic and polycarbonate resin.

NATURAL CERAMIC

"Ceramic is the material of the future," according to Hiroshi Kira, principal of Lumiere Design & Manufacturing, Inc., Westlake Village CA. Lumiere's Pebble fixture, which has the appearance of a decorative garden stone, is made with advanced ceramic materials. The base of the ceramic is silica—sand—one of earth's natural elements available in abundance.

Because ceramic is an inert material, it is unaffected by heat, cold or chemicals. It is an insulator, as well as a conductor. Mixed with other materials, it becomes particularly durable. Ceramic has been used as an insulating material in electrical equipment for decades. Ceramic is so strong it has been used in making automobile cylinders, socket materials, gears, and even space shuttle parts. It can be machined, molded, and colored. Lumiere has taken the cutting edge technology that led to the development of ceramic engines in the automotive industry and applied it to the lighting fixture industry.

The Pebble's non-corrosive ceramic finish is environmentally stable and resists the damaging effects of weather caused by ultraviolet rays, salt spray and rain.

The fixture is available in six finishes: textured gray, textured rust, black, white, verde, and cobalt blue. The permanent coloration is integral through the fixture material. Custom finishes are also available.

The 12-volt system fixtures use MR-16 halogen lamps up to 50 watts, and beam patterns from 9 to 50 degrees. The socket is ceramic and stainless steel with 250 degree C teflon coated leads. The light source is positioned in the fixture behind a tem-

pered glass lens. A low-voltage transformer, not included, is also required.

POLYCARBONATE RESIN

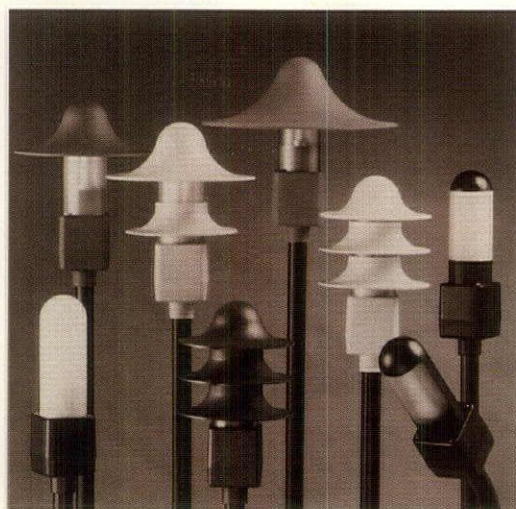
The Scapeform Series of fluorescent landscape fixtures from W. F. Harris Lighting, Inc. in Morris, NC, has a ballast housing made of injection molded, ultraviolet-stable Makrolon 9417 polycarbonate resin that is a flame-retardant, 10 percent glass fiber-reinforced grade. The lenses and shades for the fixtures are injection molded of Makrolon 2507 polycarbonate resin. Molding the unit out of non-conductive resins removed the need for a ground wire. The fixtures stand on an extruded black polyvinyl chloride staff, and the assembly screws are stainless steel, making the product virtually rustproof.

The number of parts required for installation has been reduced by placing the fixture's wiring connections in the ballast housing, a box-shaped chamber directly below the lens, the need for a separate junction box has been eliminated.

The use of fluorescent lamps in the fixtures generates energy savings. The lamps supplied are 7-watt twin tubes, 9-watt quad tubes, or 13-watt quad tubes. The lens and ballast enclosure together are 9 3/4 inches tall. The lens can be covered with one, two or three shades, or allowed to she without diffusion. The shades are supplied in three sizes: a shallow-sloped 6-inch diameter; a more gradual 8-inch diameter; and a wide-spanning 11 3/16-inch diameter.

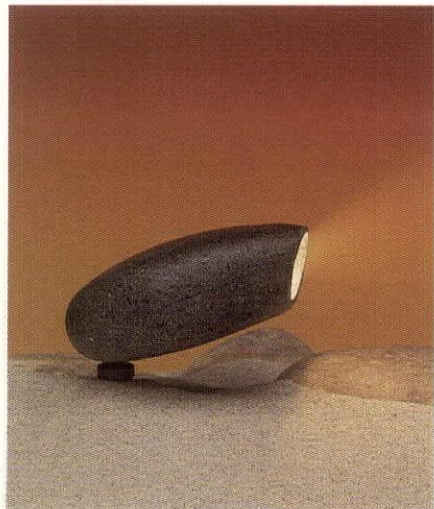
The mounting staff is supplied in 8- and 14-inch sizes for surface use with buried conduit. Longer staffs are available for direct burial with underground cable.

The polycarbonate resins come in seven shades including forest green, black, bronze, white, yellow, orange red, and shamrock green. Makrolon has impact strength that protects the fixture from being broken by thrown rocks or other typical threats. The fixtures have UL listing in wet environments.



The Pebble (right), from Lumiere Design & Manufacturing, is made with ceramic materials. Circle 75 for more information.

The Scapeform Series (left) of fluorescent luminaires from W.F. Harris Lighting Inc. is made with polycarbonate resins. Circle 76 for more information.





1. Low-Mounting Luminaires

The Bantam 2000 Series includes the Enduralume, the Prismaticite, the Prismack and the

Prismalume fixtures. All are compact for low-mounting heights, with fixture widths ranging from 13 1/4 inches to 16 1/8 inches.

Fixture lengths vary from 12 1/2 inches to 14 inches. The Prismalume (shown) has a prismatic glass reflector and tempered glass enclosure and may be used in manufacturing areas, warehouses, contemporary stores, parking garages, machine shops, storage areas and canopies. The fixture provides 20 percent uplight. Holophane Com-

pany, Inc., Newark, OH. **Circle 60**

2. Theatrical Design Fixture

The C4M Jr. Broadway utilizes the 50- and 75-watt PAR 30 halogen lamp. The C4M is well-suited for displays where a theatrical design is required, using a compact fixture. Each unit comes with adjustable four-way barndoors,

accessory holder for color filters or louver, and positive locking yoke. Numerous mount-

ing options are available. Times Square Lighting, Stony Point, NY. **Circle 61**



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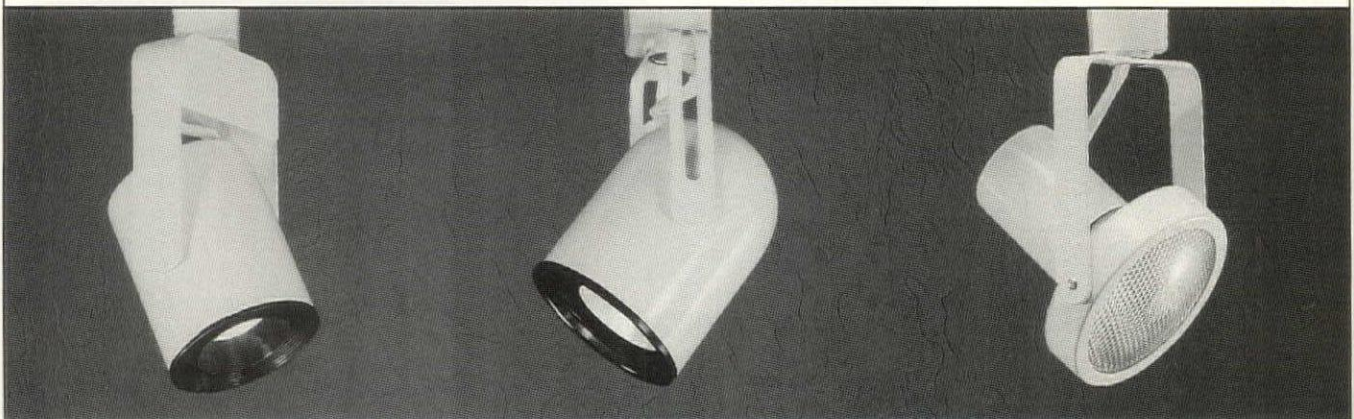
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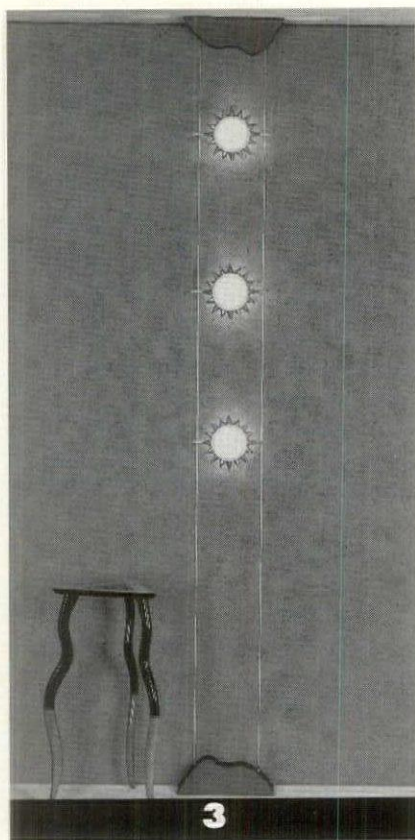
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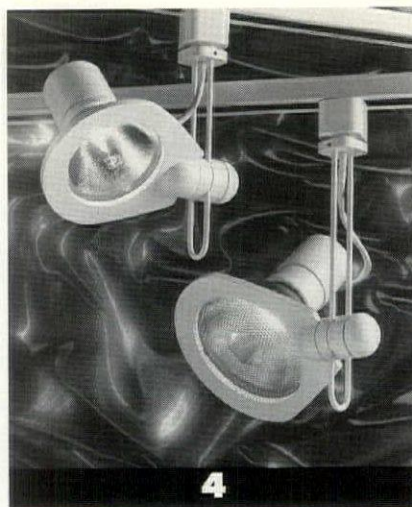


Circle No. 13 on product service card



3. Low-Voltage Fixture Family

The Sun Light low-voltage lighting system includes the vertical cable system (top and bottom mountain base, 2-10 foot cables, and three 20-watt halogen sun fixtures) shown, as well as table light and wall sconce versions. The fixtures can be positioned along the cables (or bars of the table light and sconce) and tilted.



Soft light streams from the front and back face, as well as the sides of the sun. Expo Design, Greenvale, NY.

Circle 62

4. Track Fixtures

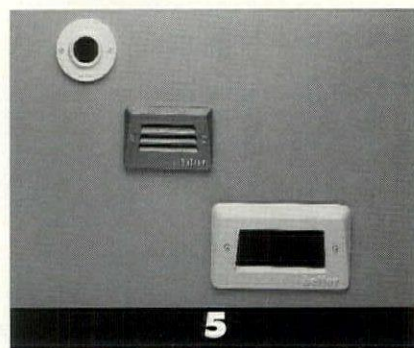
Two new Vertex

PAR lamp fixtures feature a flat, aluminum face, which, when viewed from the side, allows the sparkle of the lamp to create unusual lighting effects. An adjustable knob allows the lampholder to be moved up and down support rods. A knurled locking knob keeps the fixtures properly aimed once they are set.

ent beamspreads are available for each wattage. Capri Lighting, Division of Thomas Industries Commercial and Industrial Lighting Group, Los Angeles, CA.

5. In/Outdoor Step Lights

The Miniature Step Light series fill the three major requirements for step/aisle/platform lighting tasks: miniaturization, heavy duty construction, and the ability to utilize an array of incandescent and fluorescent lamps. They are designed for interior and exterior applications. A variety of



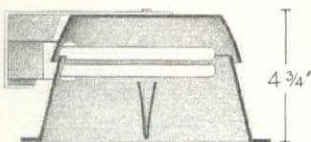
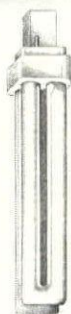
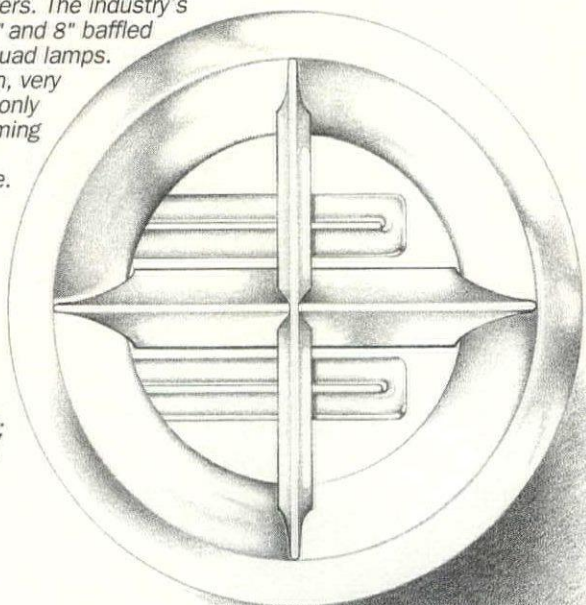
Vertex fixtures come in two sizes: the KT868 accepts 45-250-watt PAR38 lamps; and a smaller KT865 accommodates 50-75 watt PAR 30 lamps. Differ-

clear, frosted and treated Microlouver Photo-Osmetic film lenses are available to allow the specifier more flexibility. Norbert Belfer Lighting, Ocean, NJ.

Circle 64

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6. Decorative Chandelier

The Granada chandelier, designed by Salman R. Shah, has six arms and is made of bonded wood chips. The arms are made of steel piping with a polished natural finish. The metal shades are finished in the same color as the body of the chandelier. Eight finishes are offered: faded black, antique gilt, bark, muddy black, rust, sand, sterling and verdigris. The chandelier is 29.5 inches high and 41 inches in diameter. The chain length is 36 inches. Accessories International, Inc., Houston, TX.

Circle 55

7. Metal Halide Downlights

The series EY4060A/4061A of low wattage metal halide, open

fixture, recessed 7-inch reflector downlights and complementary wallwashers are available for use in low to medium ceiling height installations. The fixtures, for use with 70- and 100-



watt metal halide lamps, feature a heavy duty, die-formed mounting pan with pre-installed mounting brackets for vertical adjustment. The open



fixture lamps have a protective shield over the arc tube. This eliminates the need for a shatter guard and allows for higher light levels with less glare. Omega Lighting, Div. Thomas Industries Commercial and Industrial Lighting Group, Los Angeles, CA. Circle 56

8. Low-Profile Downlight/Wallwasher

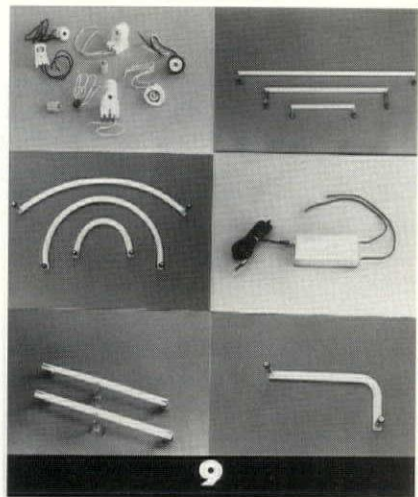
The Darklite A21/6S recessed

downlight/wallwasher has been redesigned to fit into plenums as shallow as 5-15/16 inches deep. It is the slimmest specification grade 150-watt

incandescent on the market. Darklite is one of a family of fixtures designed for A lamps of 60 through 300 watts, with apertures of four to seven inches in diameter. Each fixture includes a common housing and one of five reflectors. Edison Price Lighting, New York, NY. Circle 57

9. Fluorescent Cove Lighting

The Streamline Fluorescence system is low profile to furnish a continuous line of dimmable light. The energy-efficient, low noise system is easily installed in straight or custom shaped surface mounts, or recess mount applications. It is well-suited for conference rooms, libraries, restaurants, hotels and museums. It is offered in standard white triphosphors or custom colors, and in aperture or reflector glass. The complete system includes lamps with mounting bases, ballasts, wiring compartments,



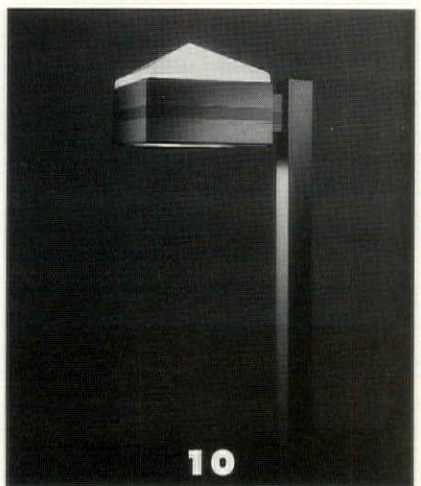
additional ballast wire, lamp supports and detailed shop drawing. The Newman Corporation, Inglewood, CA.

Circle 58

10. Outdoor Luminaire Series

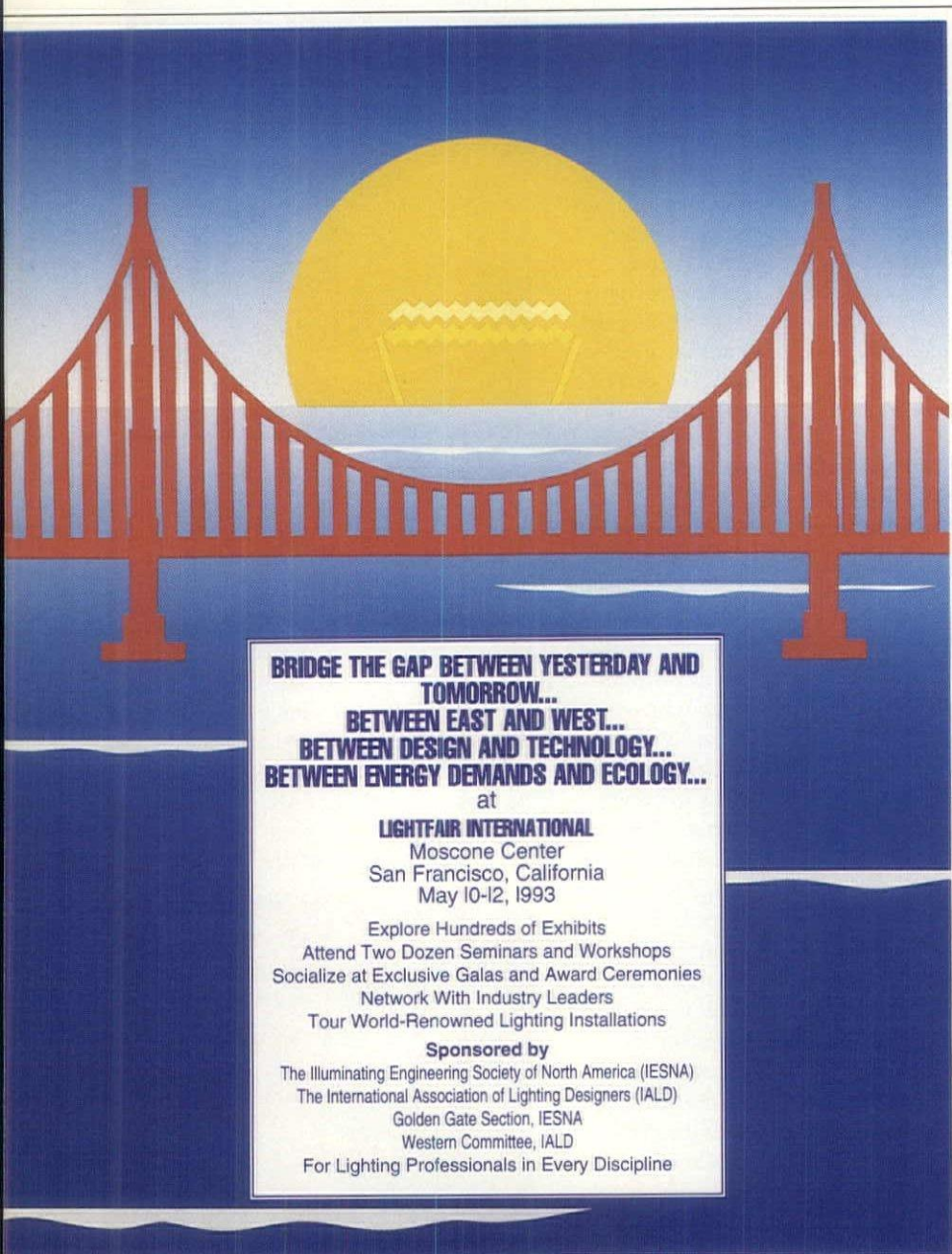
The Seabrook Series includes a

Top emits an upward glow; color Glo-Bands create a neon-line fluorescence effect to complement a building's accent color. The luminaires are available in 13 solid-colors and finishes. Accent decal stripes allow for further color



wide selection of mountings, housings, reflectors and detail options. The optional Glo-

customization. LSI Industries Inc., Cincinnati, OH. Circle 59



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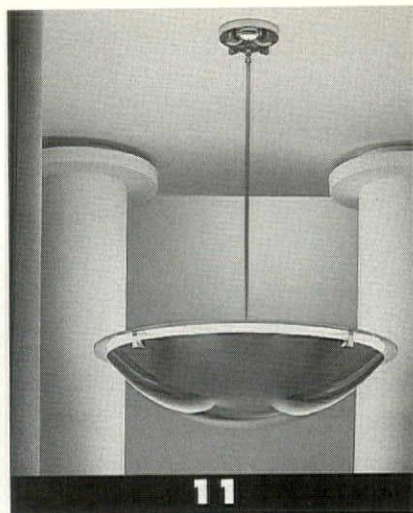
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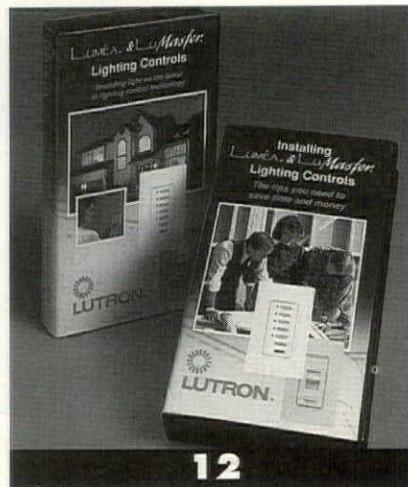
11. Decorative Pendant

The Resonance Pendant has a polished brass dome and canopy, brushed aluminum stem and detail blocks, and a green acrylic disk. The unit accommodates three 75-watt A-19 incandescent lamps. Appleton Lamplighter, Appleton, WI. **Circle 65**

12. Lighting Control Videos

A pair of videotape cassettes featuring Lumea and LuMaster lighting controls is avail-

able. One tape provides an overview of the product lines; the other gives a detailed description of how to install them. The Lumea controls and the LuMaster central control system work together to provide sophisticated residential lighting control. The products are offered in 14 colors. The LuMaster offers central monitoring and convenience, and can be designed to interface with a timeclock. Lutron Electronics Co., Inc., Coopersburg, PA. **Circle 66**



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