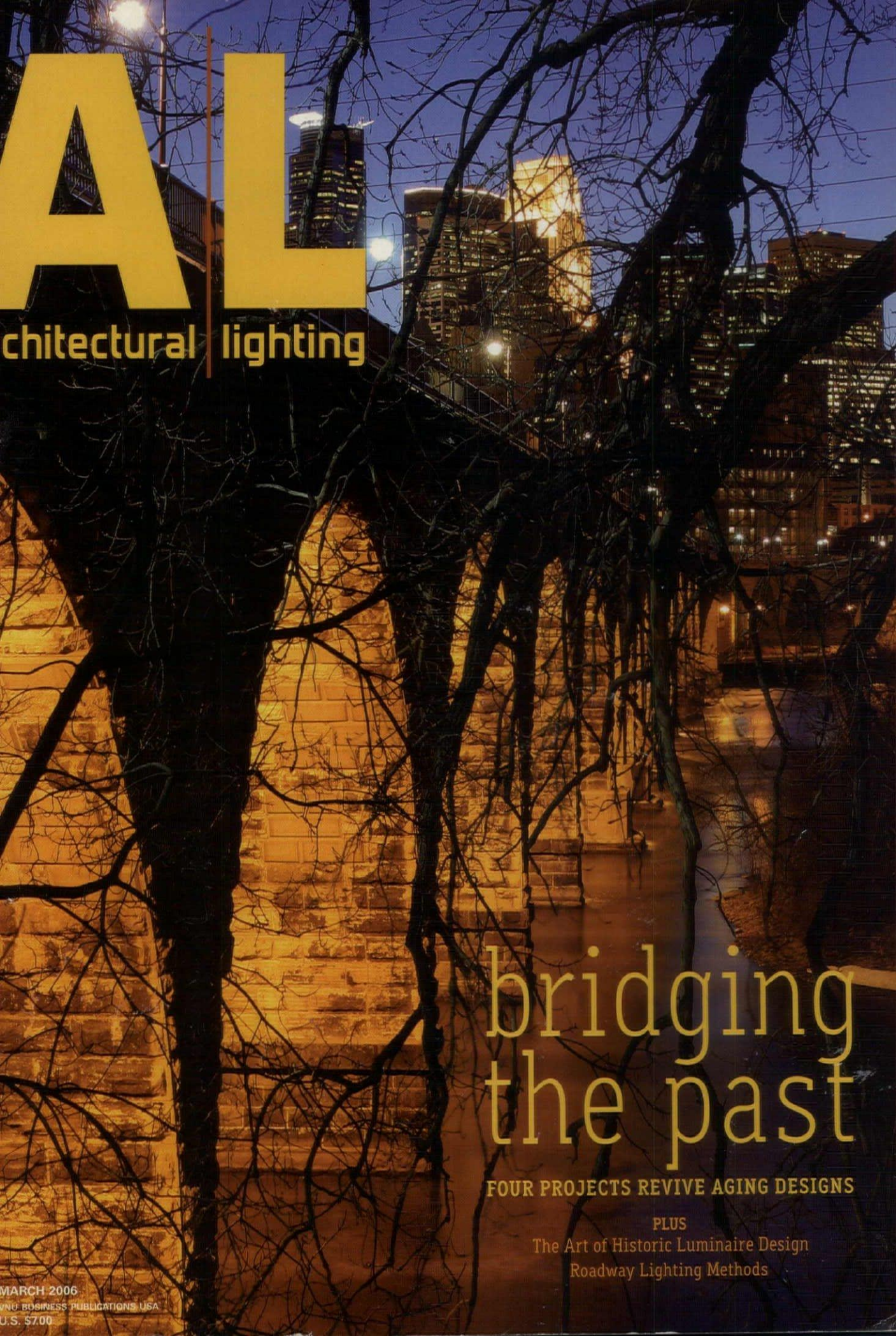


AL

architectural lighting

bridging the past

FOUR PROJECTS REVIVE AGING DESIGNS

PLUS

The Art of Historic Luminaire Design

Roadway Lighting Methods

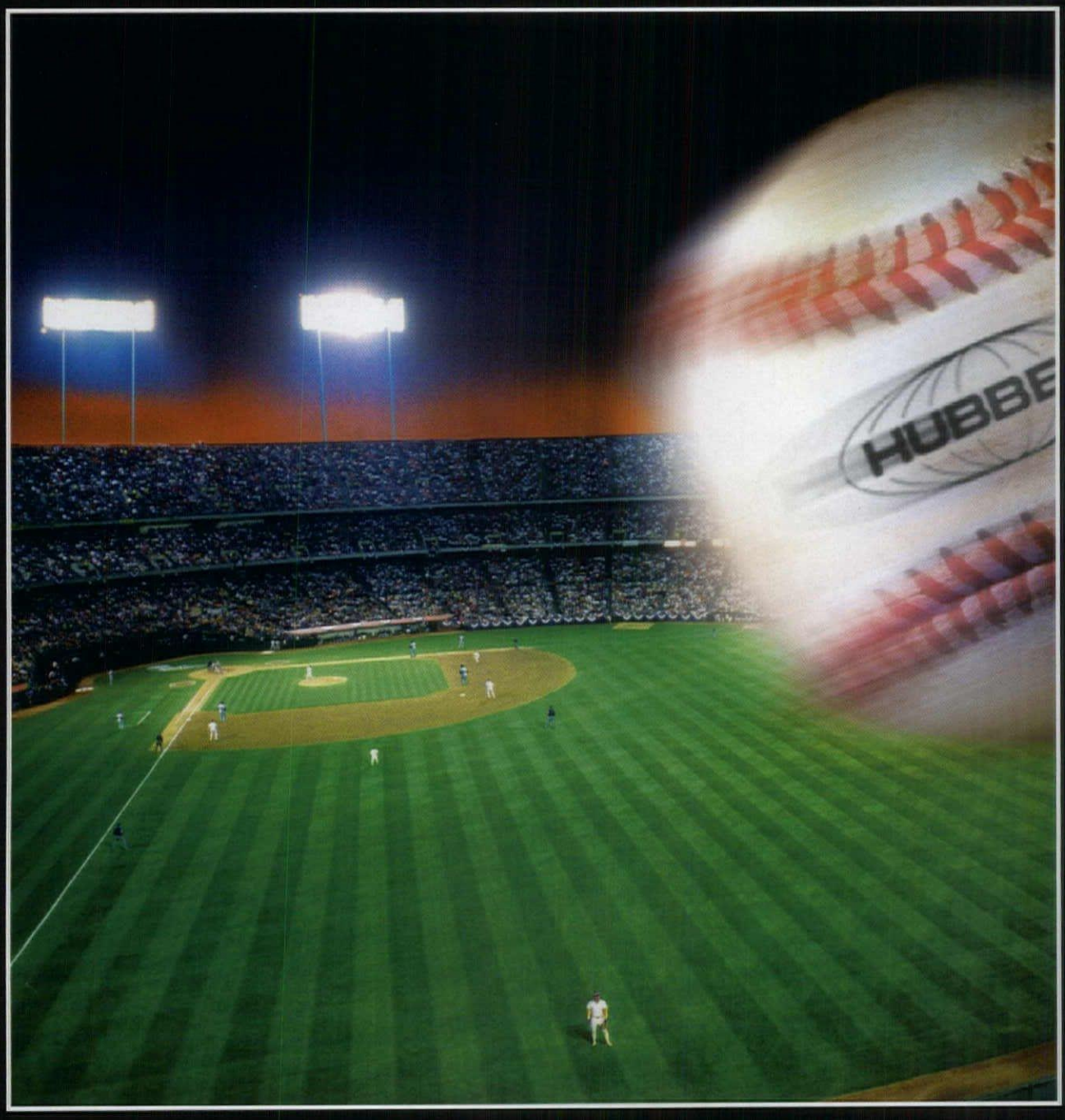
MARCH 2006
VNU BUSINESS PUBLICATIONS USA
U.S. $7.00

Lighting technology in all its facets

As a Light Factory, certain things are better done in house, such as highly specialized reflector design. For every type of lamp, application and light distribution we develop the best possible reflector shape. Let's look at the faceted flood reflector in the new Optec spotlight: It shapes and focuses the light of a powerful H.I.D. lamp into a smooth-edged beam with minimal glare and maximum efficiency. Anti-glare protection and light output ratio have been optimized for their application in store lighting. And because at ERCO we always think at the system level, it is very likely we have the optimal solution for your lighting task.

Light is the fourth dimension of architecture: www.erco.com

ERCO



If you think grand slams only happen in the game, *think again*.

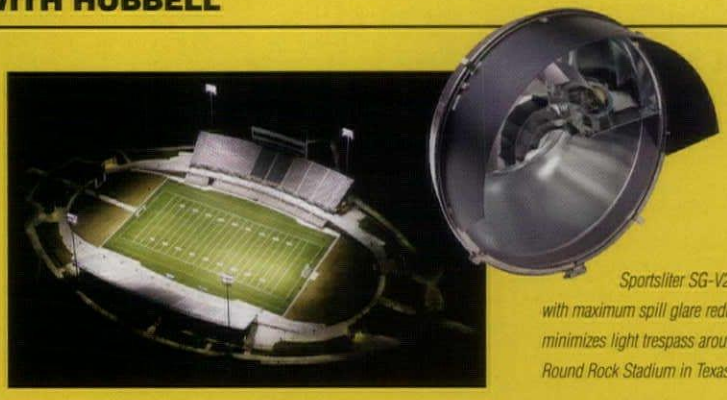
HUBBELL®

SCORE ON AND OFF THE FIELD...WITH HUBBELL

Want to score big with stadium lighting? Or just about anything electrical? Team up with Hubbell. We've been delivering sports and entertainment victories for years. Indoor, outdoor, pro, scholastic...whatever puts fans in the bleachers, we're veterans when it comes to equipping the venue.

But Hubbell experience isn't even the half of it. What truly sets us apart is performance. Lights that work better, reduce costs, and are easier to control. Power that installs faster, more safely, and is more adaptable. If you're looking for products with real benefits, check out Hubbell. Let us make you the all-star whenever a game is played at home.

hubbell.com/thinkagain

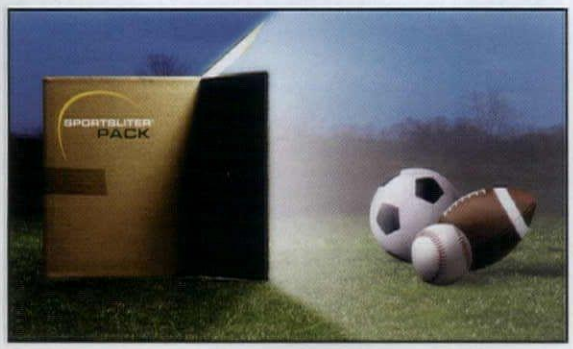


Sportsliter SG-V2 optics with maximum spill glare reduction minimizes light trespass around Round Rock Stadium in Texas.

LIGHT UP THE ACTION – AND NOTHING ELSE

The Sportsliter SG-V2 luminaire features internal louvers and an external visor to provide maximum spill glare reduction. Also available without the visor, and in a low-cost axial design, Sportsliter optics are easily adjustable, use standard metal halide lamps to reduce maintenance costs, and may be combined with 40°C-rated ballasts for extended life in warmer climates.

Circle No. 110 or www.archlighting.com/productinfo



ALL YOU NEED TO LIGHT A FIELD

The Sportsliter® Pack is the ultimate, fast, easy way to order and bring light to a field. Complete baseball/softball, football, and soccer field lighting systems include virtually all necessary components – including poles, fixtures and ballasts – to deliver outstanding performance at a competitive price. Just pick a single part number, run power to your poles, and you're ready to play. Available January 2006.

Circle No. 111 or www.archlighting.com/productinfo

PROTECT PEOPLE, AND YOUR CABLES

AccessTrak® offers ADAAG-compliant cable protection that can be expanded by width or length to conform to your pathway. TredTrak® can be extended in several directions using X and Y junction fittings, and may even be custom ordered in team colors. Both systems are constructed of non-conductive, weather-resistant polyurethane with a non-slip surface.

Circle No. 112 or www.archlighting.com/productinfo

PUT ON A SHOW

Sterner Lighting Infranor Luminaires with patent-pending motorized shades provide instant on/off capabilities – without costly instant re-strike systems – for dramatic player introductions and halftime shows in indoor arenas. Shades are quiet, will not deform or cause excessive heat build-up even if left closed indefinitely, and can be easily installed at a later date without re-aiming or adding extra luminaires.

Circle No. 113 or www.archlighting.com/productinfo

SAFE, LOCKING PORTABLE POWER

Single pole connectors feature exclusive non-conductive retaining screws that secure connections, and for extra safety, prevent replacement with conductive screws. A unique low-force inner sleeve facilitates installation. All connectors are third-party certified to UL Enclosure Types 3R, 4X and 12K.

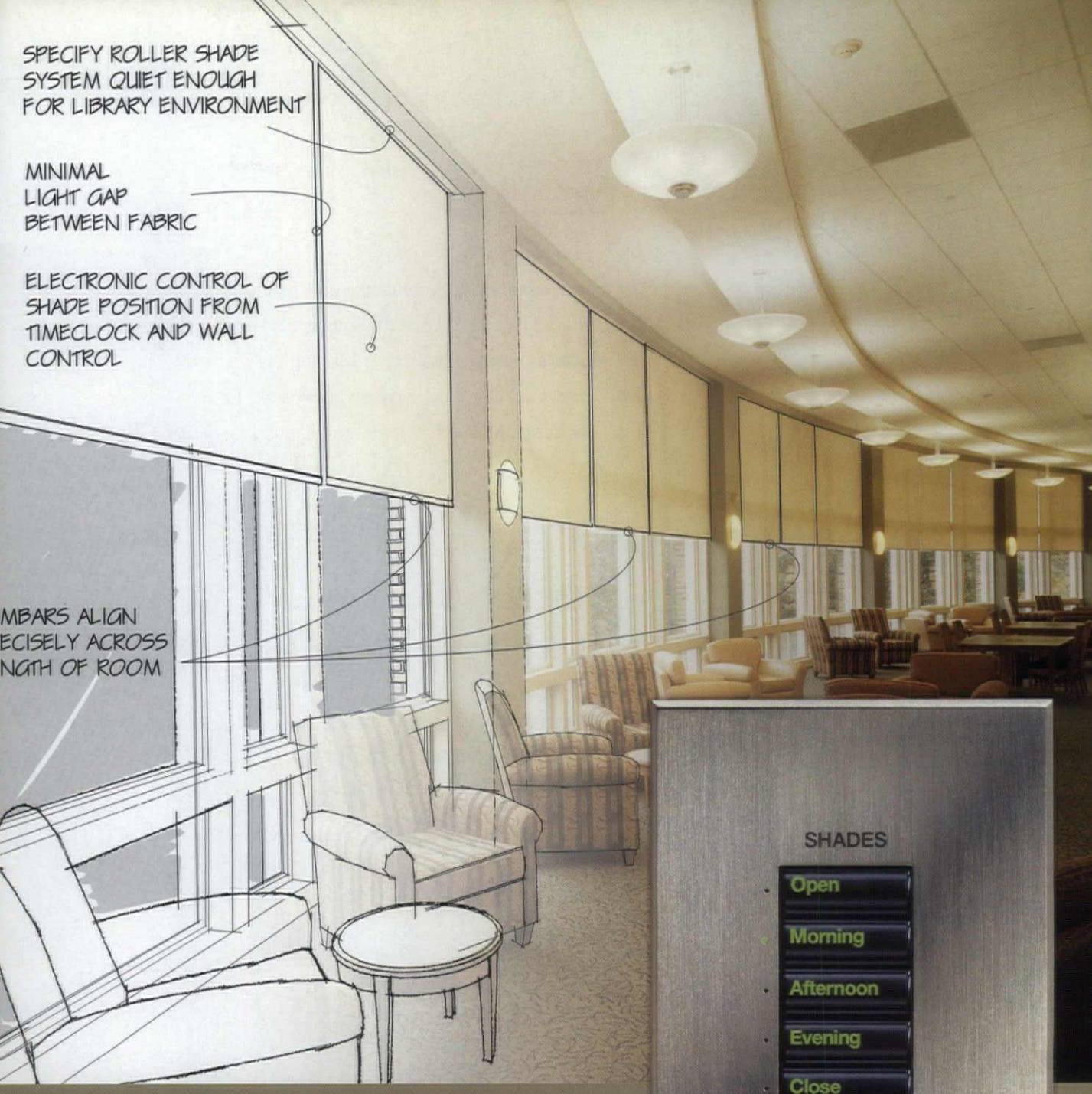
Circle No. 114 or www.archlighting.com/productinfo

A|L architectural lighting

MARCH | 06

VOL 20 | NO 2

A|L architectural lighting (Vol. 20, No. 2 USPS 000-846, ISSN 0894-0436) is published seven times per year (bimo ly, except monthly in March and June) by VNU Business Media, Inc., 770 Broadway, New York, NY 10003-9595 is distributed free of charge to individuals or firms engaged in the specification of lighting products in the US and ritories. Per year, all other subscriptions in the US and territories: $48; Canada, payable in US dollars, $60; and fore $96. Canada Post Publications Mail Agreement No. 40031729. Return undeliverable Canadian addresses Deutsche Post Global Mail, 4960-2 Walker Road, Windsor, ON N9A 6J3. Periodicals Postage Paid at New Y NY and additional mailing offices. Printed in the USA. For address changes, single-copy sales ($7 in the US, $7 + pos outside the US, payable in advance) and subscription inquiries, write to Architectural Lighting, PO Box 1061, Skoki 60076-8061 or call Customer Service at (847) 647-7987 outside the US. POSTMASTER: Send changes of addre Architectural Lighting, PO Box 1061, Skokie, IL 60076-8061.



Offer a controllable roller shade that's as precise as your customer's designs.

Sivoia QED™ Quiet Electronic Drive shading systems

precision alignment of multiple shades to within 1/8"

ultra-quiet operation (44dBA at three feet)

seamless integration with Lutron lighting controls

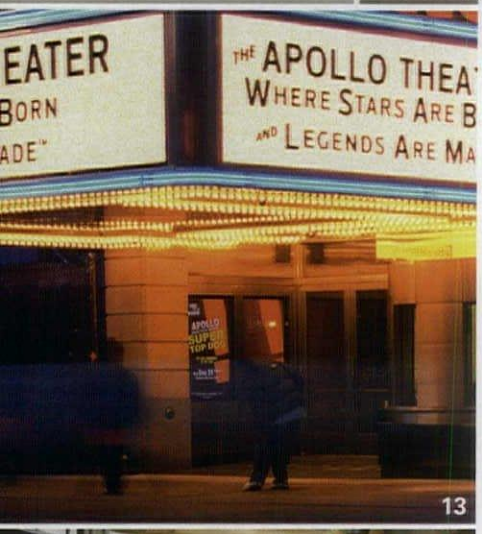
symmetrical fabric light gap of 3/4" per side

Visit **www.lutron.com/shadingsolutions** or call **1.877.258.8766** ext. **581** to learn more about Sivoia QED.

LUTRON

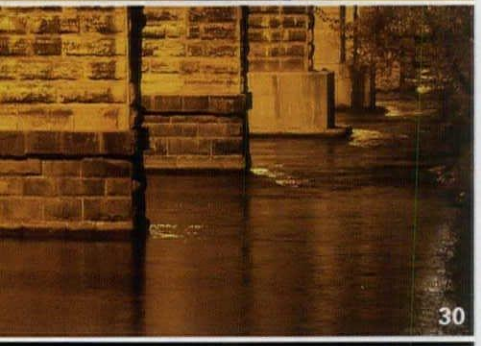
Lutron controls your light.™

AL
architectural | lighting



13


34


30

industry

09 **comments**
10 **anniversary** / An Interview with Charles Linn
13 **briefs** / Events in London; Sottsass in Los Angeles; and more
20 **letters** / Energy Zealotry Is Missing the Point
23 **report** / Crafting the Historic Luminaire
56 **exchange** / What is the state of lighting research?

projects

29 **highlight** / Higgins Hall, Brooklyn, New York
30 **bridge** / Riverfront Rebirth
34 **museum** / Illuminating History
38 **museum** / A Lift for the Louvre

OUTDOOR LIGHTING FOCUS
41 **project** / Great Yarmouth Beach, England
42 **project** / Kingston Bridge, Glasgow
44 **products** / The Outsiders

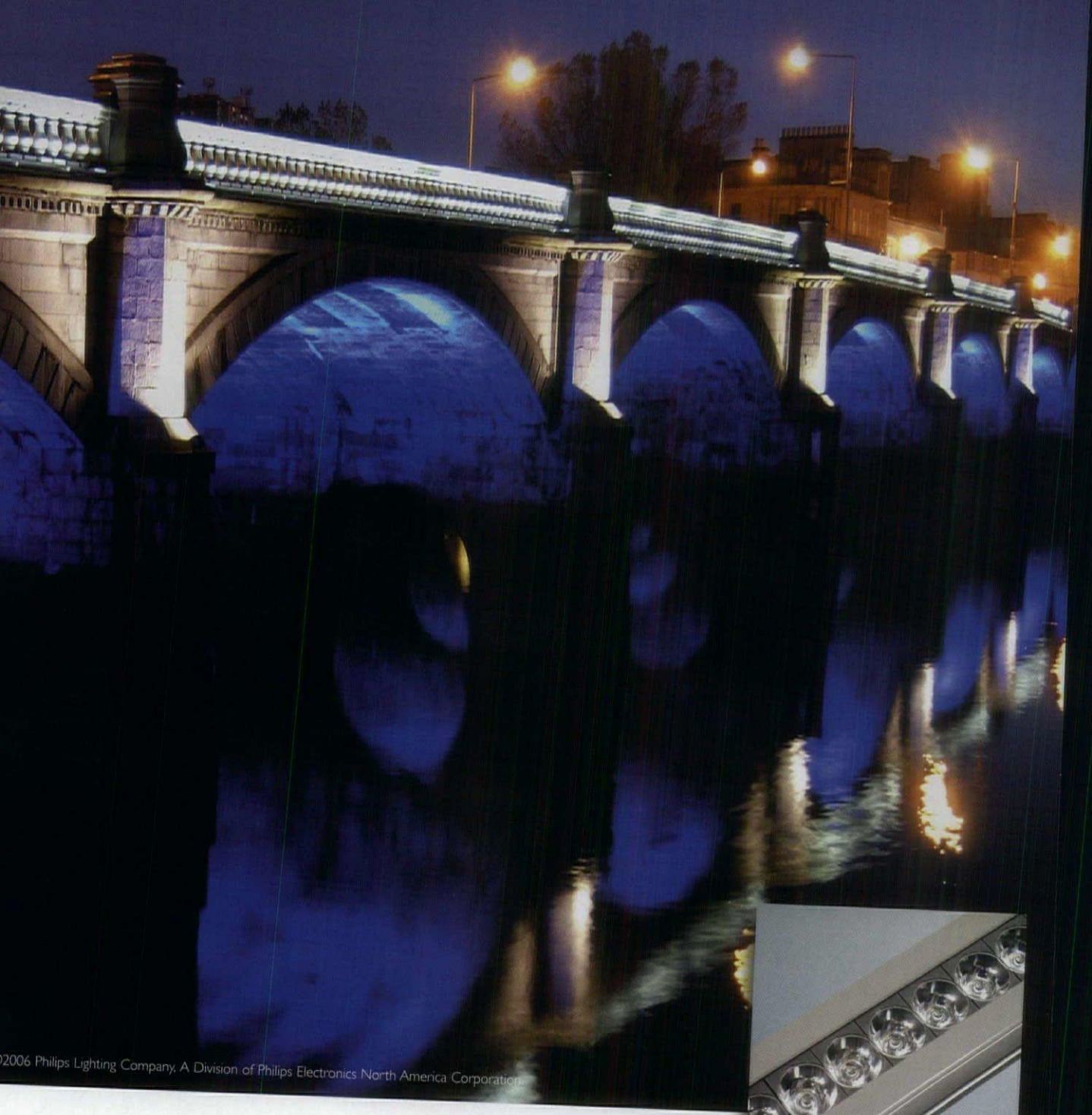
details

47 **method** / On the Road
55 **ad index**

Cover: Spanning the Mississippi River and 123 years, the recently illuminated Stone Arch Bridge, a Minneapolis landmark, wears its age well. PHOTO: ADAM GRIM

This page: New marquee for the Apollo Theater, New York; Objects on view at the New York Historical Society; Base of the newly illuminated Stone Arch Bridge, Minneapolis; Lighted beach in Great Yarmouth, England.

Additional information at www.archlighting.com



Composing with light.

hilips LED Luminaires. Philips launches a new lighting concept based on cutting-edge ED technology, providing designers with tools to turn their creative vision into reality. versatile range of floodlights, LED Luminaires are designed for use in illuminating and hancing both contemporary and historical architecture. Philips LED Luminaires represent perfect combination of high-power Luxeon™ LEDs, new dedicated optics, high quality aterial and lighting electronics.

sit us at www.philips.com or email us at light.solutions@philips.com

PHILIPS

sense and simplicit

PHOTO BY SPENCER LUM

The Restorative Power of Lighting

ONE OF THE OVERARCHING themes contained in the pages of A|L is the relationship between architecture and light. Disciplines unto themselves, projects are richer when the two speak in unison. Lighting and historic preservation, as the projects in this issue demonstrate, are no exception.

Light finds expression in two primary forms: as an object—the luminaire; and as a quality or the creation of atmosphere. It is in the latter where lighting offers a fresh perspective in a preservation context. Lighting's ability to transform a neglected structure, building, or landscape with a new identity should not be underestimated. Such is the case with the Kingston Bridge on the River Clyde in Glasgow (see page 42), the Stone Arch Bridge, which spans the Mississippi at its intersection with the city of Minneapolis (see page 30), and the beach at Great Yarmouth on England's North Sea Coast (see page 41). Although each project has a distinctly different lighting scheme, all are infused, through the application of illumination, with a new sense of vibrancy and a greater connection to the immediate site and the cities beyond.

With the Pyramid at the Louvre in Paris (see page 38), lighting does not need to introduce this twenty-first-century architectural icon to the public; rather, the refurbished lighting scheme serves to reinforce the strength of the original design, the structure's monumental presence, and the sense of place it creates around it. In contrast, at the New York Historical Society (see page 34), lighting helps to reinvigorate an underappreciated building and reintroduce historical collections of significance to the viewing public.

One project that embodies all of the themes integral to preservation—architecture and light, old and new, object and atmosphere—is Higgins Hall, home to the school of architecture at Pratt Institute (see page 29). With its modern architectural vocabulary of concrete, light, and glass, the building distinguishes itself from its landmarked brick-clad neighbors without turning its back on them. It is the very contrast of this new structure with its surroundings that allows its richness and that of the adjacent structures to happily cohabitate. Like so many of the other projects discussed in this issue, the building completely transforms at night, as its illuminated interiors provide security, comfort, and an identifiable location for students.

Through their lighting schemes, each project in this issue creates an illuminated presence and a sense of place. The extension of a building's or a landscape's identity to include a nighttime presence is perhaps too abstract an idea of preservation for some, but it seems to be taking hold as an acceptable practice. And this awareness is not just confined to designers; manufacturers are also recognizing lighting that celebrates a city's cultural and architectural heritage by establishing a nocturnal identity. Now in its third year, the City-People-Light Award program, established by Philips, has recognized urban master-plan lighting schemes worldwide (see "Lighting as Urban Design Catalyst," March 2005 and "Cities, Light and Beautiful," Jan/Feb 2006).

Historic preservation as a term describes a broad range of work with nuanced practices like restoration, rehabilitation, and adaptive reuse. Lighting is one element that fits into any of these scenarios, but we should be mindful that for all the benefits an illuminated landscape can provide, we also need to preserve another type of illuminated landscape—the night sky. Lighting plays an important role in linking our present with our past, no matter whether design includes the addition or subtraction of light.

ELIZABETH DONOFF
SENIOR EDITOR

A|L LIGHT & ARCHITECTURE DESIGN AWARDS
DEADLINE: Tuesday, May 2, 2006
ENTRY FORMS AVAILABLE AT WWW.ARCHLIGHTING.COM

APRIL/MAY EXCHANGE QUESTION
What current developments and trends do you see as having a significant impact on the lighting industry?

SEND RESPONSES TO EXCHANGE@ARCHLIGHTING.COM

A|L 20 YEARS 1986-2006

AN INTERVIEW WITH CHARLES LINN, A|L'S FOUNDING EDITOR

In the beginning, there was Charles Linn. Twenty years later, we recognize the decisive contribution Architectural Lighting*'s first editor-in-chief made to the business of lighting design when he took on the start-up magazine, which at the time was based in Springfield, Oregon. Trained as an architect, Linn brought to his position a first-hand knowledge of the practitioners the magazine was trying to reach, as well as an eagerness to learn and spread the word about the then nascent profession of lighting design. It was Linn's early energy that initially establish A|L as the voluble champion of the architectural lighting industry it is today.* **A|L**

How did all of this start?

It's one of those things that was lucky—one snap decision that changed my life. I was living in Denver. The commute and the weather were getting to me. On the eve of a huge snow storm, I drove down to the newsstand and got a Portland, Oregon, newspaper, because that's where my brother lived. There was an ad for an editor at a national trade magazine.

The company—Astor Publishing—produced magazines for the pharmaceutical and analytical instruments industries. It had titles like *Pharmaceutical Technology* and *Spectroscopy*. The publisher, Ed Astor, was an entrepreneur. He loved to try new magazines; he loved to try everything. So his researcher went to the library at the University of Oregon and started digging through all the periodicals and thought, hey, lighting is an important topic and there's not much here. The only choice was *Lighting Design and Application*, which was an analytical magazine. Astor thought it would be interesting to target architects. This happened at a moment when there was a lot of innovation.

Innovation in the lighting industry?

Yes. The IALD was getting a critical mass of members. The lighting designer was emerging as a legitimately recognized sub specialty.

There's a four-year cycle where everybody wakes up and says we have to do something; then there's a six-year cycle of product development, and a two-year cycle where things enter the market. *Architectural Lighting* happened about 12 years after the energy crisis, so suddenly, you have all of these new technologies: MR16s, compact and T8 fluorescents, compact metal halides, reflector design that was never possible before, lighting rendering software, second-generation electronic ballasts. All of this stuff was coming together at the same time. I was a very unlikely guy in an unlikely place working for an unlikely company, and yet, it was easy to see. All I knew at the time was, God, there's a lot happening here.

You dealt with daylighting a lot in the first issues.

I had just been to the international daylighting conference. I tried very hard to cover the issue in *Architectural Lighting*, but it just fell flat. As the energy crisis eased, interest gradually went away. Daylighting has been around for years, but no one has cared much about it. Some of the projects we covered could get you LEED points today. It's like the lost Rosetta stone—it sort of proves that it's not really all that new.

There have always been certain architects who thought of buildings as apertures and containers for light. You heard people like Eero Saarinen, Lou Kahn, and Edward Durell Stone talk about it, the really good architects. Maybe part of what makes them great is they see this, they see light.

Design writing and editing is another facet of architecture. Instead of drawing buildings, you're writing about them.

It does take the same skill of visualization. It demands curiosity and that you love lighting the way the people who do the projects love lighting. Meeting Howard Brandston for the first time was very intimidating. "You guys are out in Oregon," he said. "Who are you? You have to do something really great or people aren't going to respond." It was a real challenge to gain acceptance from the lighting design community because I was an outsider.

What developments did you see along the way?

After the mid 1980s and going into the 90s, technically we sort of hit a plateau, and there was a lot of complaining even among the lighting designers: "We go to Lightfair; there's nothing new. Maybe it should be every two years ... ."

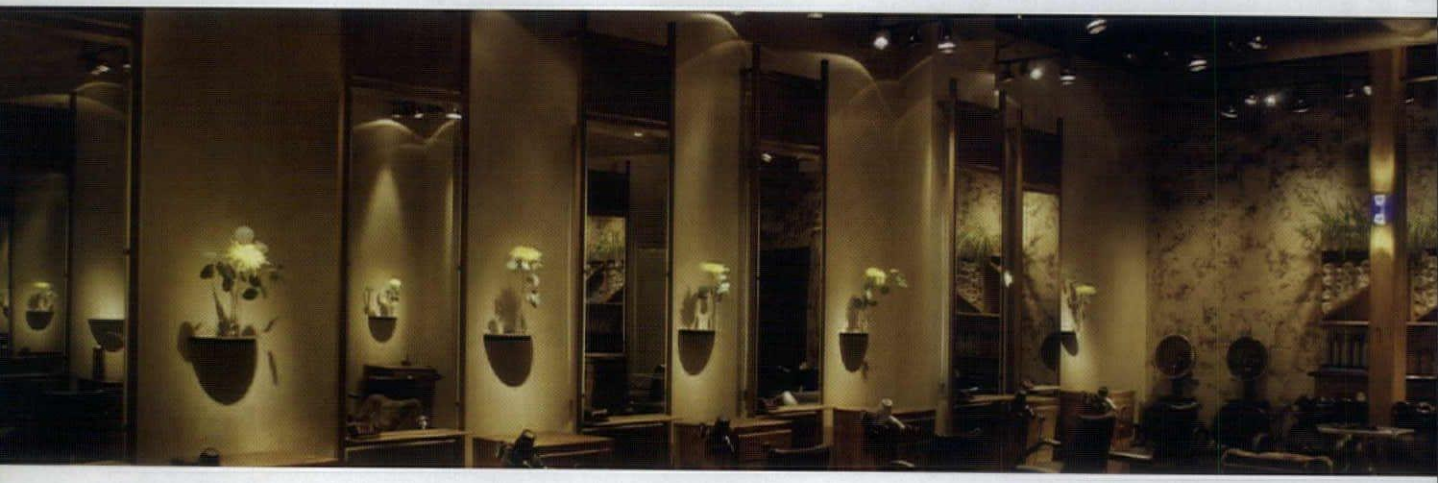
That was already being asked back in the 1980s?

It was always being asked. We had a couple of years where people really got complacent, though I wouldn't say that the lamp manufacturers became complacent about creating light sources that were more powerful and energy efficient. I think the T5 lamp is awesome.

And today?

Now, LEED and energy prices are going to push innovation, and the renewed interest in daylighting will make the profession embrace it as a real technology that's worth using. I see two other things that are driving innovation: First of all, the development of microprocessors that can run ballasts in a more fine-tuned way than ever before. And second, manufacturing has gone over to Asia. The lighting equipment manufacturers in the United States were homegrown by real entrepreneurs—people like Edison Price and the Rambusch Lighting company. When you move manufacturing overseas, the question becomes: Can R&D be far behind? One wonders how much further reflector design can really go. How much further can you take indirect uplighting? But things like LEDs will open up a range of new R&D. Can we use our engineering and ability to innovate—which is inherent in our manufacturing tradition—to lead the way into the next generation of lighting? That is the challenge that faces the manufacturing industry here, and the only way in which the United States will retain its position as the leader.

THERE'S LIGHTING.



AND THEN THERE'S
BETTER,
SMARTER,
OUT-PERFORMING,
IN-STOCK,
SOLUTION-ORIENTED
LIGHTING.

(WE LIKE THE SECOND CHOICE, TOO.)

We're a lighting company that takes the initiative to jump on trends, ship quickly, and make a good product into an even better one. Shouldn't you be using Con-Tech? Call us today at 1-800-728-0312.

CON-TECH LIGHTING® *makes it better.*

RECESSED | TRACK | RAIL | DECORATIVE GLASS | SCONCES | EMERGENCY

rchitectural Style.
esign Versatility.
uperior Performance.

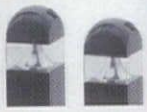
AERIS™

itectural Outdoor Illumination

ea & Roadway (AS)

Wall Mounted (ASW)

Flood (ASF)



Bollards (ASB)

honia Lighting Outdoor products are as versatile as they are reliable,
d with the Aeris Architectural Outdoor family, innovative and inspirational
signs create your complete outdoor lighting solution.

r more information, visit **www.lithonia.com/aeris**

Circle No. 77 or www.archlighting.com/productinfo

LITHONIA LIGHTING

An AcuityBrands Company

LONDON LIGHTS

HOSTED FROM NOVEMBER 30, 2005, TO JANUARY 21, 2006, at New London Architecture (newlondonarchitecture.org), the city's only exhibition center devoted to documenting London's built environment, the exhibition "London Lights: The Art of Architectural Lighting" celebrated the growing importance of lighting and its creative contribution to the nocturnal staging of the city. Original lighting schemes were represented by an eclectic collection of urban environments, ranging from classical squares and monuments to glazed buildings, high-tech bridges, and power stations. These contributions to the city's landscape offer an alternative to its daylit demeanor, through which the visitor's attention is diverted to unexpected locations and unfamiliar views of the everyday cityscape.

Although the show discussed the treatment of emblematic buildings, such as the soft rendering of the Royal Albert Hall's architectural ornamentation and Lloyd's of London's iconic blue lighting scheme (right), the majority of the exhibit was dedicated to emerging architecture and lighting solutions, such as the Croydon Skyline project and the lightwork behind the A13 Highway. Both projects demonstrate that lighting can invigorate dull environments, animating a decaying and anonymous-looking quarter of town, or smoothing a rough concrete overpass into an urban setting.

From paver's signs and Christmas decorations to projections in narrow alleyways, these London projects demonstrated that there is no space too small or too inconsequential to be transformed by the power of light. **AURELIA DUPLOUICH**

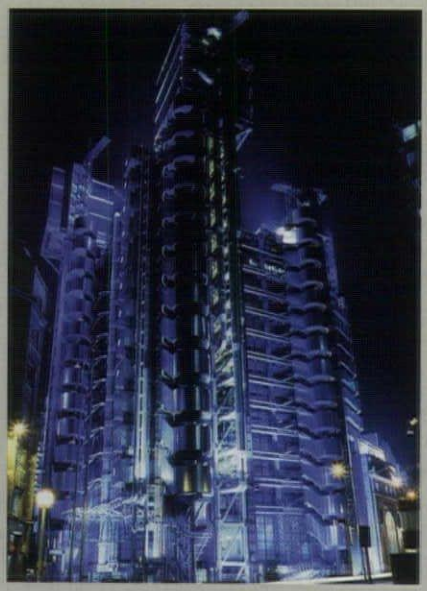


PHOTO COURTESY OF NEW LONDON ARCHITECTURE

ARC 06 REVIEWED

THE SECOND ANNUAL ARCHITECTURAL, RETAIL, AND CORPORATE LIGHTING TRADE FAIR, ARC 06, was held in London, February 13 to 14, displaying in its cross-section of exhibitors, sessions, and ancillary events an engaging balance between the technical and artistic aspects of the lighting profession.

ARC 06 saw an increase in the number of larger manufacturers compared to last year's show, including Erco, GE Lighting, and Philips. Not surprisingly, the general trend was toward expanded LED offerings, in particular high-powered and color-changing solutions. Philips and Color Kinetics introduced new LED products, while U.K.-based Philip Payne, a division of Thorlux Lighting that specializes in emergency egress lighting, introduced an LED-based architectural product, the Aveo line. This focus was also true for smaller manufacturers: Advanced LEDs is developing a solar-powered LED bollard.

In addition to these product exhibits, several London-based lighting designers and consultants (including Speirs and Major, Hoare Lea Lighting, Arup Lighting, and Maurice Brill Lighting Design) presented examples of their work in a dedicated gallery. The functional and artistic relationship between architecture and lighting was further explored in a continuously looping 15-minute short film, *Made of Light*. Conceived by Speirs and Major, the film focused on the conceptual and ephemeral aspects of lighting design. The "London Lights" photo exhibition, which closed at the New London Architecture Center on January 21, was also on view at ARC 06. (See "London Lights" above.)

A relatively smaller event in comparison with other lighting shows, ARC 06 nevertheless demonstrates a growing interest in information about lighting among design professionals worldwide, a need show organizers predict will continue, having already set dates for ARC 07: February 12 to 13, 2007. **AD**

THE WORKS OF SOTTSASS AT LACMA

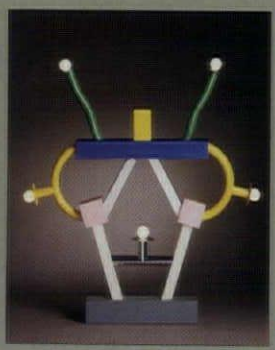


PHOTO COURTESY 2005 MUSEUM ASSOCIATES/LACMA

Sottsass' Ashoka table lamp

THE LOS ANGELES COUNTY MUSEUM OF ART (LACMA) HAS announced its upcoming exhibition, "Ettore Sottsass," in what the institution claims is the first major U.S. museum exhibition showcasing the works of the renowned Italian architect and product designer. LACMA assistant curator of decorative arts, Ronald T. Labaco, has organized nearly 100 of Sottsass' most influential works, highlighted in an installation conceptualized by Sottsass himself.

Throughout his long career, the 88-year-old Sottsass has made groundbreaking contributions to product design. "From furniture, ceramics, and glass, to lighting and metalwork, he has been at the forefront of his profession, straddling the boundaries between art, design, and social commentary for over sixty years," Labaco says.

Included in the exhibition, among other provocative creations, are five of Sottsass' luminaires spanning almost 50 years: two versions of the Hanging Lamp, 1957; the Asteroid table lamp, 1968; the Capodanno table lamp, 1979; and the Ashoka table lamp, 1981.

The exhibition premiers March 12, 2006, and will run through June 11. For more information, visit www.lacma.org. **A|L**

paradigm shift...this integrating dome will change the way you light a building...light a room...light retail products ...it will change the way you view solid-state lighting... it provides every color of the spectrum...every color of white light...from one truly intelligent fixture...with the IntelliBlend dynamic monitoring system ensuring consistent light output and color...assuring the integrity of your design...throughout its lifecycle...decades from now.

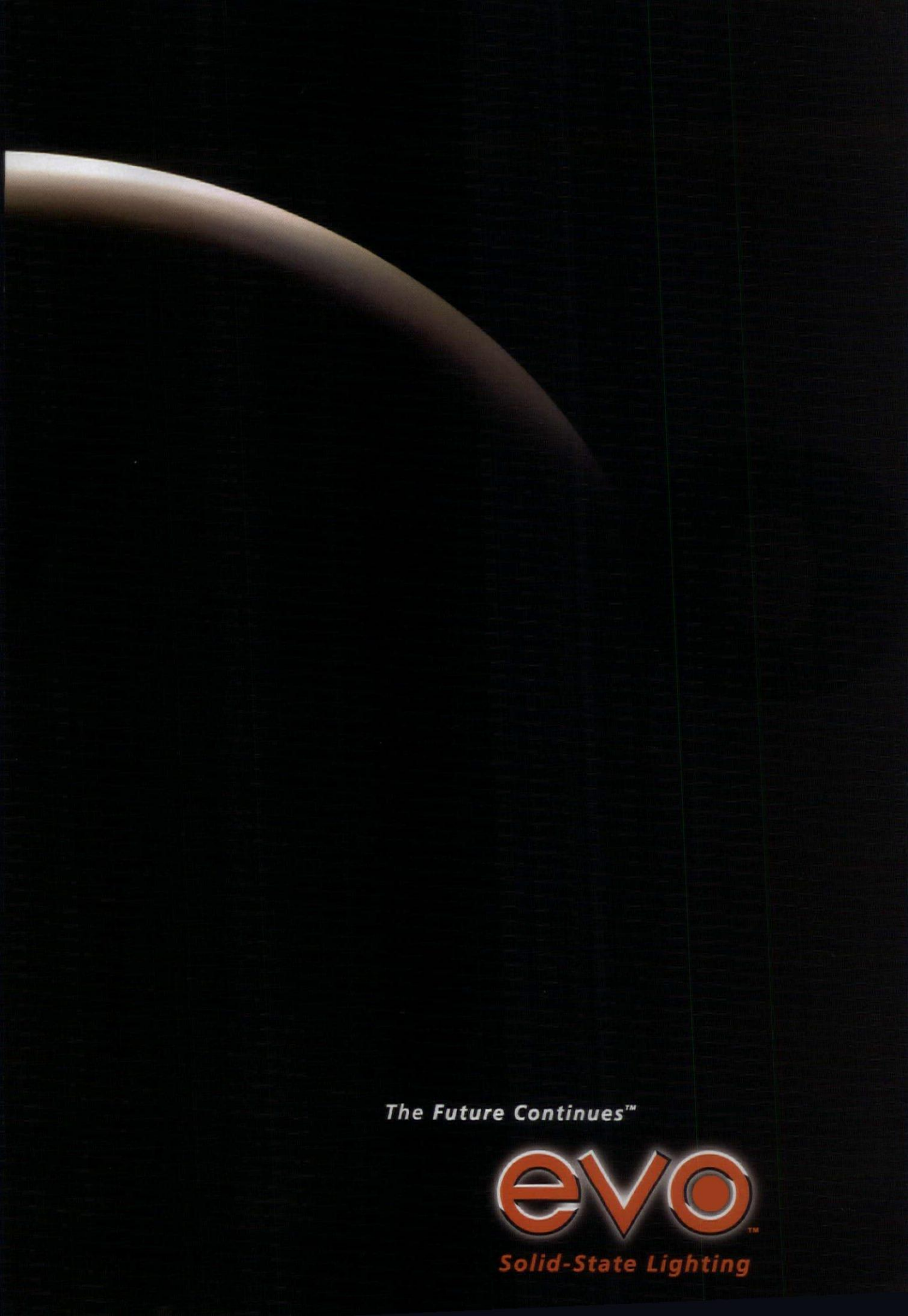
Visit us at LIGHTFAIR.

IntelliBlend

Renaissance Lighting | P 703.707.9000 | F 703.707.9244 | renaissancelighting.com/4

Premier lighting products by Renaissance Lighting Corporation

Circle No. 10 or www.archlighting.com/productinfo

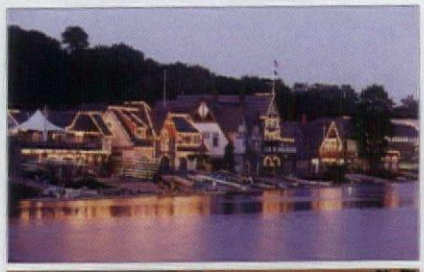

The Future Continues™
evo™
Solid-State Lighting

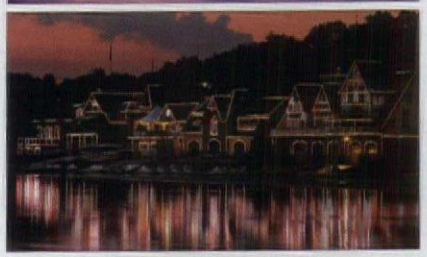
BOATHOUSE ROW: INCANDESCENT VS. LED

CAN LEDS EFFECTIVELY RELIGHT HISTORIC STRUCTURES IN a way that respects content and conveys authenticity within a contemporary context? That is the question raised by the updated exterior lighting system for the 12 Victorian-era boathouses along Philadelphia's Schuylkill River.

Launched to kickoff the city's annual weeklong July Fourth bash last summer, the $300,000 initiative, funded by local utility provider PECO Energy, replaced an outdated 6,000-bulb incandescent system originally designed by Philadelphia lighting firm Grenald Waldron that was installed for the city's American Bicentennial celebration. The new system is comprised of 12,000 individually controllable and programmable LEDs in 30-foot-long nodes. Unlike the incandescents, which produced a warm glow and soft outline of each boathouse, the color-changing LED system sharply defines the architectural form of each structure.

Although the LED solution saves the city $58,000 annually in operating and maintenance costs, and showcases solid-state lighting, the nighttime aesthetic produced by the LEDs is haunting. Rather than convey the boathouses as volumes, the directional but flat LED light shrouds the actual buildings in darkness, turning them into light-emitting skeletons.





Images of Philadelphia's Boathouse Row "before" (top), and "after" (above).

"How and when LEDs are used," says lighting designer Troy Martin-O'Shia, part of the team responsible for the new scheme, "is a debate that every project that uses LEDs needs to address," particularly for a historical or a more traditional context.

As electrical engineer Shannon Yott, also part of the design team, has found, feelings about the LED makeover are mixed. "We decided to go with LEDs for maintenance and economy," she explains. "Whether they look as nice as the incandescents is up for debate, but the fact that all of the lights turn on night after night has been a plus." Bulb burn-out was a problem that plagued the incandescent system.

That the light is continuous, may win over the project's detractors, proving to them that the system not only gives new life to the boathouses, it also gives a fresh image to Philadelphia as a city embracing the contemporary. **JOSEPH DENNIS KELLY II**

PHOTOS BY B. KRIST/GPTMC (TOP) AND BY R. KENNEDY/GPTMC (BOTTOM)

MTR Light Column
Tacoma Glass Museum/Thea Foss Waterway Esplanade

The Thea Foss Waterway Esplanade stretches for a mile and a half through historic Tacoma, Washington. Throughout this recent major upgrade, the design team specified se'lux MTR Column for its clean architectural design as well as the glare-free, visual comfort provided by the patented MTR refractor technology. Available with various lampings and column designs.

Circle No. 85 or www.archlighting.com/productinfo

Light. Ideas. Systems.

se'lux

www.selux.com/usa

(800) 735-8927

LUTRON LAUNCHES ENERGY SAVING SWEEPS

ESTABLISHED IN RESPONSE TO INCREASING ENERGY PRICES AND TARGETED SPECIFICALLY at homeowners, lighting controls manufacturer Lutron Electronics has launched its "Energy Saving Sweepstakes." Open to individuals, the sweepstakes will run in the United States and Canada through May 1, 2006, after which winners will be selected in a random drawing. A lump sum of $15,000, intended to be used toward energy bills over the next 10 years, will be awarded to the grand-prize winner. In addition, first-prize winners will receive $1,500 toward Lutron lighting control systems and other energy-saving products; second-prize winners will take home a Maestro IR remote-control dimmer.

"This is an opportunity to create awareness about the benefits provided by lighting controls," says Lutron Electronics media relations manager Melissa Andresko. "It's fair to say that consumers are not aware of the fact that dimmers save energy and make light bulbs last longer." Recognizing that energy costs continue to increase, Lutron hopes to educate consumers on alternative ways to reduce their energy bills. "Education is a crucial first step toward solving this energy problem," says Andresko. "The sweepstakes is the perfect way to drive that message home."

No purchase is necessary to enter the sweepstakes. Entry forms can be found at participating showrooms, or visit www.lutron.com for more information. **A|L**

PAUL TRIVELY APPOINTED TO IALD BOARD

A SIGNIFICANT OUTCOME IN THE RECENT IALD ELECTIONS WAS THE APPOINTMENT of Paul Trively as IALD President's Selected Director for 2006–07. Trively, vice president of specification sales at Lutron, is one of six elected at-large directors who will be assigned specific projects by the IALD Executive Committee, where his primary role will be to serve the mission and objectives of the IALD. To that end, to prevent any potential conflict of interest, Trively has resigned from all Lighting Industry Research Council committees and will no longer represent Lutron on the council.

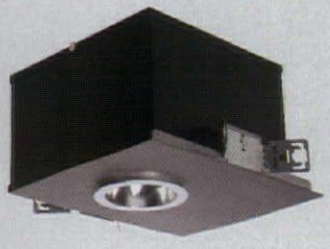
Although the IALD bylaws do not require that an IALD member hold this position, it is a fairly unique occurrence when the presidential appointment is made to a non-IALD member and a representative outside of the design community. But Trively's 38-year career in the lighting industry speaks for itself. IALD President Graham Phoenix made the recommendation based on Trively's experience and perspective as a manufacturer and business executive. Trively's particular area of expertise and research is the role of lighting controls in the healthcare industry. The appointment went into effect in January. **A|L**

Visit www.archlighting.com for timely news updates, company buzz, events, and competition information.

EASY

prescolite

ABOVE & BEYOND



aim

Make your life easy with Prescolite's new Architektūr A4 adjustable accent lights. Hot aiming, 45° vertical and 362° rotational adjustment, tool-less locking, multiple media accommodation, top access, a wide array of trims, lamp types and more... A4 has it all. What could be easier? To learn more about Prescolite's A4 family, contact your local Hubbell Lighting representative or visit us at www.prescolite.com or call 888-PRS-4TEC.

Circle No. 28 or www.archlighting.com/productinfo

Architektūr ARCHITECTURAL DOWNLIGHTS

HUBBELL

A FACELIFT FOR THE APOLLO

THE FIRST PHASE OF RECONSTRUCTION FOR HARLEM'S 91-year-old Apollo Theater has been completed. Along with a fully refurbished façade, a stainless-steel and glass storefront, and a new box office, the Manhattan landmark's exterior has undergone a lighting overhaul. Under the direction of Domingo Gonzalez from New York-based lighting design firm Domingo Gonzalez Associates, the façade and marquee lighting have been updated, yet keep with the theater's classic look.

In order for the marquee to resemble the original 1940s design—mandated by the New York City Landmarks Preservation Commission and the New York State Historic Preservation Office—the neon tubes of the red "Apollo" signs, and red and blue bands bordering the marquee, were replicated. While uplights provide general façade illumination, the marquee itself is comprised of a three-sided LED display screen housing approximately 275,000 LEDs, simulating the original hand-applied letters on the formerly backlit white plastic surface. For this reason, while capable of full color, the screens are limited to static, but changeable, messages. On the underside of the marquee ceiling, recessed downlights and incandescent chaselights provide sparkle. According to Mike Lewis of Barr & Barr, the construction management company for the project, the marquee lighting (including display screens) cost approximately $600,000. **A|L**

LETTER TO THE EDITOR

IN RESPONSE TO JAN/FEB 2006

The article, "Uncle Sam Gives Back for Efficient Lighting," brings back memories of the 1970s when, during the 'Energy Crisis,' I served on several government agencies and other committees whose mission was to get our country on track to save energy. It was quite amazing to me the number of schemes presented, most of which had little merit. It was clear that if I was to be of value, I would have to propose a positive, simple approach that would be easy for practicing professionals to incorporate in their work. At the same time this would need to be an easy-to-use system so that code officials could readily apply it. My contribution was a mathematical equation that set the upper power limit for lighting in new buildings. That equation was adopted. But it was William Tao, a brilliant engineer on the committee, who used that equation to produce Unit Power Density (UPD) tables that met the criteria of easy and simple. We owe a lot to Mr. Tao.

The lighting density table published in your Jan/Feb 2006 issue ("Uncle Sam Gives Back for Efficient Lighting," Page 20) shows the reduction of allowable power density from 1989 to 2004. The reduction in allowable connected load has been significantly reduced in that four-year period. When compared to the UPD's that Bill Tao and I worked on, the reduction in connected load is quite significant.

I am greatly concerned that if we continue on this course of limiting power for lighting we will be doing a great disservice to the significant role that lighting plays in the built environment. It is interesting for me to observe that most of the wonderfully lighted projects illustrated in this same issue far exceed the limits in the table you published. Further, in my opinion, if the designers had followed the limits set in the 2004 table, they could not have produced those magnificent lighting schemes. That would have been a disaster for their clients. I applaud professionals who serve their clients needs. They are the true professionals that exercise professional judgment to optimize the use of energy.

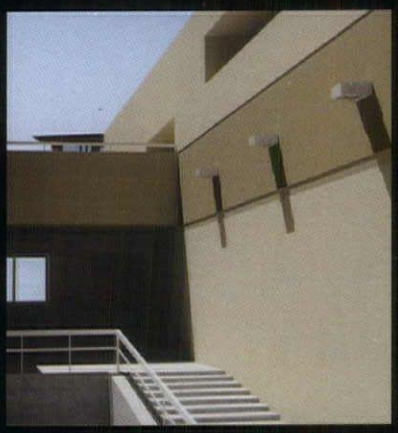
It is clear that energy zealotry is missing the point when it comes to lighting. The time is now to rethink where we are going and produce a table that is consistent with the needs of different user groups.

HOWARD M. BRANDSTON, Founding Partner, Brandston Partnership, New York

PHOTO BY ELLIOTT KAUFMAN PHOTOGRAPHY

Introducing The New Wall Commander™

Kim Lighting's new Wall Commander Series combines powerful area illumination, dramatic up/down accent effects, and relevant architectural design into one compact wall mounted luminaire.



KIM LIGHTING

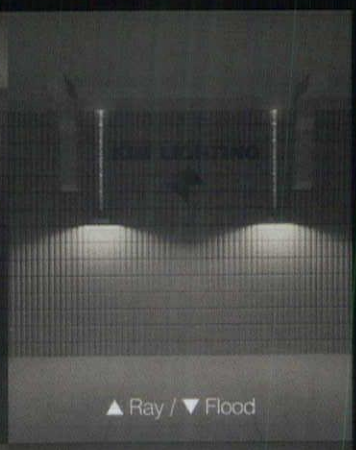
16555 East Gale Avenue
City of Industry, CA 91745
626/968-5666

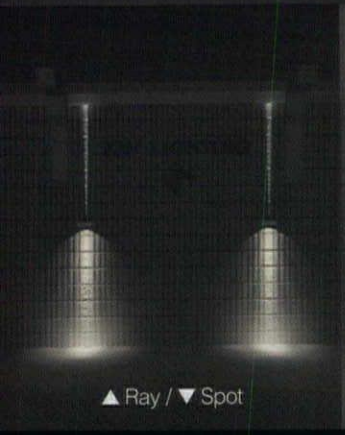
www.kimlighting.com

Made in America

Hubbell Lighting, Inc.

ISO 9001:2000





Photos represent only 12 of over 40 Wall Commander optical configurations available. Contact Kim Lighting for more information.

Crafting the Historic Luminaire

BY ELIZABETH DONOFF

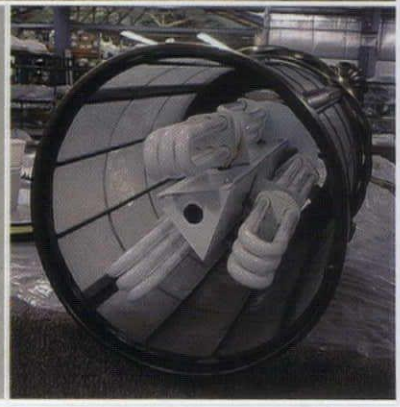
THE ARCHITECTURAL CONSIDERATIONS FOR A HISTORIC PRESERVATION project can be complex, and the same holds true for its lighting. There are numerous variables to consider for both existing and replicated luminaires, from materials and technique to lamp technology, the quality and type of light in a space, and required cost. Most importantly, before any actual design or fabrication can begin, a series of key criteria must be discussed, reviewed, and agreed upon by members of the project. This starts with identifying the scope of preservation; establishing the goals of the client, architect, and lighting designer; and understanding the available budget. The expertise of fabricators and manufacturers, such as Rambusch, Winona, New Metal Crafts, and Crenshaw, who specialize in custom historic decorative fixtures, can provide architects and lighting designers with valuable assistance and insight.

Identifying the scope of work, establishing the project goals, and understanding the available budget, are the key issues to discuss at the outset of any project involving the design and fabrication of historic luminaires.

SCOPE OF WORK

Establishing these criteria may seem like a straightforward process, but it is not. "The first and hardest part is to really identify the true goal, which results in a word definition or visual impression of what the project is," explains Edwin Rambusch, whose family business, Rambusch Lighting, a design and crafts workshop, located in Hoboken, New Jersey, has been constructing decorative stained-glass elements and custom historic luminaires for over 100 years. "Historic preservation in its true definition is to maintain that which is there," he says. In Rambusch's opinion, "duplication" of a luminaire should mean an exact replication, but because cost often comes into play, designers are willing to broaden the definition.

The scope of work is partially defined by whether it is a historic register project, explains Ron Schimmelpfenning of Dallas-based Winona Lighting. These projects require a detailed record of the restoration process: Specifically, the luminaire must be photographed from three different views in its exact location and its current condition before it is removed from the site. The register also requires a tagging system be attached to identify each luminaire before it can be packed and sent to the factory. If something should break at the shop, the piece must be engraved on the back with the date and the name of the manufacturer to note the amended part. On completion, it is re-photographed in the workshop and again when it is installed on site. Three copies of the documentation for each luminaire are usually made, and one



Fixtures for the Utah State Capitol are currently in production at Rambusch's workshop. The original luminaire, its replica, and the components of others wait for assembly (above). At Winona's factory, the structure and new scrollwork for replicas of a fixture for Walter Library at the University of Minnesota in Minneapolis are set out for assembly (below). The fixture is fitted with six 42W compact fluorescents with electronic ballasts mounted in a newly fabricated canopy (bottom).

binder is turned over to the owner, another to the historical register, and the third kept by the fabricator.

Although the team might agree on preservation vocabulary, part of the difficulty comes in assessing the condition to which the luminaire should be restored, explains Schimmelpfenning. This is often complicated by the fact that people mistakenly think that the patina they have been looking at for the last 20 years is the original finish. "Original" can only really be detected once the luminaire is removed and taken apart. At that point, says Schimmelpfenning, if the fabricator discovers something—for example, a bright polished finish—it has to be reviewed with the designer, since the discovery can present a bit of a quandary: restoring the fixture to its original state (a polished finish, for example) may actually make it seem "new," not historic.

Beyond the challenge of aesthetic interpretation, one area that is underaddressed according to Schimmelpfenning is lamp mechanics. Many old fixtures were originally illuminated with gas jets. The trick then is to provide an updated light source that replicates the color temperature and meets the right light-level requirements.

Woody Crenshaw of Crenshaw Lighting in Floyd, Virginia, acknowledges that there are different "gradients" of restoration that can be achieved: "museum quality," meaning that the luminaire is indistinguishable from the original at close range; "95 percent restoration/replication," meaning the luminaire is indistinguishable from a few paces away after it is installed; and "90 percent restoration," meaning that it has similar proportions, dimensions, and form that are close to the original. According to Crenshaw, the final option is usually budget-driven.

CRAFT AND FABRICATION

"Educating" the architect and lighting designer is one part of the fabrication process; training the craftspeople that build the luminaire is another. "We prefer to think of ourselves as craftsmen who participate in the development of the fixture," says Rambusch. "I'm being careful not to say designer, because there should be a designer—whether it's a lighting designer or an architect—on the project, who gives direction on the image, but it's our job to craft the luminaire and make it manageable to fabricate." Depending on the complexity of the job and the number of luminaires involved, anywhere from two to thirty people can work on a project.

Each company has its own internal training methodologies. Winona uses a rotation system, in which its employees work under a lead craftsman. The idea is that junior members of the team will be able to step into a lead role on future projects, which Winona structures to

Introducing...

W2 ARCHITECTURAL LIGHTING

NORFOLK

Decorative Luminaires

W2 introduces a complete line of architectural lighting for commerical, hospitality, and retail applications. The Norfolk Series features architecturally styled decorative pendants with glass and acrylic diffusers, offered in 24"–48" sizes for large spaces. We also offer matching Norfolk ADA sconces, ceiling mounts and close-to-ceiling luminaires in Bronze and Platinum finishes. Available for CFL or incandescent lamping. See us at LightFair.

ensure that the work is geared toward the strengths of individual craftspeople. Crenshaw Lighting also uses a team model to see a luminaire through from start to finish. This allows the members a certain level of "ownership" in the fixtures they are producing. The company has also developed a formal apprenticeship program with the local high school, in which one apprentice per semester works with the company, while studying welding theory and metallurgy. Chicago-based New Metal Crafts relies on one designer or engineer to coordinate the overall fabrication and production process.

COST

Cost is undeniably a factor in the design and manufacturing of historic luminaires. Meeting a budget is difficult when an architect or a lighting designer has an expectation about what he or she would like to see accomplished on the project, but is not sure how to synchronize the desired result with an achievable one. The challenge, explains Rambusch, is to assure a level of continuity through each of the steps involved in the overall process—from budget and schedule, all the way through to installation. For example, a designer may initially think he wants to delve into an elaborate historic preservation process, while in actuality all he really wants to do is strip and refinish the fixture. Other times a designer might want to put in new optics, but she does not have the budget to see it through properly, so the team finds the best solution that comes as close to the original goal as possible. Ultimately though, to achieve the greatest accuracy and level of craftsmanship, the manufacturer selection needs to be based on workmanship and quality, not on a low-bid process. In today's competitive marketplace, this is difficult, but if the decision has been made to spend the time, energy, and money to invest in a project that requires this kind of attention to detail at every step, then the result can prove rewarding.

As with any endeavor, the success of a historic preservation project is based on establishing relationships. From the manufacturer's point of view, the earlier they can participate in the discussion, the more accurate the project cost and the more successful the job. In the end, it is about understanding real definitions and terms so that scope and budget align. "Ultimately, it's about how much range, how much latitude you are given," says Rambusch. "I think the most successful projects are those in which everyone is respected for what they bring to the table, and there is an active conversation between all to accomplish it."

more **information** at ARCHLIGHTING.COM

smooth curve of the diffuser flows into the rippling lines of the trim ring in this
ssic 1920's reproduction fixture. The Calypso hangs from the ceilings in some
he country's most prestigious buildings. Available as a pendant, sconce,
d ceiling mount, the Calypso is offered with a shallow or deep diffuser.

ginal Cast Lighting

Circle No. 4 or www.archlighting.com/productinfo

www.ocl.com | p. 314-863-1895 | f. 314-863-3278

tailor-made.

ONE MORE **ADVANTAGE** OF USING BARTCO LIGHTING.

architect: Platt Byard Dovell White Architects lighting design: Cosentini Lighting Design photography: Paul Rivera - Archp

- Modified MiT5 with cable suspension kit. Shown with custom reflector
  * patent # US 6,652,119 B1

- Modified BFL292 with cable suspension kit. Shown with custom lens accessory

bartco LIGHTING
leading the way and lighting it.™

- retail
- hospitality
- commercial
- institutional
- residential

YOUR **VISION.** YOUR **PROJECT.** YOUR **LIGHTING** SOLUTI

nasf
RETAIL DESIGN A
20
diamond spon

bartcoLIGHTING.com

manufacturers of quality lighting prod

tel **714.848.0892** fax **714.848.6843**

Circle No. 49 or www.archlighting.com/productinfo

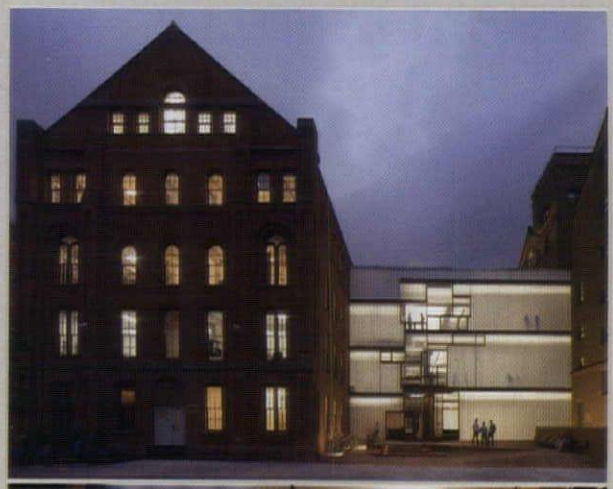
MARKING THE END OF NEARLY A DECADE OF CONSTRUCTION AND RENOVATION, Higgins Hall, part of the Pratt Institute's Brooklyn campus, reopened last September. The three-building structure, built in 1868 and gifted to the independent college of art and design in 1965, became the School of Architecture in 1970. Fast forward to 1996, when a devastating fire tore through the hall while it was undergoing renovation by Rogers Marvel Architects, decimating its center building and damaging parts of the north and south wings. While Rogers Marvel continued restoration on the north and south buildings, the school's dean, Thomas Hanrahan, called on Steven Holl Architects to design a new center section.

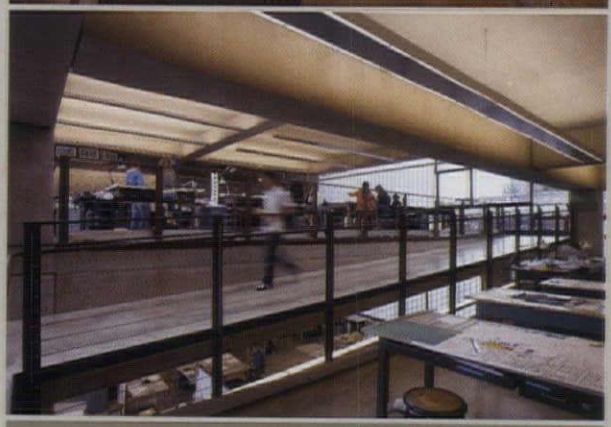
Its status as an architecture school building led to the idea of a didactic design "in which all the structures of the different pieces are expressed," explains Tim Bade, partner in charge on the project from Steven Holl Architects. This is most obvious from the outside, where the weathered brick mass of the existing adjoining structures can be seen through the semi-transparent interlocking U-shaped structural channel glass that comprises the addition's three-story façade, showcasing the structure's interior fluidity and its role as the hall's connective tissue. Giving the school a modern update and bringing new character to the complex's historic aesthetic and landmark status, this "urban insertion" is a contemporary bridge that carries students between its Victorian flanks. As Rogers Marvel associate Guido Hartray explains, the addition "allows the building to be knit back together so that the sections feel like there is a dialogue between them."

The semi-transparent façade and resulting nighttime glow also satisfy a more serious concern—the students' safety. In a neighborhood that was "pretty rough when we started building," says Bade, signs of activity after dark were key, especially for a program that requires 24-hour accessibility. The interior illumination casts a bright spot onto the street; Holl placed the open-plan studios on this glowing stage, where the activity of students working late into the night could be broadcast into the community.

Despite the visual distinction between the old and new structures outside, the interior design is fluid. The lighting scheme, realized by Arc Light Design, is minimal yet sophisticated. In keeping with the geometric patterns throughout the entire hall, the center section is illuminated by several variations of one custom linear pendant from Day-O-Lite. Suspended below the expanse of exposed concrete, the reflected light from these fixtures highlights the ceiling's texture and provides an ambient glow to the space. "We wanted the lighting to be minimal, yet provide enough illumination for the students to be able to work," explains David Singer, president of Arc Light Design. Light levels are between 20 to 30 footcandles, enhanced by daylight via the semi-transparent structural glass and a double-throated skylight. Together, they produce an even and flexible indirect light that—with luminaires allowing for four light levels and the option to bring in task lamps to supplement the existing lighting—leaves room for students to create their own environment within the studio.

Higgins Hall is historic preservation with a twist, the creation of a space where Pratt's architecture students can feel inspired and learn firsthand the fundamentals of architecture and lighting through the exposed structural elements of the building in which they study. The success of Holl's contemporary addition to the complex's historic fiber is not only a byproduct of his design, but a testament to what a building can accomplish when it is created with a clear directive in mind. This is not just a bridge between two buildings, but an integral piece of a puzzle that has, until now, been missing. **SALLIE MOFFAT**

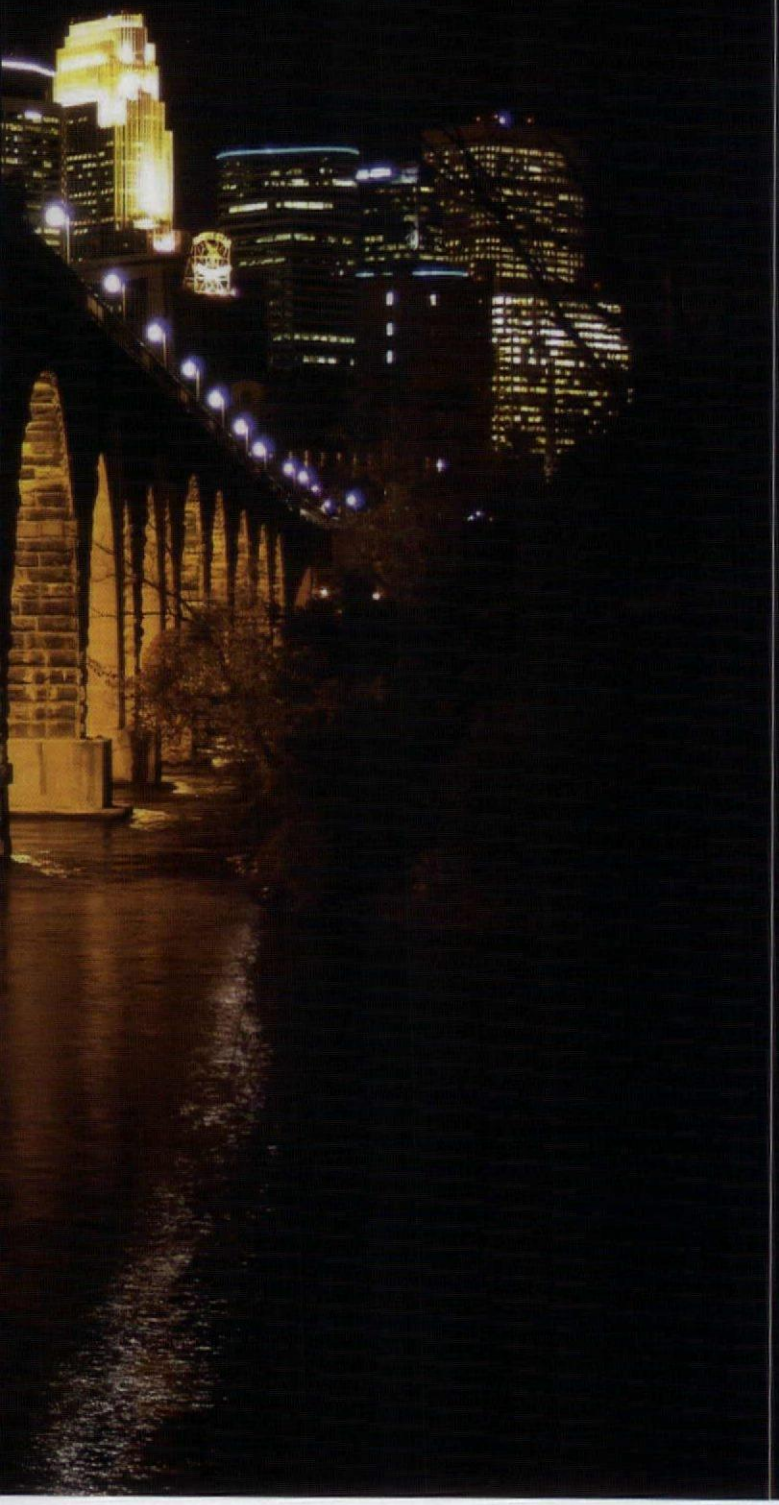




PROJECT: Higgins Hall **LOCATION:** Brooklyn, New York **ARCHITECT OF RECORD:** Rogers Marvel Architects, New York **DESIGN ARCHITECT:** Steven Holl Architects, New York **LIGHTING DESIGNER:** Arc Light Design, New York **PHOTOGRAPHER:** David Sundberg/Esto, New York

more **photos+drawings** at ARCHLIGHTING.COM

RIVERFRONT REBIRTH

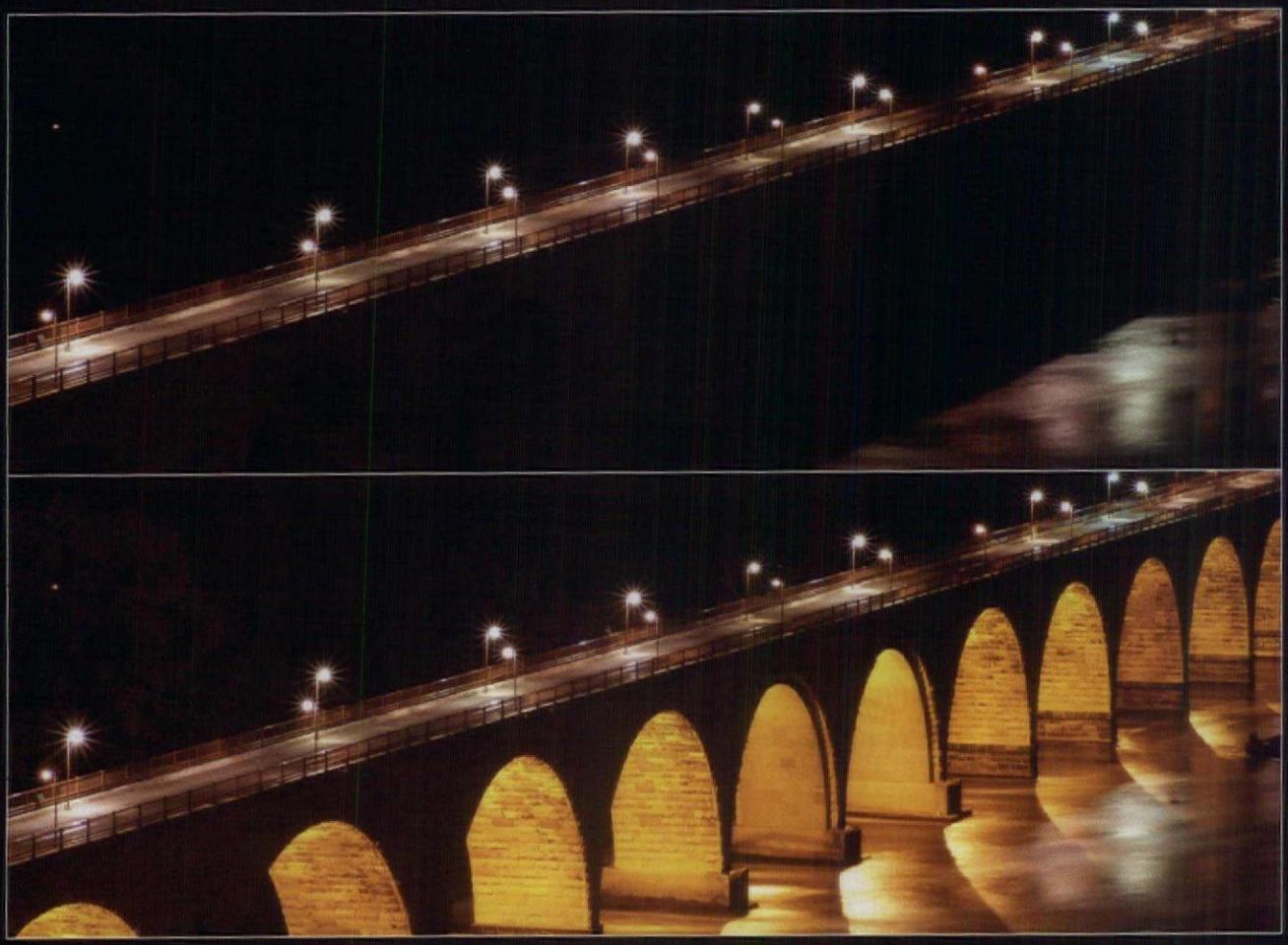


LIGHTING INFUSES NEW LIFE INTO A BELOVED MINNEAPOLIS LANDMARK.

RESIDENTS NEAR THE FALLS OF ST. ANTHONY, THE ONLY WATERFALL ON the Mississippi River, are witnessing the greatest boom along the riverfront since the milling days of the late 1880s, when Minneapolis became "flour capital" of the world. People are flocking to this historic waterfront district to live in restored buildings or in new condominium towers and townhouses. Numerous pedestrian walkways blanket the area, but the most popular by far is the route along the Stone Arch Bridge.

A working bridge until 1965, the 123-year-old structure was completed in 1883 by railroad pioneer James J. Hill. Deemed a National Historic Engineering Landmark in 1975, rehabilitation started in 1980, and in 1994 the bridge was restored for pedestrian use. Below the bridge deck, 22 arches of native granite and limestone stretch across the river spanning the Falls of St. Anthony. However, by night, lack of any bridge illumination, except for the pedestrian walkway above, made this section of the Mississippi a dark void; a gloomy contrast to the warm glow of light from the neighborhoods bordering the river.

In 2003, when planning began for the "Grand Excursion 2004" celebration—a river and steamboat flotilla replicating the 1854 Grand Excursion route up the Mississippi from the Quad Cities of Iowa and Illinois to the Twin Cities of Minneapolis and St. Paul—Peggy Douglas, chief developer of the Minneapolis historic district, realized the city's riverfront could be revived by lighting the bridge arches. Subsequently, city mayor R.T. Rybak brought Douglas together with Jay Cowles and Charles Zelle, who had founded the Friends of the Minneapolis Riverfront while working on the Grand Excursion organizing committee. In order to fund the project (no public monies were available), Cowles and Zelle's fundraising efforts generated $545,000, enough to light the 12 main arches over the water. Meyer, Scherer & Rockcastle, well known for its design of the award-winning Mill City Museum adjacent to the site, was



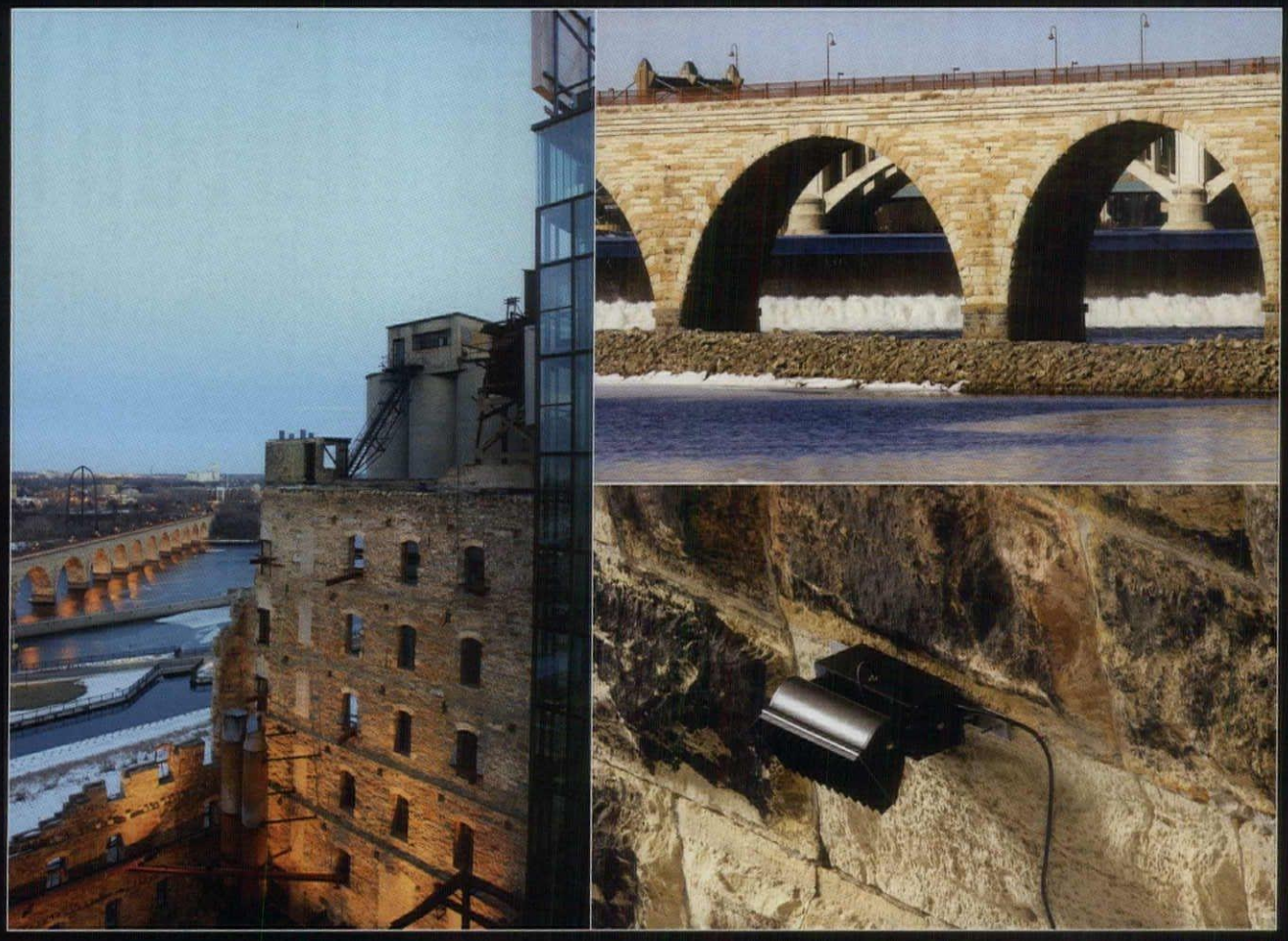
The Stone Arch Bridge now has a nighttime presence on the Mississippi River, and the difference between the bridge arches illuminated and not illuminated is striking. The color temperature of the light distinguishes between the upper pedestrian walkway, a cool white-blue light, and the undersides of the arches, which are washed with the warm tone of 400W high-pressure sodium lamps.

chosen as the architecture firm to oversee the project.

With Tom Meyer as principal, the firm's lighting designer, Carla Gallina, worked closely with the Minnesota Department of Transportation (MnDot), the bridge's owners; the Minneapolis Heritage Preservation Commission; and a host of other governmental agencies. David Fey, the city's senior policy manager, helped navigate the bureaucratic red tape, which involved no less than seven different public and private entities. The overall goal of the bridge's illumination was to enhance the warm natural color and texture of its limestone, and to highlight the arches' sculptural beauty without reflecting light into the adjacent neighborhoods. "We had three options," explains Gallina. "Light the river faces, light the arches, or light the river faces and the arches."

The MnDot required that the lighting design for this landmark be reviewed under the National Historic Sites Act, and consequently, the team had to meet three strict requirements: no drilling or damaging of the stone, no exposure of the conduits, and replace any damaged mortar joints with a historically correct mix. The contour of the stone had depths varying from 8 inches to 2 feet, so the designers needed to find a mounting system that did not touch the stone. The solution placed a single bracket along the mortar joint, which in turn was secured with a bolt. The team worked with a bridge inspector and mortar expert to review each mounting location to ensure there was no damage. Next, to avoid drilling and exposing the conduit, they used existing trench and drain holes to bring the conduit to the fixtures.

The team's lighting approach was straightforward—find the smallest fixtures and use as few as possible. An asymmetric uplight from Elliptipar for use with a 400W high-pressure sodium lamp was selected. The luminaires, 24 in total, could not be located at the bottom of each arch because there was no way to maintain them in case of flooding. Instead, Gallina placed the fixtures—2 per arch, one on each side and cross-aimed—about one-third of the way below the arch apex to create an even wash of light over the masonry form as well as on the water below. The standard fixture was modified to include captive screws and lens tethers because of the over-water installation. In addition, cutoff baffles prevent glare. Another important aspect of the design was the color of the light. "The pedestrian lighting along the top of the bridge and throughout the pedestrian parkway is white-



The Mill City Museum and the Stone Arch Bridge form the major focal points for the St. Anthony Falls Historic District (above left). The falls are the only waterfall on the entire length of the Mississippi River (top right). Luminaires are carefully placed on a bracket mounting system and installed in the mortar joint. Power is suppplied utilizing existing trench and drain holes (above right).

blue. All of the lighting on historic buildings along the riverfront is very warm, incandescent or high-pressure sodium," explains Gallina. "It's appropriate that the color of the lighting distinguishes between the two." An onsite mockup allowed the designers to carefully check the placement of the luminaires and the color and light intensity of the lamps.

Last October, Mayor Rybak flipped the switch at a public lighting ceremony. Crowds cheered when they saw this important landmark reborn. "As the lights slowly reached their full brightness, it was really magical," says Meyer. For Gallina, this project has been one of the "greatest rewards" of her 16 years of professional lighting design. "It was a long journey getting everything installed. To see it finally lit was emotionally breathtaking," she says. Through the support of elected officials, the efforts of a private fundraising campaign, and the sensitivity and attention to detail in the lighting design, citizens are once again able to enjoy this Minneapolis icon. **BETTE HAMMEL**

Bette Hammel is a freelance journalist in Minneapolis.

DETAILS

PROJECT Stone Arch Bridge, Minneapolis
COMPLETION DATES Phase 1: 12 arches over the water, October 2005; Phase 2: 5 arches over land, July 2006
CLIENT Friends of the Minneapolis Riverfront, Minneapolis
ARCHITECT/LIGHTING DESIGNER Meyer, Scherer & Rockcastle, Minneapolis
ENGINEER City of Minneapolis Traffic Engineers
PHOTOGRAPHERS Adam Grim (opening spread and facing page); Pete Sieger (all images this page)
TOTAL SQUARE FOOTAGE Phase 1: 33,600 square feet; Phase 2: 22,064 square feet
LIGHTING COST Phase 1: $545,000; Phase 2: $200,000 estimated. (All funding came from private donations.)

MANUFACTURER	APPLICATION
Elliptipar	Outdoor asymmetric uplight attached to underside of bridge arches

more **information** at ARCHLIGHTING.COM

ILLUMINATING HISTORY

Straightforward solutions bring the New York Historical Society up to date.

In the Luce Center display cases (below), objects once relegated to storage are now prominently displaye
Fluorescent strips with UV filters, wrapped in neutral-density sleeves provide a low-energy, low-infrare
UV-controllable solution. In the library (facing page, top and bottom), lighting designer Doming
Gonzalez replicated the sense of daylight once provided by the ceiling skylights b
backlighting the glass with pendant-mounted three-lamp industrial fluores
cent luminaires. Compact fluorescents concealed within the upp
cornice add a wash of light to the vertical surface

WHEN NEW YORK-BASED LIGHTING DESIGNER DOMINGO GONZALEZ WAS CALLED IN FOR A quick consultation at the New York Historical Society (NYHS) in 1995, he never realized that he would "spend the next ten years of my life working for them." The first project simply required advice on lighting the galleries. "I think I was paid with an Audubon tie," he says.

But later that year, when the NYHS was ready for a complete gallery overhaul, they knew the person to call. Gonzalez had been involved with historic restorations before—including Newark, New Jersey's Penn Station and the Great Hall at New York's City College—and had developed a formula for such projects: "Become familiar with the original fabric," he says, "and do no harm while updating for modern needs." The challenge with such endeavors is incorporating lighting systems into spaces created before electricity was standard. "You're always trying to graft interventions onto an architecture that didn't want them originally," Gonzalez says. And while the NYHS wished to respect its building's neo-Classical architecture, as the Society modernized, it had another major concern: a tight budget.

The NYHS, which literally sits in the shadow of the better-known and better-attended American Museum of Natural History, fell on hard times a decade ago. Built in 1908 and the oldest museum in New York, the structure houses important collections, such as the original watercolors for Audubon's Birds of America and turn-of-the-century architecture firm McKim, Mead and White's original drawings—but the lighting design did not do them justice. "It was a hodgepodge of elements," Gonzalez says, with many antiquated or in disrepair. "We counted seven different kinds of tracklighting from seven different manufacturers, some of whom were no longer in business. Some were sophisticated; others were low end."

THE GALLERIES

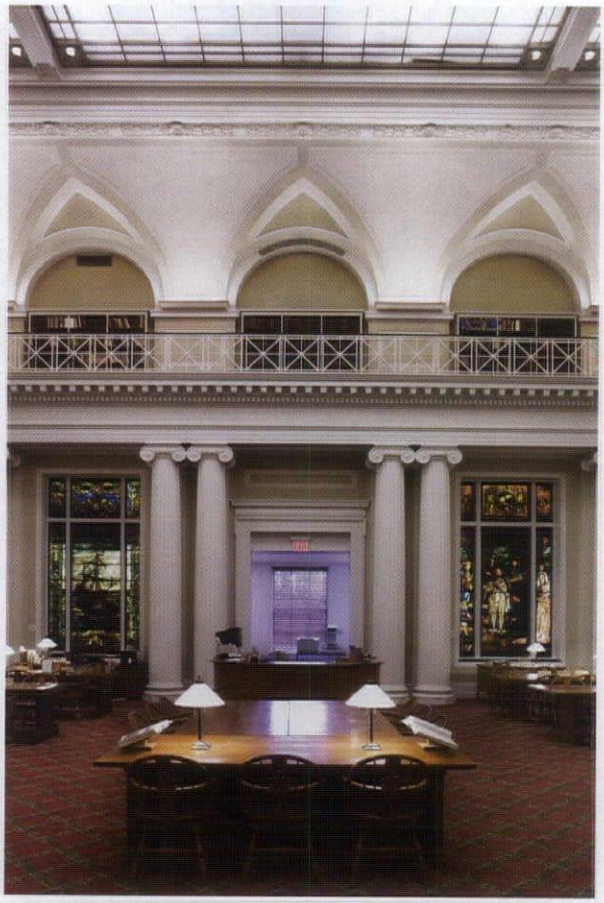
The first step in the galleries was to standardize. Because several were already outfitted with surface-mounted tracklighting from Lighting Services Inc, Gonzalez made it the norm for the rest of the gallery spaces. "LSI has a very consistent technology," he explains. "We could put fixtures that were twenty years old on a new track, because the fittings had not changed." Since gaslight, candles, daylight, and early variants of incandescent lamps were originally used to view the collections, Gonzalez aimed to replicate this quality of light with a family of tungsten halogen PAR lamp fixtures that take a variety of lenses and accessories, and that use a two-circuit track to allow for more fixtures. Remote transformers attached to the tracks, and turned down permanently about 10 percent, both warmed the color temperature by 200 degrees, and stretched the lamp life as much as 400 percent. The result is a gentle wash of light over the gallery walls. "It's a tried and true artwork lighting technique," Gonzalez explains.

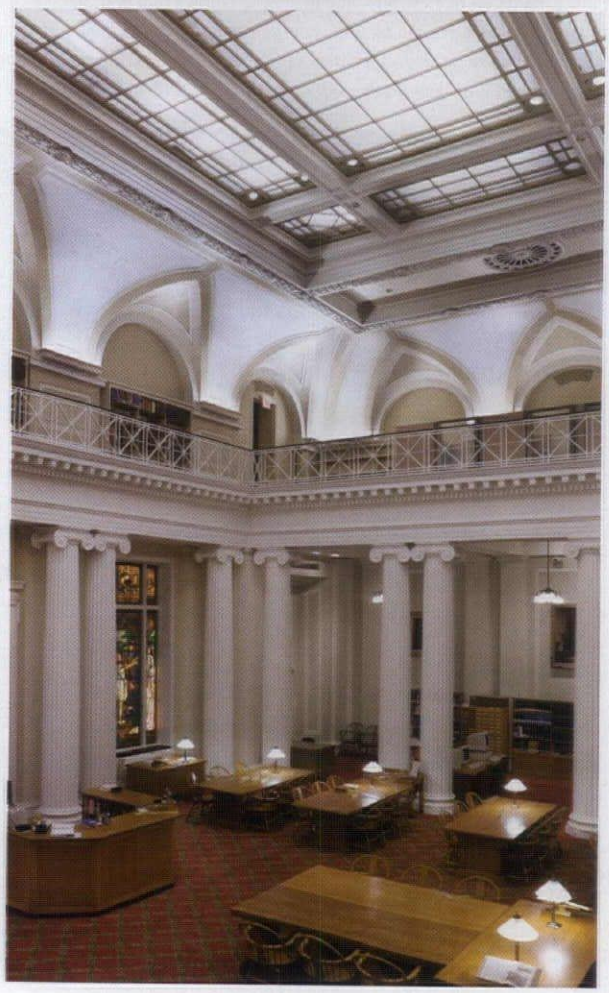
A series of indirect fluorescents remain on after the tracklighting is turned off. "At night, a security guard can make his rounds and see everything without having the incandescent lights on," says Gonzalez. "Energy usage is reduced, as is the bombardment of paintings with ultraviolet light."

LUCE CENTER

The balance between historic and contemporary was key in Gonzalez's next project for the NYHS. In 1997, he was called in to illuminate the Luce Center for the Study of American Culture, a scholars' gallery on the upper floor of the museum, where nearly 40,000 artifacts from the museum's permanent collection are contained in glass cases. The pieces had been resigned to storage, that is until the Society decided to illuminate the storage area itself, and put all the artifacts on permanent display. The question was how to light them in a way that was budget friendly, and would not cause heat buildup in the cases.

Gonzalez's solution was simple: inexpensive fluorescent strips with UV filters, wrapped in neutral-density sleeves. The resulting





Fluorescents were a useful—and budget-friendly—tool in illuminating the 40,000 objects in the Luce Center's collection (above). A series of indirect fluorescent fixtures remain on after energy-consumptive incandescents are turned off (facing page, top). Standardization was key in the galleries (below, and facing page, bottom): Existing surface-mounted track from Lighting Services Inc was matched with new product, and fitted with a family of tungsten halogen PAR lamp fixtures that recall the quality of light provided by the gaslights once used to illuminate the galleries.

light is gentle, allowing the objects themselves to shine. "Fluorescent can be beautiful, too," he says.

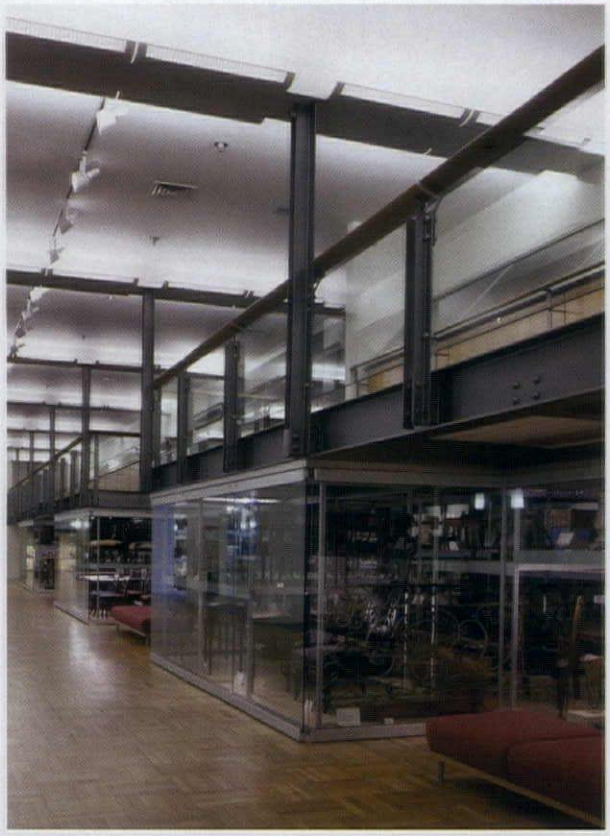
THE LIBRARY

Gonzalez applied the same combination of beauty and budget-watching to his final project: the Society's interior restorations. Begun in 2000, the main focus of this work was the NYHS library. The formidable space houses everything from historical broadsides to menus, all under a glass ceiling that had once illuminated the collections solely with daylight. "The lighting technique was very sophisticated," Gonzalez says, "but the ceiling technology at the time was not. It leaked like a sieve." The skylight had been sealed with concrete at some point in the museum's history, making the ceiling completely dark. Gonzalez wanted to replicate the sense of daylight that was there in 1908, so the lighting team backlit the glass with pendant-mounted three-lamp industrial fluorescent luminaires, and fitted the ceiling's corner rosettes with tungsten halogen PAR lamp downlights. On the library's second level, a discrete architectural cornice with concealed compact fluorescents was added to wash the wall surfaces. The reading desk task lights, lamped with 13W compact fluorescents, add another layer of light to the space.

Gonzalez himself is glowing about the result. "You would never know we had used fluorescents if I hadn't told you." The key, he says, is not to be afraid to consider lamp types you might have been prejudiced against before. "People say they don't like fluorescents, but they don't know they can look like this."

Responding to the specific program requirements of individual spaces, yet maintaining an overall continuity, updated lighting systems have been added discretely at the NYHS, preserving the historic feel of the building. The Society's diverse collections are now exhibited in a manner worthy of their significance, an important treasure waiting to be rediscovered. **LISA SELIN DAVIS**

Lisa Selin Davis is a freelance journalist in New York, who writes for publications including the New York Times *and* Metropolis.



DETAILS

PROJECT New York Historical Society renovations, New York (Galleries: 1995–6; Luce Center: 1997–2000; NYHS interiors: 2000–04)

ORIGINAL BUILDING ARCHITECT York and Sawyer Architects, New York (1908)

RENOVATION ARCHITECT Beyer Blinder Belle, New York

LIGHTING DESIGNER Domingo Gonzalez Associates, New York

PHOTOGRAPHER John Bartelstone, New York

PROJECT SIZE 163,000 square feet

MANUFACTURERS	APPLICATIONS
A+L	Custom surface-mounted compact fluorescent indirect luminaire in library cornice, walls, and ceiling; basement galleries
Belfer	Continuous surface-mounted compact fluorescent strips in library ceiling
Columbia	Recessed compact fluorescent wallwasher in café
Edison Price	Recessed tungsten halogen PAR lamp downlight on library walls
GE	Lamps
Lighting Services Inc	Recessed line-voltage track in basement corridor, galleries, and museum store
Lithonia	Staggered fluorescent strip in architectural cove in basement galleries
Metalux	Pendant-mounted industrial fluorescent fixture over uplight component in library ceiling
Neoray	Compact fluorescent asymmetric uplight in architectural cove in café ceiling
Osram Sylvania	Lamps
Philips	Lamps
Rejuvenation House	Decorative pendant-mounted compact fluorescent in museum store vestibule
Rejuvenation Lamp & Fixture Company	Library table lamps
Specialty Lighting	Surface-mounted incandescent wallwash strip in library ceiling
Winona	Surface-mounted compact fluorescent sconce in hallways; suspended cylinder around compact fluorescent in café
Zumtobel	Surface-mounted, non-air-handling, direct/indirect fluorescent troffer with white reflector and perforated metal basket in Luce Center display cases

A Lift for the Louvre

Lighting designer Claude Engle's 1989 scheme for the I.M. Pei-designed pyramid at the Louvre involved lighting the steel tensile web that supports the structure, rather than the glazing, in order to avoid glare that would limit the building's transparency, an effect preserved with the recent retrofit.

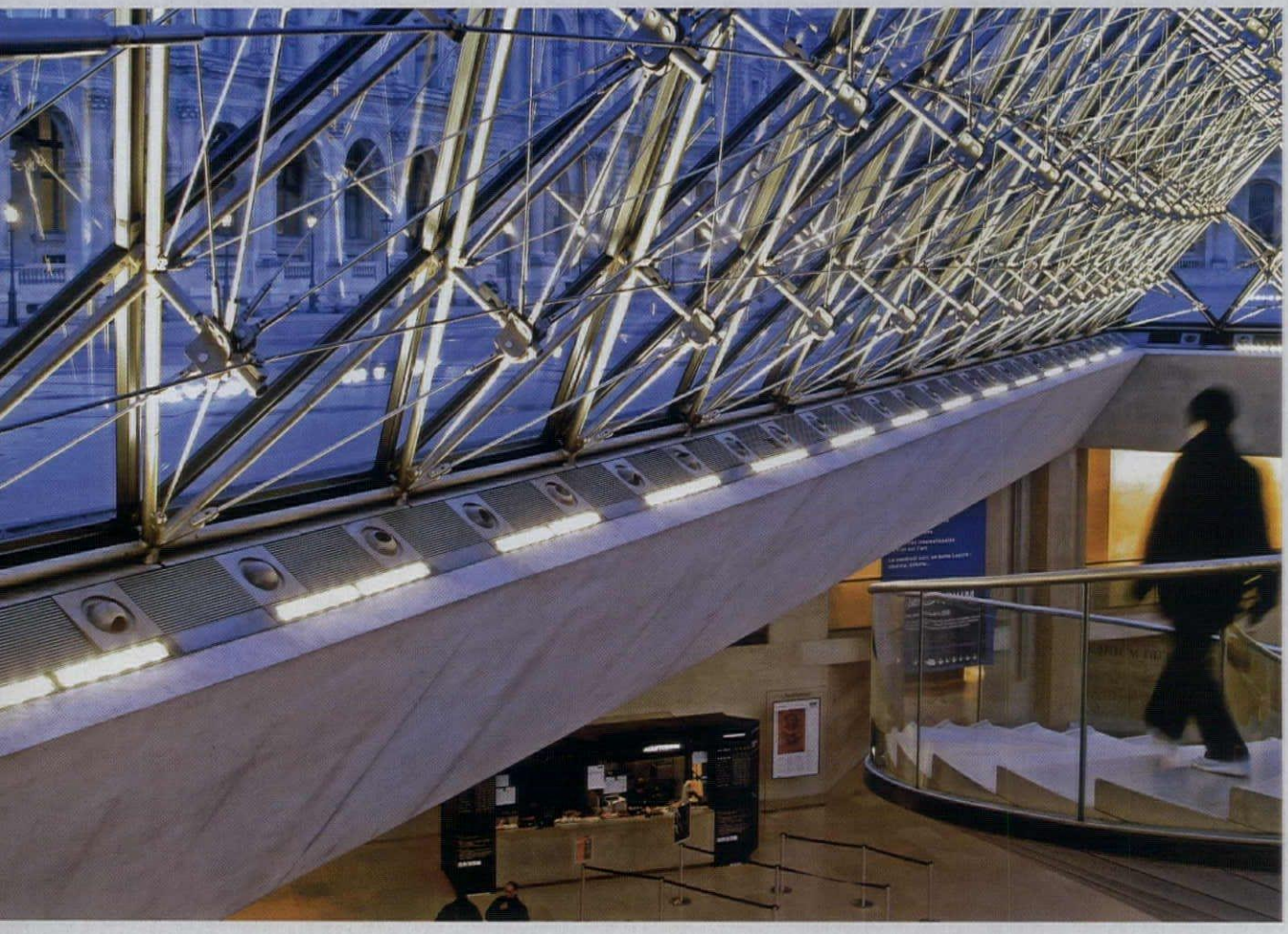
DESIGNED BY I.M. PEI AND COMPLETED IN 1989, THE PYRAMID AT THE LOUVRE IN Paris is now a familiar symbol of both the museum itself and modern French character. Conceived to connect the old collections and the new auditorium through underground galleries, the emblematic structure is the key entrance for the 6 million visitors that discover the Louvre every year.

Illumination of the glass and steel pyramid was originally entrusted to Maryland-based lighting designer Claude Engle. The client wanted the effect of an object that is illuminated from inside, while avoiding any glare that would limit its transparency. As Engle emphasized in a recent interview, the lighting's purpose was to support the conceptual approach of the architectural composition itself: The pyramid, even though visually oriented on the historical axis of Paris—which runs from the Louvre west to La Defense—would not interfere with the view of the façades surrounding it.

Toward this end, Engle, after extensive experimentation, decided to concentrate the light on the steel tensile structure of the pyramid instead of on its glazing. He located the luminaires in a channel around the interior base of the pyramid, setting them in specially designed mounting trays. Each tray contained a series of five modular spotlights, lamped with a 100W halogen source and angled to reveal the intricacy of the load-bearing elements. This solution avoided reflections, establishing a delicate balance between the transparency of the surface and the interior volume.

Fifteen years later, the system was in need of modernization. The client had two goals: to infuse a more contemporary quality to the light emanating from the pyramid to contrast with the warm tone on the surrounding historical façades; and to reduce the maintenance and cost of the system. Having supplied the custom mounting trays and luminaires for Engle's original design in 1989, Erco was asked by the museum to adapt the lighting system to meet these

Enhancements to the 15-year-old lighting system for the Louvre pyramid bring new sparkle to an iconic structure.



Asked to update Engle's design 15 years later, Erco adapted the trays around the perimeter of the pyramid that hold the spotlights for easier maintenance (inset, facing page), and replaced the original 100W halogen lamp with a 20W metal halide, thereby achieving the same effect more efficiently.

requests, while maintaining the designer's original concept.

Installed at the end of 2004, the solution was based on newly developed metal halide technology: The 20W lamp from Philips was chosen for its longer life-span (6,000 hours instead of 2,000), reduced power (20W instead of the original 100W) and, consequently, easier maintenance. While the difference in color temperature is slight (from 2700K originally to 3000K currently), it is a perceptibly whiter light. The lamp's dimensions also enabled utilization of the original system's reflector construction, though Erco redesigned the trays to allow grouping of the lamps in sets that could be physically accessible all at once for maintenance. Remodeling the control system with a double circuit enabled the luminaires in each tray to be switched in groups of two or three to adjust brightness. The new housing is also IP44-rated, in order to better handle humidity that has been found to occur inside the pyramid, notes Martin Krautter, marketing director for Erco.

That the recent adjustments to the pyramid's lighting are primarily technical is a testament to the strength of Engle's approach almost two decades ago. "It's definitely the original design," says Krautter, "only with better materials." **AURELIA DUPLOUICH**

Aurelia Duplouich graduated from the Versailles School of Architecture, and has a masters in Urban Design from the Bartlett. She contributes regularly to publications in French and English.

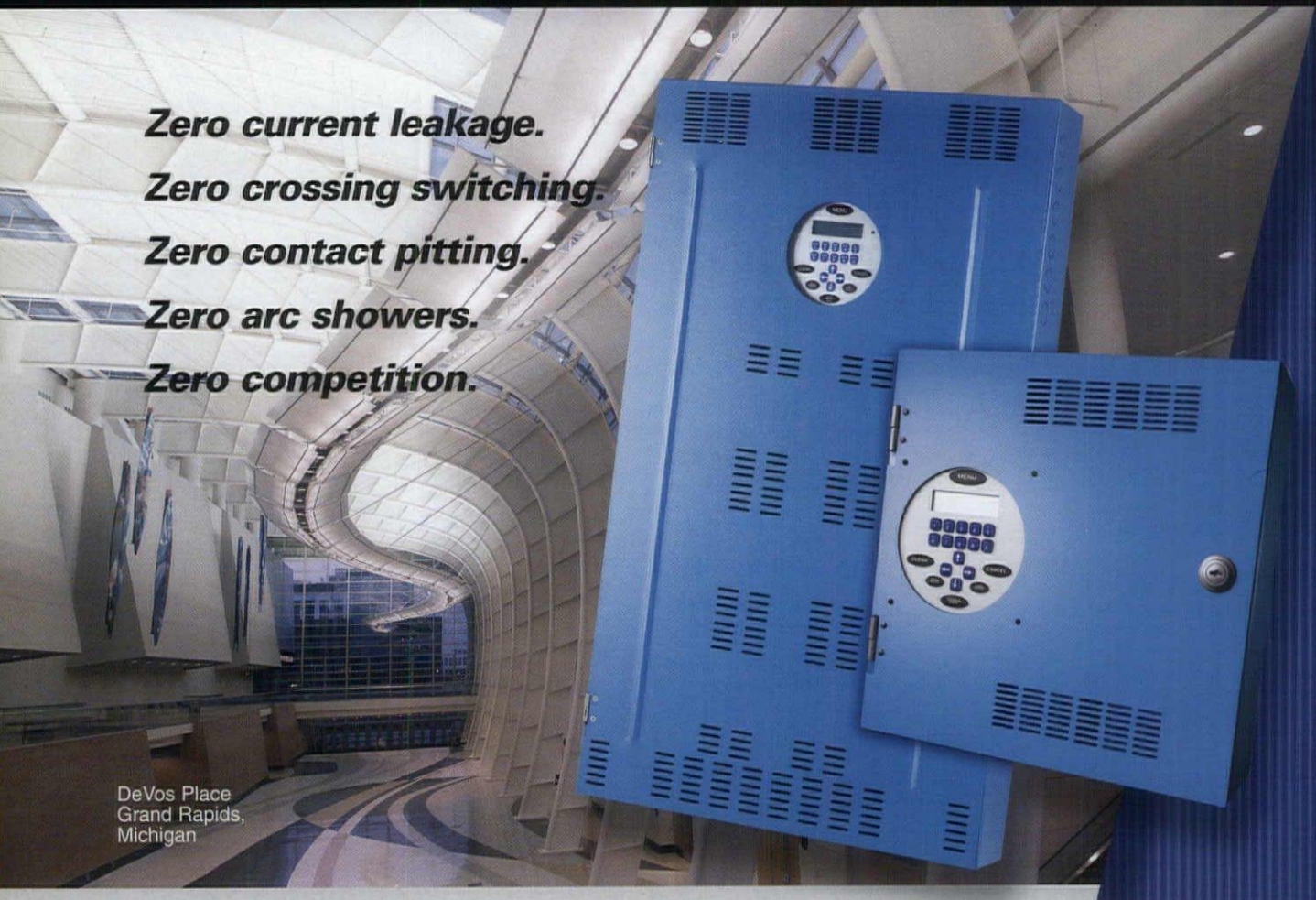
DETAILS

PROJECT Pyramid at the Louvre, Paris
CLIENT Musée du Louvre, Paris
ARCHITECT Pei, Cobb, Freed & Partners, New York
LIGHTING DESIGNER Claude Engle, Chevy Chase, Maryland
PHOTOGRAPHER Thomas Pflaum, Castrop-Rauxel, Germany

MANUFACTURERS	APPLICATIONS
Erco	Custom mounting trays and reflectors
Philips	20W metal halide lamps

more **photos** available at **ARCHLIGHTING.COM**

Introducing Z-MAX with "zero current" switching. Never before have zeros added up to so much.



Z-MAX

Now there's a relay system that gives you incredibly more life for your money–plus a broad range of energy management solutions. ■ Z-MAX, the proprietary switching circuitry from Leviton Lighting Management Systems, is specifically designed to control electronic ballast loads and deliver an industry-leading *10-million-cycle life.* Far above the 6,000-cycle UL requirement, Z-MAX's performance is made possible by innovative design that lets you switch under full load conditions at zero crossing with true zero current. The result is air-gap switching that completely eliminates arc shower pitting at the contacts, the number one obstacle to longevity. ■ A built-in astronomical time clock, advanced networking and your choice of digital and low-voltage switches make Z-MAX the most advanced lighting control relay system available. There's simply nothing else like it. ■ Leviton's Lighting Management Systems delivers the broadest range of energy management solutions. From occupancy sensors to fully networked daylighting controls to facility-wide control, we're your single-source solution. To learn more, call 800-996-2276 or visit us at www.leviton.com.

Building a Connected World
200
LEVITON
1906
FOR OVER 100 YEARS

GREAT YARMOUTH BEACH, ENGLAND

CHALLENGE One of the United Kingdom's premier seaside resort towns on the North Sea coast, Great Yarmouth has always been recognized for its beaches and maritime history. Economically, the town has relied on a lengthy tourist season of up to eight weeks, but over time that holiday period has declined. In an effort to draw visitors year round and have them recognize the spot as more than just a warm-weather destination, an organization called the Great Yarmouth inteGREAT Partnership was created in 2003 to revitalize the town, the beach, and area historical sites. One of the first projects, part of a multi-phased master plan, was the installation of new lighting along the beachfront esplanade.

ARCHITECTURAL AND LIGHTING SOLUTION The lighting scheme employs new custom-designed poles, finished in a gold tone, that support two carefully secured luminaire components: a footway-type downlight that provides the correct light levels for pedestrians, and a color-changing fixture that is focused toward the beach. "Particular effort was made to make sure they sat well with the existing town streetscape infrastructure," explains Peter Western, Martin Architectural's U.K.-based project engineer, who collaborated on the project.

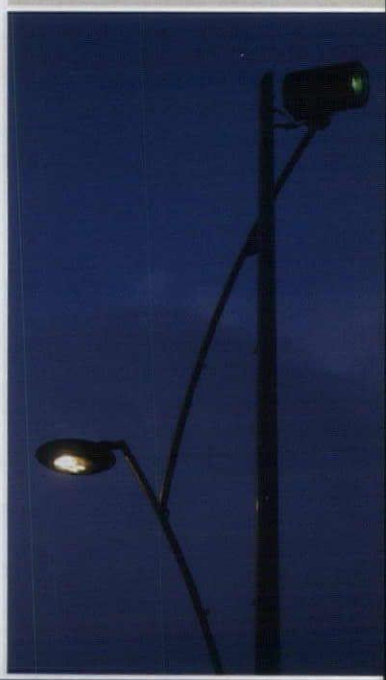
The fixtures, Martin Architectural's Exterior 600s, are positioned at 38 separate locations along the esplanade, which borders the mile-long stretch of beach between the Wellington and Britannia piers. The luminaire, which uses a 575W metal halide lamp, was selected for its color-changing capacity and programming capabilities, and was specified with an IP65 rating in order to withstand wind, salt, and mist.

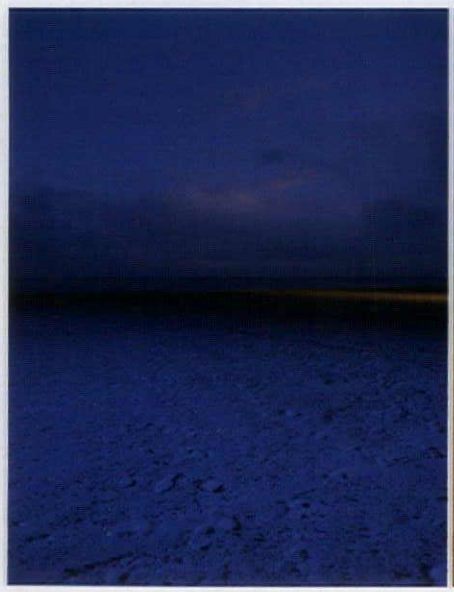
The CMY color-mixing system is able to project numerous color sequences. To date, blue, pink, and yellow tones have been used to wash the beach, sand, and water, transforming what is normally viewed as a recreational space into something more theatrical and ephemeral. The color selection is still a work in progress, says Western, and it is likely that the colors will grow to coincide with specific events and holidays as inteGREAT expands its programming. The lighting control system is located across from the esplanade in a council building. Although this posed a bit of a challenge for the cabling, it gives inteGREAT the flexibility to add equipment and programming capabilities at a later date.

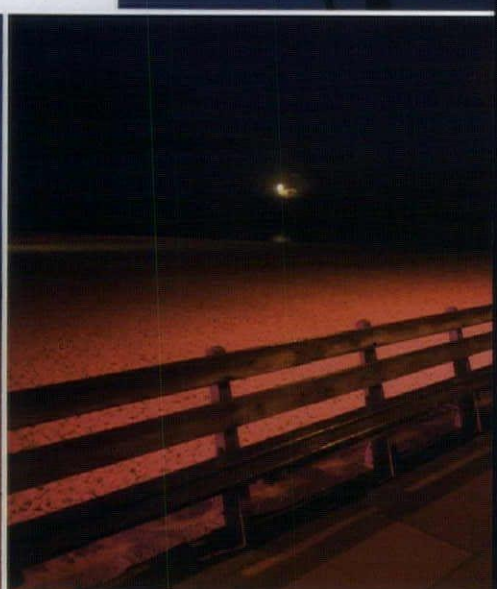
Although a great deal of focus has been placed on attracting tourists to Great Yarmouth, inteGREAT is also working to provide local residents and businesses with a "safer, more comfortable and dynamic place to live and work." To that end, the new lighting scheme has made the beach and esplanade an approachable nighttime location with an ambiance completely different from its daytime character. "One of the first effects we saw was people actually using the beach in the evening," says Rosie Couch, the marketing communications officer for inteGREAT. As she points out, it not only extends the summer season, but also stretches day into evening, providing new opportunities for esplanade business, like cafes that are open at night—a win-win situation for residents and beachgoers alike. **ELIZABETH DONOFF**

DETAILS

PROJECT | Great Yarmouth Beach, England
DESIGN TEAM | inteGREAT (client); Martin Architectural (technical consultant); Herbert Tonkin (esplanade architect)
PHOTOGRAPHER | Allan Toft, Aarhus, Denmark
MANUFACTURER | Martin Architectural







KINGSTON BRIDGE, GLASGOW

DETAILS

PROJECT | "Chroma Streams; Tide and Traffic" on the Kingston Bridge, Glasgow

DESIGN TEAM | JM Architects, Glasgow (architect); Leni Schwendinger Light Projects, New York (lighting designer); Mott MacDonald Civil Engineers, Glasgow (engineer)

PHOTOGRAPHER | Steve Hosey, Glasgow

ILLUSTRATIONS | Courtesy of Leni Schwendinger Light Projects

PROJECT SIZE | 57,183 square feet

WATTS | .126 per square foot

COST | $343,500 (equipment, programming, installation)

MANUFACTURERS | BP Solar Panels, Martin Professional, Smartek, Strand, Trichord Data Collection

CHALLENGE Glasgow has joined the ranks of European cities employing light as a vehicle for urban design and civic renewal. The City Council's lighting initiative—"Glasgow: City of Light"—not only complements the municipality's extensive rejuvenation plan for the neglected stretch of land on either side of the River Clyde, but extends to encompass the city in its entirety. While the initiative aims to revive the Clyde's social, economic, and physical map, where industrial areas that once thrived from shipbuilding now sit derelict after the industry's decline, it also hopes to develop lighting as a recognizable art form in the city.

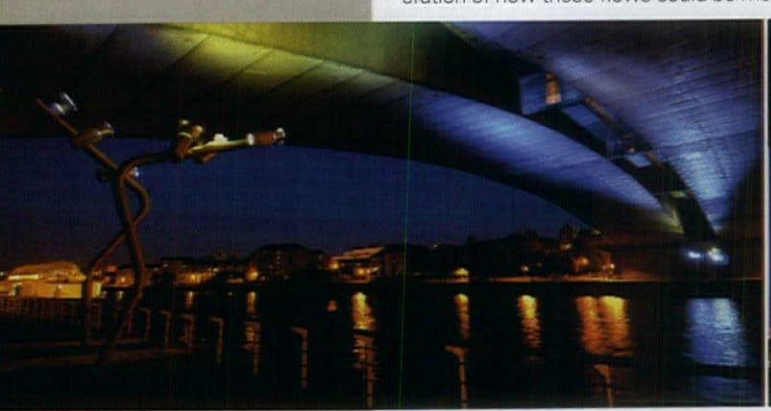
ARCHITECTURAL AND LIGHTING SOLUTION With a topography populated by church spires, prominent landmarks, and bridges, Glasgow's architectural assets are receiving dramatic makeovers with light. One project recently completed in the second phase of the city's proposed three-phase lighting strategy is "Chroma Streams; Tide and Traffic" on the Kingston Bridge, an installation by lighting design firm Leni Schwendinger Light Projects. Commissioned by the Council, the project explores the interplay between the traffic flow on the bridge and the slow change of the river's tides.

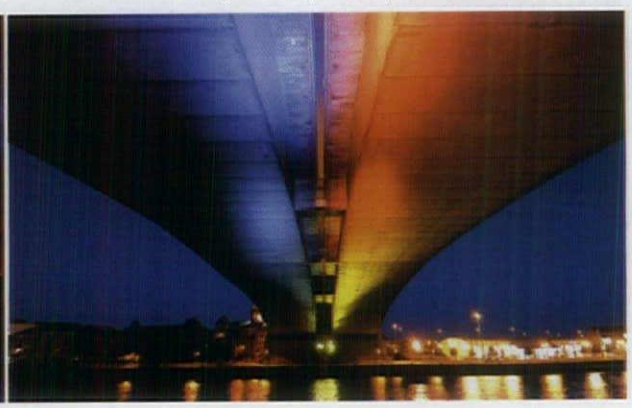
As the busiest road bridge in Europe, carrying over 180,000 vehicles a day, the Kingston Bridge comprises five traffic lanes in each direction, supported by two monumental concrete arcs. A "big beast in urban terms," says Ian Alexander of JM Architects, who collaborated on the project, "but with a certain unadorned elegance." In order to design the lighting, Leni Schwendinger, founder of Light Projects, looked to the underside of the bridge, an aspect of the structure she really loved, as inspiration. And then an idea presented itself: "It came to me one day that there were two great flows," Schwendinger explains, "the flow of the traffic and the flow of the river." While researching the Clyde, she happened upon physicist Lord Kelvin's tidal graphs, which prompted the consideration of how these flows could be measured and illustrated through color on the bridge itself.

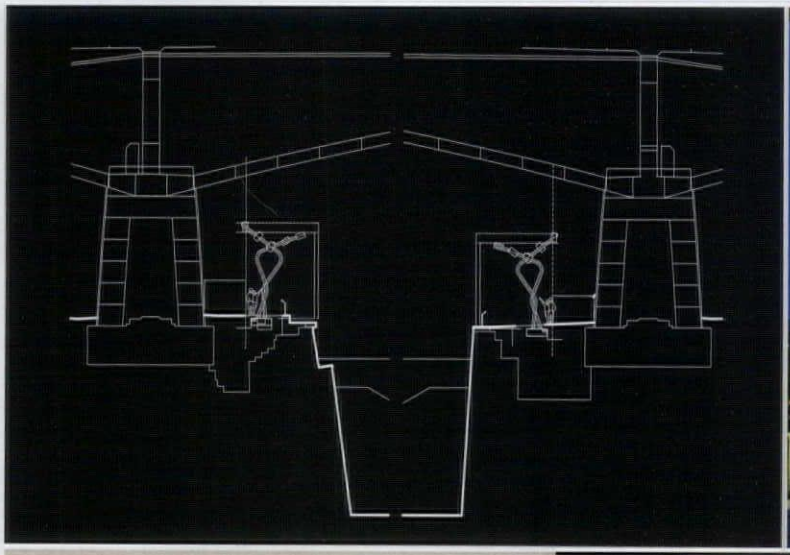
Providing a daytime element to the installation's nighttime presence was important to the design. Four 20-foot-tall stainless-steel sculptural armatures, inspired by Lord Kelvin's curvy nineteenth-century graphs, were planted in pairs on each side of the river. Three color-changing washlights fixed on each stem are fitted with custom barndoors to help direct the light upward, recreating the swoop of the bridge's underside, and 575W metal halide lamps provide all of the illumination. For a design that was seemingly simple, "it took night after night of adjustments to finalize the focus," explains Schwendinger. "It was the most arduous focus I've ever done."

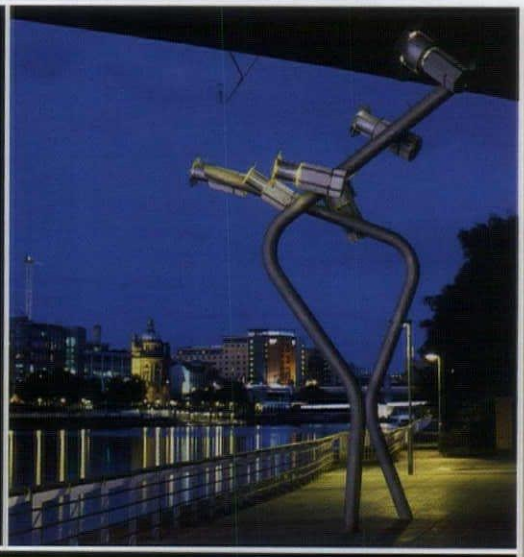
The colors projected onto the bridge are the result of highly orchestrated programming that allows for 144 sequences derived from the real-time patterns of traffic and tide. Because the tides are a predictable condition, a linear mutable color pattern starting at the cool end of the spectrum—from light green to indigo blue—was assigned to illustrate their four interlocking cycles. The variable flow of traffic is based on levels of service, measured by volume and speed. Like a grading scale, the best traffic (A) is yellow, meaning constant and clear, while the worst (F) is red/pink, a static traffic jam. Each of these levels represents a color on the warm end of the spectrum. Each minute, data is transmitted from streetlight sensors and sent to a "black box," where it is translated into a preprogrammed scene. "We wanted the transitions to look pleasing and intentional" explains Schwendinger. "Even though it's shown in real time, it's not changing in a non-disciplined way."

With this installation, the Kingston Bridge has become an interactive artwork physically depicting the city's rhythms and providing users a gauge for what to expect on the road ahead. The lighting strategy allows the familiar to be viewed in an artistic context, in this case, says Alexander, "re-engaging and modifying a perhaps poor perception of the bridge in the public eye." **SALLIE MOFFAT**

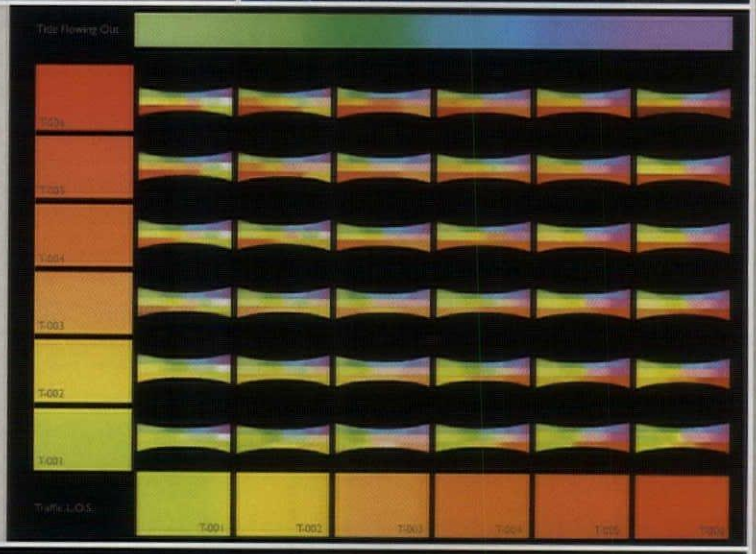


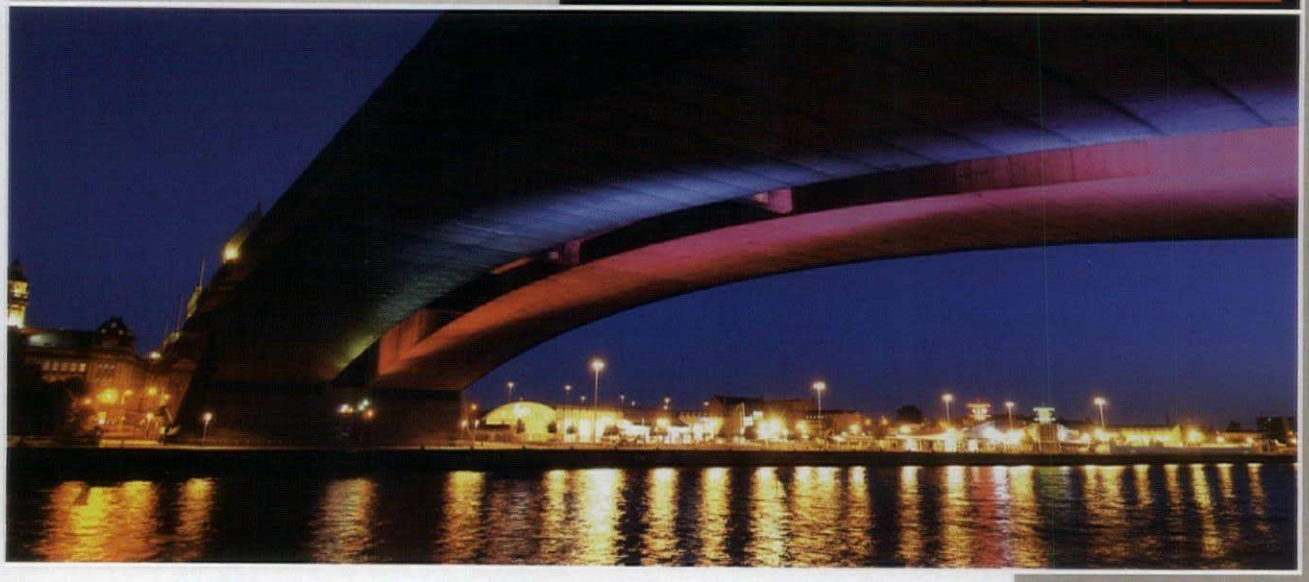






An installation that draws attention to the Kingston Bridge's overlooked surfaces, "Chroma Streams; Tide and Traffic" projects light onto the underside of the structure via 12 fixtures located on two pairs of 20-foot-tall sculptural armatures on each side of the River Clyde (above right and drawing). Depending on the speed and volume of traffic and the tide's direction, one of 144 preprogrammed colored light scenes—36 of which are based on one of four tidal flows (right)—is shown for one minute before updating (below and facing page). This installation, part of the city's proposed three-phase lighting strategy—"Glasgow: City of Light"—not only heightens the bridge's interplay with the flow of the river below and the traffic above, but has brought life to the Clyde at night and improved the quality and safety of Glasgow's nighttime environment.





THE OUTSIDERS

VISIO LIGHTING | ZODIAC 500 SERIES | VISIOLIGHTING.COM
Offered in pole-top (shown), pendant, or surface-mounted versions, the Zodiac 500 Series provides area illumination with high-pressure sodium, metal halide, or compact fluorescent lamps. Constructed of die-cast aluminum with a corrosion-proof finish, the fixture accommodates several internal louver designs for a variety of light distribution patterns. A selection of shades, decorative top caps, and pole designs are available. CIRCLE 125

ALLSCAPE | DESIGNER WALL BRACKET | ALLLIGHTING.COM
One in a family of high-performance floodlighting fixtures, the Designer Wall Bracket can be aimed up or down as a wall-, ground-, or ceiling-mounted fixture. Easily adjustable with a tilt of 136 degrees and a rotation of 360 degrees, the luminaire takes either a metal halide or compact fluorescent lamp. Its aluminum housing is offered with a baked-enamel or powder-coat finish, with custom colors available. CIRCLE 127

LUMIÈRE LIGHTING | ARCHITECTURAL STEPLIGHT | LUMIERELIGHTING.COM
This line of architectural steplights is offered in 5- and 7-inch round or square housings with several fascia designs, including cross-guard with a diffused lens (shown) and louvered with a clear lens. The fixtures are available in a variety of metal and painted finishes and can be lamped with low-voltage halogen, metal halide, compact fluorescent, and LED sources. CIRCLE 126

SEA GULL LIGHTING | HERMITAGE OUTDOOR PENDANT | SEAGULLLIGHTING.COM
Part of the Hermitage family of classic lanterns, this outdoor pendant is 11 inches in diameter and 18 inches tall. Its solid brass frame has an antique bronze finish and contains a frosted glass shade, which conceals a 26W compact fluorescent lamp, enabling the luminaire to meet both Energy Star and California Title 24 requirements. CIRCLE 128

BETA LIGHTING | BAA-S22-H-T4 | BETA-LIGHTING.COM
This area-cutoff luminaire has a segmented reflector designed to provide forward throw with lateral distribution, appropriate for athletic court illumination. Its 22-inch-square die-cast aluminum housing contains a high-impact, strength-tempered glass lens to protect either a metal halide or pulse-start metal halide lamp. Five mounting choices are offered, and up to four fixtures can be mounted on a single pole. Finish colors include bronze, black, and silver. CIRCLE 130

OLUCE | STONES OF GLASS | OLUCE.COM
Made to resemble rocks, Stones of Glass luminaires are constructed of weatherproof polycarbonate and are available in three sizes—small (5 inches high), medium (7 inches high), and large (8 inches high). Each stone requires an electrical outlet and takes an incandescent lamp. They are offered in the United States through YLighting (ylighting.com). CIRCLE 129

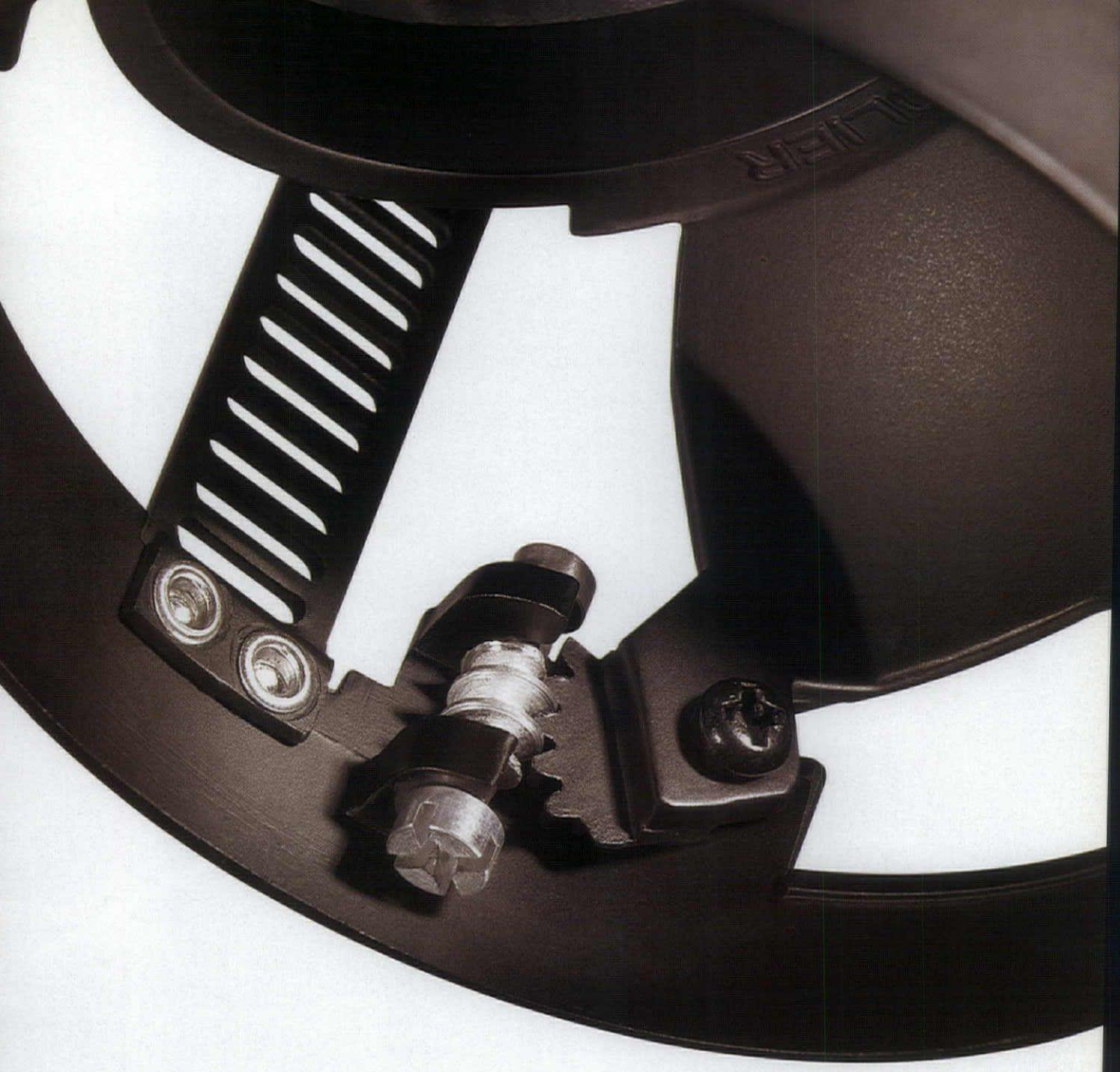


Image shown 400% of actual size

THREE INCH.
THE NEXT EVOLUTION.

Delivering the optical performance, mechanical precision and visual comfort you have come to expect from Evolution downlights. All from an aperture less than 3" in diameter.

2005
architectural lighting
ACE.alAWARDS

LIGHTOLIER®

ARCOS™ ID

litecontrol.com

Designed with versatility in mind

Arcos ID is the latest addition to Litecontrol's Arcos Family – a complete line of high performance light fixtures with a compact, arcuate-shaped design. An indirect/direct fixture, Arcos ID now joins Arcos, Arcos Perf II, and Arcos Slots, to provide a broad range of design tools for achieving quality lighting.

LITECONTRO

LITECONTROL . . . *an employee owned company* 100 Hawks Avenue Hanson MA 02341 781 294 010

Circle No. 69 or www.archlighting.com/productinfo

On the Road with Light

BY J. DELVIN ARMSTRONG & BENJAMIN J. JORDAN

METHODS TO CONSIDER WHEN DESIGNING ROADWAY LIGHTING

ROADWAYS ARE NOT PARKING LOTS—HIGHER VEHICLE SPEEDS ON ROADWAYS CALL FOR lighting designed to help drivers quickly identify hazards and react to them. The American National Standard Institute's Practice for Roadway Lighting (ANSI/IESNA RP-8-00) provides three design methods for roadway lighting: illuminance, luminance, and small target visibility (STV). Illuminance is the amount of light reaching the roadway surface, measured in footcandles (lumens/ft^2) or lux (lumens/m^2). Luminance is the measure of light reflected off the roadway surface, measured in candelas per square meter (cd/m^2). STV predicts visibility of a standard object on the roadway, and accounts for the contrast between a standard target and its background, taking into account factors including driver age, viewing time, pavement reflectance, and glare from the luminaire. The larger the STV number, the more visible an object will be.

THREE APPROACHES

Which method should you use? Illuminance is the most common, since it is also the oldest, having been around since the early days of lighting design; however, illuminance levels do not correlate with visibility or driver performance. Standard RP-8-00 addressed one shortcoming of the illuminance method by adding a maximum veiling luminance ratio intended to limit glare from the luminaire. A luminance calculation is necessary to calculate this veiling luminance ratio. Luminance design, including a maximum veiling luminance ratio, has been in use since 1983. Luminance describes the reflected light from the pavement seen

		Illuminance					Luminance				Small Target Visibility			
Roadway Classification	Pedestrian Conflict Area	Minimum Average Maintained Illuminance (fc) for Pavement Reflectance Classification			Maximum Uniformity Ratio Avg./Min.	Maximum Veiling Luminance Ratio	Minimum Average Luminance (cd/m^2)	Maximum Uniformity Ratio Avg./Min.	Maximum Uniformity Ratio Max./Min.	Maximum Veiling Luminance Ratio	Minimum STV Weighting Average	Avg Maint. Luminance if Median Width is less than 7.3m (cd/m^2)	Avg Maint. Luminance if Median Width is greater than 7.3m (cd/m^2)	Maximum Uniformity Ratio Max./Min.
		R1	R2&R3	R4										
Freeway A		0.6	0.9	0.8	3.0	0.3	0.6	3.5	6.0	0.3	3.2	0.5	0.4	6.0
Freeway B		0.4	0.6	0.5	3.0	0.3	0.4	3.5	6.0	0.3	2.6	0.4	0.3	6.0
Expressway	High	1.0	1.4	1.3	3.0	0.3	1.0	3.0	5.0	0.3	3.8	0.5	0.4	6.0
	Medium	0.8	1.2	1.0	3.0	0.3	0.8	3.0	5.0	0.3	3.8	0.5	0.4	6.0
	Low	0.6	0.9	0.8	3.0	0.3	0.6	3.5	6.0	0.3	3.8	0.5	0.4	6.0
Major	High	1.2	1.7	1.5	3.0	0.3	1.2	3.0	5.0	0.3	4.9	1.0	0.8	6.0
	Medium	0.9	1.3	1.1	3.0	0.3	0.9	3.0	5.0	0.3	4.0	0.8	0.7	6.0
	Low	0.6	0.9	0.8	3.0	0.3	0.6	3.5	6.0	0.3	3.2	0.6	0.6	6.0
Collector	High	0.8	1.2	1.0	4.0	0.4	0.8	3.0	5.0	0.4	3.8	0.6	0.5	6.0
	Medium	0.6	0.9	0,8	4.0	0.4	0.6	3.5	6.0	0.4	3.2	0.5	0.4	6.0
	Low	0.4	0.6	0.5	4.0	0.4	0.4	4.0	8.0	0.4	2.7	0.4	0.4	6.0
Local	High	0.6	0.9	0.8	6.0	0.4	0.6	6.0	10.0	0.4	2.7	0.5	0.4	10.0
	Medium	0.5	0.7	0.6	6.0	0.4	0.5	6.0	10.0	0.4	2.2	0.4	0.3	10.0
	Low	0.3	0.4	0.4	6.0	0.4	0.3	6.0	10.0	0.4	1.6	0.3	0.3	10.0

TABLE 1. ANSI/IESNA RECOMMENDED VALUES FOR ILLUMINANCE, LUMINANCE, AND SMALL TARGET VISIBILITY

Compiled by Benjamin J. Jordan, the table (above) is based on values published in Tables 2, 3, and 4 of the ANSI/IESNA RP-8-00 American National Standard Institute's Practice for Roadway Lighting. The purpose is to view the approaches and values side by side. Combining roadway-scale and pedestrian-scale lighting effectively illuminates both the roadway and the walkway and adds visual interest for pedestrians (top).

PHOTOS BY BENJAMIN J. JORDAN

Mounting height is critical. Pedestrian-scale lighting, for example, does not effectively light the roadway and looks out of proportion with the scene.

when driving, so evaluating the quality of a lighting project by how it looks at night is actually the same as evaluating its luminance.

STV, which was added as a design method in 2000, predicts how easily a pedestrian or an object will be seen in the roadway. Making it easier to see people and objects is the goal of roadway lighting design, so it is logical to use a method that predicts visibility. The one drawback to STV is limited designer experience, given the method's relative newness.

Most U.S. designers still use illuminance as the primary roadway lighting design criteria. Worldwide, however, luminance is the dominant method, and practitioners in the United States would be well served to make the change, as it will help to better predict the performance of their roadway lighting designs. Designers should run luminance and STV calculations and select a design that meets the luminance criteria while maximizing the STV value.

PRODUCING A ROADWAY LIGHTING SCHEME

With multiple design methods and many criteria to consider, it is hard to know where to start when designing a roadway lighting scheme. Software that is capable of STV calculations is a must. (A list of programs is available at www.darksky.org/links/software.html.) Because the design process is iterative, producing multiple answers that meet the criteria, there are several decisions to make before entering numbers into a software program. The luminaire and lamp type, along with mounting height, spacing, configuration, and orientation all influence the results.

MOUNTING HEIGHT One design approach is to begin by selecting a mounting height that is in scale with the roadway cross section. A mounting height equal to the roadway width times 0.62 produces a visual scene that approximates the Golden Rectangle, the proportional measure determined by ancient Greek scholars. Using this mounting height, adjusted to match the nearest commercially available option, will produce a design that appears in scale with the roadway.

Specifying a luminaire mounting height of 12 to 15 feet is a common mistake designers make. This height correlates to a pedestrian-scale walkway; it does not work well for lighting the width of a roadway. However, the designer can relate a roadway-scale solution to the pedestrian by specifying an architectural base that provides visual interest at the pedestrian's eye level. A roadway-scale lighting system can also be supplemented with separate luminaires and light standards at the pedestrian scale.

CONFIGURATION After choosing a mounting height, determining luminaire configuration is the next step. Possible layouts that will usually offer better visibility include luminaires on one side of the road, luminaires on both sides of the road, or luminaires in a center median. Two-sided staggered, a popular configuration intended to provide a more uniform lighting level, will have poorer visibility results, because the increased uniformity actually decreases visibility on the roadway. One-side and median configurations often have the additional advantage of requiring less wire and conduit, resulting in lower construction costs.

LUMINAIRE AND LAMP TYPE Next, the designer needs to select a luminaire and lamp. Type II or Type III (IESNA terms that refer to width of beam spread) luminaire distributions are typical for roadway lighting. Cutoff or full-cutoff luminaires should be specified to limit light pollution. Semi-cutoff luminaires are a good choice for applications such as a downtown area, where the luminaire might also

A|L LIGHT & ARCHITECTURE DESIGN AWARDS

DEADLINE: TUESDAY, MAY 2, 2006

ENTRY FORM & SUBMISSION GUIDELINES
ARE AVAILABLE FOR DOWNLOAD AT WWW.ARCHLIGHTING.COM

Architectural Lighting announces the THIRD ANNUAL A|L LIGHT & ARCHITECTURE DESIGN AWARDS honoring outstanding and innovative projects in the field of architectural lighting. The A|L DESIGN AWARDS recognize and reward excellent lighting within the specific criteria relevant to each category. To acknowledge topics of notable importance in today's practice of lighting design, A|L will award the A|L VIRTUOUS ACHIEVEMENT (ALVA) AWARDS, which recognize projects that achieve the Best Use of Color; the Best Incorporation of Daylight; and the Best Lighting Design on a Budget. All winning projects will be published in the July/August 2006 issue of A|L, and will be featured on archlighting.com for three months.

A|L DESIGN AWARDS CATEGORIES

- RESIDENTIAL
- INTERIOR LIGHTING (PROJECTS UNDER 10,000 SQ. FT.)
- INTERIOR LIGHTING (PROJECTS OVER 10,000 SQ. FT.)
- EXTERIOR LIGHTING (PROJECTS UNDER 10,000 SQ. FT)
- EXTERIOR LIGHTING (PROJECTS OVER 10,000 SQ. FT.)

A|L VIRTUOUS ACHIEVEMENT AWARDS

- BEST USE OF COLOR
- BEST INCORPORATION OF DAYLIGHT
- BEST LIGHTING DESIGN ON A BUDGET

have to provide vertical illumination for building façades. Non-cutoff luminaires produce significant glare and sky glow, and should not be specified for roadway lighting.

High-pressure sodium lamps are most common for roadway lighting. Metal halide is used where color rendition is a concern or "white light" is desired. Lamps typically range from 100 to 400 watts, depending on the mounting height and roadway cross-section. A light-loss factor (LLF) is selected to account for the depreciation in lamp output and luminaire performance over time. Typical light-loss factors are 0.60 to 0.70 for high-pressure sodium lamps and 0.45 to 0.55 for metal halide lamps. The LLF will also vary depending on environmental conditions and maintenance procedures.

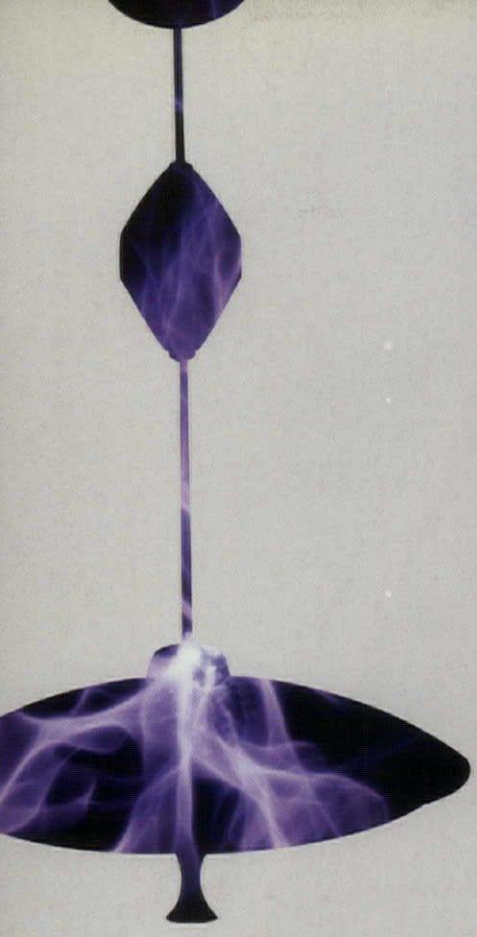
SPACING After selecting the inputs, luminaire spacing can be calculated. Most software programs have optimizers that run multiple iterations, varying the distance between luminaires in order to determine the allowable separation. Even if the first trial works, it is helpful to change the inputs to identify other possible designs. The software can provide a number of "right" answers, but it is only a tool; the designer must still compare construction and operating costs and visibility performance in order to select the best lighting system for the roadway. Adopting this design approach will result in an efficient and effective lighting system that improves safety.

Interesting details on the pole base relate roadway lighting to the pedestrian.

J. Delvin Armstrong, president of Armstrong Engineers, specializes in outdoor illumination projects in the Pacific Northwest. He is a member of the IESNA Roadway Lighting Committee. He is also an instructor in the University of Wisconsin-Madison, Department of Engineering Professional Development continuing education course, "Effective Roadway Lighting."

Benjamin J. Jordan is a program director for the University of Wisconsin-Madison, Department of Engineering Professional Development. He is also an instructor in the "Effective Roadway Lighting" course, information about which is available online at www.epdweb.engr.wisc.edu/webH123.

more **information** at ARCHLIGHTING.COM



create+connect

HD 2006

expo & conference

Expo: April 27-29, 2006
Conference: April 26-29, 2006
Sands expo & convention center
Las Vegas, Nevada
www.hdexpo.com

HD 2006 is only weeks away!
Register online at www.hdexpo.com!

Recharge your creativity.
Connect with the community.

There's only ONE place for you to do both: HD 2006.

There's a reason why HD has been the premier event for hospitality design for over 13 years. It's the only place where you can get inspired by hundreds of innovative new products and network with the leading minds in hospitality design. At HD, you won't wade through unrelated back-of-house supplies to find the design elements you're looking for – the over 900 exhibitors on HD's expanded show floor all showcase products specifically for hospitality design.

And our LU/CEU accredited courses are more than a design track– they're all focused on the design-centric challenges you face everyday. Our peer-based discussion sessions are taught by designers, owners, and executives from our community who will give you insight on solutions, trends, and what's ahead for our industry.

Create + Connect at HD 2006 –
Register now at www.hdexpo.com.
We'll waive the $50 fee when you use code LGT03.*

*Expo registration only. You must register on or before 4/1/06 online and use your VIP code to be eligible for free registration.

ented by: hospitalitydesign

sociation with: NEWH The Hospitality Industry Network | IIDA International Interior Design Association | ISHP International Society of Hospitality Purchasers

architectural lighting

5th ANNUAL ACE.al AWARDS

ARCHITECT'S CHOICE
FOR EXCELLENCE

CHOSEN BY
LIGHTING DESIGNERS & ARCHITECTS

AWARDED BY
ARCHITECTURAL LIGHTING

Recognizing
durability,
customer service,
value and
design.

Look for your
2006 ACE.alAWARDS
ballot in the April/May
& June issues of
Architectural Lighting.

Cast your vote and let the industry know which
lighting manufacturers you trust and believe in on m

PAGE	ADVERTISER	CIRCLE NO
28	Bartco Lighting	49
18	B-K Lighting	7
12	Con-Tech Lighting	73
51	Cooper Lighting	41
7	Elliptipar	6
C2–1	Erco Lighting	31
53	HD 2006	–
2–3	Hubbell	110, 111, 112, 113, 114
21	Kim Lighting	12
C4	Ledtronics	83
40	Leviton	46
52	Lightfair International 2006	75
45	Lightolier	52
46	Litecontrol	69
11	Lithonia Lighting	77
55	Luraline	26
5	Lutron Electronics	9
27	Original Cast Lighting	4
20	Pathway Lighting	16
8	Philips Lighting	30
19	Prescolite	28
14–15	Renaissance Lighting	10
16	Schott	55
26	Sea Gull Lighting	67
17	Selux	85
24	Sentry Electric	56
50	Sirius	58
22	Venture Lighting	104
25	WAC Lighting	72
C3	Watt Stopper	27

Publisher is not liable for errors or omissions.

Circle No. 26 or www.archlighting.com/productinfo

The State of Lighting Research

When the IESNA celebrated its 100th anniversary in January, an international group of lighting designers, educators, researchers, and manufacturers gathered to discuss important issues facing the lighting industry. Among topics such as daylighting, light and human health, and sustainability, one major focus was education. Attendees debated whether lighting education is in a state of crisis—underfunded and under appreciated. Given the integral link between education and research, it seems logical that if the former is ailing the latter must be as well. What is the state of lighting research in the United States today?

more **responses** available at **ARCHLIGHTING.COM**

RESEARCH VS. PRODUCT DEVELOPMENT

KEVIN HOUSER, ASSOC. PROFESSOR | **UNIVERSITY OF NEBRASKA-LINCOLN**

It is important to distinguish between "research" and "product development." Research implies scholarly or scientific inquiry and tends to be aimed at the greater good of an industry or society at large. Product development has different motivations and outcomes: it is driven by the potential for profit. The state of product development is healthy. The state of lighting research is not. Just as a rising tide lifts all boats, there are many basic research questions that, if answered, would benefit society at large and lighting product development in particular. Take spectral content as one example. I've listened to people passionately argue that continuous spectra like that from daylight and incandescent lamps are essential for visual and biological health. Yet I've heard others argue just as passionately that spiky spectra with gaps are more effective. This is a fundamental question that could guide the spectral design of electric light sources, yet the existing body of knowledge is incomplete and conflicting.

We need a collective commitment to the greater good to answer such questions. But this is not just philanthropy; the answer would address a practical goal. Light sources that are spectrally tuned to the visual system will be more sustainable. They will use less energy by generating their output in regions of the spectrum where the visual system responds most strongly, resulting in better seeing for building users. This example reinforces the difference between research and product development. At present, tens of millions of dollars are spent on increasing the luminous efficacy of LEDs; this is product development. Little is invested in understanding how LED spectra could be optimized to benefit vision; this would be research.

LIGHTING RESEARCH LACKS RESOURCES

MARTIN MOECK, ASST. PROFESSOR | **PENNSYLVANIA STATE UNIVERSITY**

Lighting research in the United States is very poor, for the following reasons: Research requires large laboratories, which are expensive ■ Research requires supercomputers, or at least extensive large-scale lighting simulation. Most lighting scientists lack access and the training to use them ■ Research requires lighting systems measurement in buildings over extended periods of time. This is called monitoring, and is expensive ■ The Department of Energy does not fund basic lighting research. Neither does the National Science Foundation ■ Companies spend more money on patent litigation than they do on research ■ The IESNA has no money for research, and hardly any readers to read lighting research journals ■ Lamp research has become separate from lighting research. The big lamp research conferences are in Europe and Japan, and are no longer part of the IALD or IESNA. Most lighting researchers know little about lamp development ■ Research has not proven significant effects by different lighting scenarios on health, productivity, attention, and sales ■ LED research is hardly possible, because one company has over 10,000 general patents, which limits new development owing to royalties ■ The big lamp manufacturers do not sponsor university research ■ The number of lighting educators and scientists is declining. It is almost half of what it was 10 years ago, considering the number of students.

A STATE OF TRANSITION

FRED OBERKIRCHER, ASSOC. PROFESSOR AND DIRECTOR, TCU CENTER FOR LIGHTING EDUCATION | **TEXAS CHRISTIAN UNIVERSITY**

To paraphrase a famous line from the movie *Casablanca*, let's round up the usual suspects. There's Cal Poly, Colorado, Nebraska, Penn State, the Lighting Research Center, and ... Some would suggest that the number of research centers roughly equals the amount of research money available. And if you listen carefully, you don't hear the sound of money.

There is another story, however. A review of the "hot" topics suggests that funding is moving to issues such as non-visual effects, solid-state lighting, and energy-reduction efforts. It could be argued that these are not "true" lighting areas. There is research in chrono-biology, solid-state electronics, and nano-engineering—all areas on the far, far periphery of lighting as we typically think of it.

If the initial question were "What is the state of lighting in the United States?"—I believe the answer would be "In a state of transition." And I believe lighting research reflects that. The difficulty is that research agendas are not easily changed. The assembly of faculty, staff, and equipment—let alone money—takes a long time. Based on this, let's try one last question. "Can traditional lighting research in the United States change fast enough to prevent its own obsolescence?"

DEMANDS UNANSWERED

BRUCE HOSTETTER, LIGHTING DESIGNER | **REALIGHT DESIGN**

I don't truthfully know what the state of research is in the United States. According to "Vision 2020: The Lighting Technology Roadmap," a white paper prepared by the Department of Energy, we need more. My question for manufacturers is this: Why have we never seen a cross-over between automotive headlight technology and architectural products? Where's my instant-restrike metal halide battery-powered emergency light? Where are my molded headlight assemblies that I would like to adapt as combination downlight/wallwashers? Why does it appear that there is more R&D in the automotive sector than in the architectural lighting sector? And why do linear companies like Ledalite continue to innovate, when others focus on new housings?

Get the whole story on lighting controls

- Lighting control product information
- Project design and application guidance
- Solutions for energy code compliance and sustainable projects
- Insights on control strategies
- Easy-to-handle, desktop format

Visit www.wattstopper.com/PSG to request your free copy today!

WattStopper

legrand®

800.879.8585 • www.wattstopper.com

Circle No. 27 or www.archlighting.com/productinfo

TURN LIGHTING ON ITS HEAD!

THINK LEDS INSTALLATIONS

> S14 DecorLED™ Lamps
Palace Theatre, Albany, NY

> Round, Flexible RopeLED
Tortilla Jo's, Anaheim, CA

> Custom-Built LED Lamps
Vincent Thomas Bridge, San Pedro, CA

> S14-Styled DecorLED Lamps
Bardavon Theater, Poughkeepsie, NY

> 4-LED, 9mm Miniature Wedge-Based Lamps
Hillsboro Arch, Hillsboro, OR

> 7-LED, S6 Candelabra-Based Lamps
Hyatt Regency, Long Beach, CA

RELAMP WITH BRIGHT, LONG-LASTING ENERGY EFFICIENT DIRECT INCANDESCENT REPLACEMENT LED BULBS AND LAMPS FROM LEDTRONICS.

FEATURES

- NO HEAT - COOL TO THE TOUCH
- USE 70% TO 90% LESS POWER
- LEDS LAST UP TO 11 YEARS
- SHOCK/VIBRATION RESISTANT
- 12 VOLTS DC TO 240 VOLTS AC
- IDEAL FOR SOLAR POWER
- LED COLORS: WHITE, GREEN, BLUE, RED, YELLOW, AMBER AND TINTED FROSTED LENSES

LED®

LEDTRONICS, INC.®

THE FUTURE OF LIGHT®

23105 Kashiwa Court, Torrance, CA 90505
Phone: 310.534.1505 | Fax: 310.534.1424
Email: webmaster@ledtronics.com

1.800.579.4875

www.LEDtronics.com

Circle No. 83 or www.archlighting.com/productinfo