The acquisition of Globe Illumination, Williams now offers the ultimate in parabolic design.

Williams, your best specification-grade source for fluorescent lighting, has just added to its line the complete series of Ultrapar parabolic fixtures originally supplied by Globe.

Parabolic units, in popular sizes, will now be manufactured at Williams' Carthage, Missouri plant. For more information on or any of Williams' full line of high-quality, energy-saving, specification-grade lighting products, contact:

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PAN-A-LUX: Unequaled efficiency for important public spaces.


PAN-A-LUX: Unequaled efficiency for important public spaces.
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GROUND EFFECTS

This tree is illuminated by three of the favorite lamp choices of landscape designers – from left to right, a 70 watt Metal Halide HQI, a 100 watt Mercury Vapor, and a 100 watt Quartz Halogen. A landscape rainbow – same tree, different effects. Hydrel recognizes the importance of lamp selection by offering a wide line of fixtures to protect and conceal the source.

Hydrel’s 4500 Series Accent Lights were used in this illustration. The 4530 for the Metal Halide lamp, the 4519 for the Mercury Vapor lamp, and the 4525 for the Quartz Halogen lamp. The 4500 Series was designed for the rigors of the outdoor environment. Hydrel’s forty years of experience has proven the value of providing the finest materials, testing and ongoing innovation to provide products with an extra margin of reliability.
This little fellow is just the right size for the new Par 20 and Par 16 lamps. When fortified with all of our accessories, he becomes one macho guy.

For a 270 series information kit, write on your letterhead to:
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Circle No. 4 on product card.
Introducing the GM-2000 Series mini uplights from Imperial Bronzelite. Unlike any other grade-mounted uplight available, this new luminaire is compact. It's only $12^{\prime\prime} \times 7^{\prime\prime} \times 4^{\frac{1}{2}}^{\prime\prime}$ deep. The perfect fit for landscapes requiring a concealed light source.

At night, the GM-2000 luminaire brings landscapes to life with exciting light. The series is specifically designed to provide superior performance with new, energy-efficient, compact lamps: 20 to 75 watt low-voltage halogen, 50 to 75 watt low-voltage incandescent or 70 watt HQI metal halide. Combined with the GM-2000 series, any of these lamps can be used to create spectacular lighting effects with excellent color rendition.

Daylight reveals the contemporary square lens of the GM-2000 framed by a handsome textured top plate available in cast aluminum, cast bronze or dark bronze composite.

This new series is ruggedly constructed with full gasketing and stainless steel fasteners for long-lasting, low-maintenance service. Its advanced single piece, composite housing readily withstands impact, moisture and the harshest of soil conditions. Plus, its light weight allows for easy installation.

Welcome to a New Era

Welcome to a new chapter in the history of Architectural Lighting. Change can be a positive influence in building a stronger tomorrow when it cultivates the achievements of the past, and combines this with the fresh thinking and enthusiasm of the present.

In this issue, and in those to come, you will find a thoughtful blending of past and present. Charles Linn, AIA, will remain on staff as executive editor. And many of the columnists and editorial advisory board members who have shaped the magazine to date will continue to help it grow in the future.

Here at Gralla Publications, Architectural Lighting's new staff draws upon and benefits from the collective creativity and energies of the many other professionals who work in the editorial, advertising, production, circulation, and marketing departments, and whose efforts result in the publication of 20 additional, diverse trade magazines and tabloids.

Architectural Lighting's staff is dedicated to maintaining the high quality of the photography and text that has made this magazine the leading publication in its specialty field.

We thank the advertisers who are supporting Architectural Lighting as it enters this new era. And we hope readers will continue to share their fine work with us.

We value both groups as partners with us in promoting the visionary wonder that is lighting.

Thank you.

ART GOLDEN
PUBLISHER

WANDA JANKOWSKI
EDITOR

ART GOLDEN
WANDA JANKOWSKI

GETTING TO KNOW US

ARCHITECTURAL LIGHTING's editorial staff operates from Gralla Publications' headquarters in New York. Left to right: Art Golden, Publisher; Wanda Jankowski, Editor; Catherine Schetting Salfino, Managing Editor; Ronald Gabriel, Art Associate; Christina Lamb, Assistant Editor.

Charles Linn, AIA, Executive Editor, based in Eugene, OR.

SUPER SALES TEAM

Doyle Peck,
West Coast Regional Manager

William Loeb,
Midwest/Eastern Regional Manager

6 Architectural Lighting November 1989
Introducing Lytesystem 12: A halogen low voltage chandelier system designed to bring celestial effects to residential and commercial spaces. The core of the system—a 20W 12 volt T3 lamp—is used with lightforms made of thick pressed and etched glass or gleaming polished chrome with etched glass discs. Lightforms can be suspended from reflective ceiling pans and attached to circular or linear chassis. The 12 volt power feed is safely carried through metal rods; there are no visible wires. The total effect is magical. Lytesystem 12: The future of light, today. Lytesystem 12 is part of Lightolier's new Lightstyles Collection. For a copy of the Lightstyles catalog, contact your Lightolier representative or Lightolier Lightstyles distributor.

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Circle No. 6 on product card.
Hanover Lanterns catalog supplement no. 9037 features 7 NEW series of decorative cast aluminum lighting fixtures. Series 9300, 9400, 9500 and 9600 are featured with clear beveled glass, solid brass finials and spindles. Also included are additional landscape lighting fixtures and an in-ground mounted H.I.D. ballast housing with floodlites.

Avoiding halogen hazards

In May 1987, Shirley Allen, owner of The Light Shop, in Kansas City, MO, was experiencing a large number of violent premature failures from a variety of tungsten-halogen lamps. She asked me to research cautionary notices concerning the use of tungsten-halogen lamps in the following categories: ceiling fixtures/chandeliers, desk/table/task lamps, wall sconces, floor lamps/torchieres, recessed downlights, and track lighting fixtures.

My research started with the IES Lighting Handbook: 1981 Application Volume, which states: “Caution notices are generally provided with most lamps for stage and studio service. All tungsten-halogen lamps operate with internal pressure above that of the atmosphere; therefore, protection from lamp abrasion and avoidance of over-voltage operation is advised. The use of screening techniques is advised where appropriate to protect people and surroundings in case a lamp shatters.”

My next inquiry was to the American National Standards Institute (ANSI). They publish the C78.1451.1988 Cautionary Notice for Electric Lamps—Use of Protective Shields with Tungsten-Halogen Lamps. It reads, “Scope: This standard is a cautionary notice applying to the use of protective shields with tungsten-halogen lamps described in the C78.1400 series of American National Standards for lamps and with similar lamps. Cautionary Notice: To assure maximum safety during handling and use of the lamps described in the Scope, the following notices should be observed.

1. Tungsten-halogen lamps operate at high temperature and at internal gas pressure. Consequently, a lamp may shatter. Certain lamps may also emit some amount of ultraviolet radiation. Therefore, a suitable protective shield, screening technique, or both, shall be used with the luminaire to protect people and surroundings from both hazards.

2. Always read and observe the information contained in the lamp manufacturer’s caution notice.”

My continuing research led me to the National Electrical Manufacturers Association (NEMA), the Canadian Standards Association (CSA), the International Electrotechnical Commission (IEC), and Underwriters Laboratories, Inc. (UL). The UL standard for safety for portable electric lamps, UL153, was revised with respect to tungsten-halogen lighting on November 18, 1988, with an effective date of December 21, 1990. The UL standard for safety for incandescent lighting fixtures (permanently attached), UL1571, was revised with respect to tungsten-halogen lighting on December 26, 1988, with an effective date of January 1, 1991. These standards require a 1/8-inch-thick annealed or borosilicate glass barrier, so that no part of a ruptured bulb can leave the luminaire by a direct path, as determined by line of sight between any portion of any opening in or around the shield and any portion of the bulb. The luminaire must also

CONTINUED ON PAGE 60
Introducing LyteJacks:
An innovative low voltage system that provides a new range of lighting possibilities. LyteJacks offers miniature scale and dramatic visual impact with "trackless" points of halogen light. Compact spotlights deliver directional accent light . . . and miniature decorative pendants create intimate pools of light. Components can be combined into myriad configurations, dropped close to objects being lighted or clustered into "free-form" chandeliers. LyteJacks: The future of light, today.

LyteJacks are part of Lightolier's new Lightstyles Collection. For a copy of the Lightstyles catalog, contact your Lightolier representative or Lightolier Lightstyles distributor.
TALL ORDER: Power House Place's 200-foot-high smokestack (below) is illuminated by 1,000-watt sodium lamps. The turn-of-the-century structure is part of a 60,000-square-foot office/entertainment complex (below right).

CHALLENGE: Power House Place, a $20 million office/entertainment complex, wanted to emphasize its brick smokestack, since this 200-foot-high structure is the only remnant from the original 1904 coal-burning power plant. Mackey Associates decided to uplight the smokestack to create a nighttime landmark, designing a lighting system that would illuminate the 165-foot-high circular flue evenly around its 35-foot-high, 18-square-foot base with enough thrust to reach the top of the stack.

DESIGN/TECHNICAL CONSIDERATIONS: Creating this new highway beacon required that certain criteria be met. Both the installation and operation of the system had to be economical, the support brackets had to complement the "Industrial Romanesque" style of the complex and the color rendition had to coordinate with the whole of the structure.

METHOD: Because they're energy efficient and have a long lamp life, high-pressure sodium lamps were chosen. With the assistance of computer modeling, it was decided that equally spacing eight of these 1,000-watt lamps and placing them 8 feet from the stack would accomplish the goal. Foot-candles gradually decrease from 170 at the base to two at the crown. Triangular steel brackets support each housing. Time frame, from design through installation, was approximately six months.

CONCLUSION: Nighttime illumination of the brick, turn-of-the-century structure adds visual appeal to the 60,000-square-foot office building complex, which includes a 10-screen theater, and will soon house Power House Night Club and Whitey Herzog's Restaurant. Total installation costs for the new landmark, which has been awarded the IES 1989 Edwin F. Guth Memorial Award of Merit, were $25,370. Energy usage is approximately 35,200 KWH/year.
Introducing Lytegems: New expressions of style and function. Each Lytegem combines an architecturally sensitive, elegantly scaled design with effective downlighting. Flexible in application, Lytegems can dress up a room or corridor, while providing general lighting. They can signify special areas with bright punches of downlight or add sparkle and glow, while providing task lighting. Lytegems are both beautiful and practical: they use standard Lytecaster Frame-In Kits and Reflector Trims. Lytegems: The future of light, today.

Lytegems are part of Lightolier's new Lightstyles Collection. For a copy of the Lightstyles catalog, contact your Lightolier representative or Lightolier Lightstyles distributor.
Florida Home's Uncommon Garden Variety

CATHERINE SCHETTING SALFINO
MANAGING EDITOR

CHALLENGE: The backyard of a private lakefront residence had been transformed from a single sloping lawn with a built-in pool to a three-tiered 15,800-square-foot garden, with the pool retained. The homeowners wanted lighting on each level that could vary from being dramatic to soothing, depending on whether they were throwing a party or relaxing with family members.

DESIGN/TECHNICAL CONSIDERATIONS: In order to create unified illumination throughout the garden, consideration had to be given to the three very different levels of the garden: the lawn by the lake, the pool level, and the top tier on the first floor living level of the house. The lighting also had to stand up to Florida's heavy humidity and rains. Finally, the homeowners had a price cap within which the lighting designer had to remain.

METHOD: Several light fixtures have been chosen in order to light the garden's trees, flowers, decks, and pool area: incandescent 100-watt lamps are used in the small bollard-like path lights sprinkled on each level; placed throughout the garden are 60-watt A-19 gooseneck garden lights; up-lights with 150-watt PAR 38 lamps wash tree trunks and the canopy of smaller trees throughout the space; 300-watt mercury vapor lamps are mounted high in tall trees for a moonlighting effect; and 40-watt PL fluorescent fixtures backlight a wooden trellis on the upper deck. All of the fixtures are wired to 120-volt, 24-hour timers that enable the system to turn itself on and off at predetermined intervals. A 1500-watt-capacity dimming system also has been installed.

CONCLUSION: The project came in under budget and the Winter Park, FL, family now uses the garden space for informal evening gatherings and social entertaining.

CREDITS/SOURCES:
PROJECT: RESIDENTIAL GARDEN
LOCATION: WINTER PARK, FL
LANDSCAPE ARCHITECT: TOM WALLIS, WALLIS, BAKER & VERLANDER
LIGHTING DESIGNER: TOM WALLIS, WALLIS, BAKER & VERLANDER
PHOTOGRAPHER: RICH FRANCO
LIGHTING MANUFACTURERS: HADCO, path light, backlight, and uplight fixtures; KIM, moon lights fixtures; BEGA, garden luminaires; LUTRON, dimmers; GENERAL ELECTRIC, incandescent, PL, and PAR lamps; SYLVANIA, mercury vapor lamps

LIGHT BLOSSOMS: Like a floral bouquet, an assortment of PL, PAR, and mercury vapor fixtures illuminate three-tiered, lakefront property.
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SONNEMAN CRITIQUES EUROLUCE

September 20-25. Exhibitors indulged in fantasy and eclecticism but, in general, innovation took a back seat to styling and much of it bordered on contrivance.

There were some bright spots, however. Low-voltage halogen was without question one of the dominant themes of the lighting exhibition. Ingo Maurer, the artist and innovator in the medium, introduced a number of fixtures utilizing halogen's potential. One from the Heart, a playful "lamp for lovers" has a rubber alligator for a base, and a large, red plastic heart concealing a 50-watt halogen bulb, equipped with a touch-tronic dimmer.

Another outstanding new Maurer design is the Tujico system, which incorporates a counter-balanced element (allowing the lamp to move in a 360-degree pattern) mounted on steel shafts, and plays with ideas of precariousness. Maurer's work stands out for its whimsicality and originality.

Vistosi, the well-known Venetian glass manufacturer, introduced Onda, designed by Gigi Marazzani. Wave-like ribbons of glass are crafted into halogen wall and table lamps that typify the softened lines of today's modern design. Donatella Costa's lamps, for the same manufacturer, are notable for their striking color.

The seemingly endless fascination with the MR 16 reflector lamp resulted in a variety of designs by several exhibitors. Gallileo,
designed for Antonan Geli by Arturo Silva, has an adjustable lens and aperture. Available as a ceiling, wall, or table unit, the device provides a range of focus.

There were numerous attempts at suspensions of low-voltage MR 16s and MR 11s from stretched cables and tensioned metal rods. Elosta by Sicme was typical of the systems in proliferation.

Several manufacturers showed a variety of Italian glass lamps and fixtures. The Rondo by Tre-T Illuminazione was among the most spectacular. A matte aluminum ring supporting a white satin crystal diffuser, it was elegantly simple. Leds showed Arco Iris designed by Sergio Asti, a wall lamp that relied on a similar concept—a plane of opaque metal with a rectilinear flap indirectly lit.

Serapide was another standout with its new cable-suspended glass and perforated metal lighting fixture designed by Ernesto Gismondi and Giancarlo Fossina for Artemide.

Mazzega showed a range of wall and floor lamps of black metal pierced with various colored glass disks, by Michele De Lucchi, Gianfranco Giannetti e Amerigo Lorini.

Tronconi showed a new wall lamp by Georgio Marianelli of black satin aluminum pierced only slightly by an illuminated glass band.

September’s best offerings were dominated by the Italian manufacturers. However, the fair is truly international and also featured exhibitions by the French, German, Dutch, and even the Taiwanese. The exhibition has been expanded by the addition of another building and the range of decorative manufacturers is impressive, if only by the sheer number in attendance.

As Euroluce has grown over the years, the pressure on manufacturers to introduce new product has become intense. To the purveyors of lighting design, the stature of the event has developed an importance equal to what the Paris couture shows represent for fashion.

Whether this massive effort will result in more innovation—or just more lighting—is yet to be seen. The 15th Euroluce in Milan is slated for September 19-24, 1990. For now, Milan is still the design capital of decorative lighting. And if designers are going to make it anywhere, they had better make it at Euroluce.
Light without glare, continued.

This is the new Peerless 7” x 3” Rounded fixture.

It uses the same breakthrough technology that distinguishes our Open Office Fixture, wrapped in a remarkable extrusion.

Note the slim profile, and how it distributes the maximum amount of light from the minimum amount of fixture.

Look around the picture. Try to find any glare or harsh reflections, on the VDT screen or anywhere else. See how smooth the light is on the walls and ceiling.

Then look at the sculptured end cap and the flared lens that gives the 7” x 3” Rounded its unique cross section. The lens gives a continuous line of light—a soft, crystalline glow that’s never darkened by a lamp socket or a fixture butt, never brighter than the ceiling above the fixture, and only available from Peerless.

Practical office lighting never looked so good.
LIGHTING FOR TODAY'S LIFESTYLES: The caption for this photo, which appeared in 1905, read: "The real heroine of the first decade lived not in romantic fiction, but in the American kitchen and she, too, had her hero—it was Sears, Roebuck & Co." Lifestyles and lighting have changed dramatically since then. For details on Residential Lighting, check out the IES course, San Francisco, offered January 10, 17 and 24, 1990. Instructor: Joanne Stinson. CEU credits available. Contact: Heide Kawahata, IES Golden Gate Section, 650 7th St., San Francisco, CA 94107, (415) 982-9832.

INDUSTRIAL LIGHTING SEMINAR, Philips Lighting Center, Somerset, NJ, December 4-6, 1989. Covers lighting systems and issues common to industrial spaces, such as inspection and quality control. Contact: Sherry Bachman, Lighting Center Coordinator, Philips Lighting Company, 200 Franklin Square Drive, Somerset, NJ 08875-6800, (201) 563-3600.


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How to Plan a Focusing Session

JANET LENNOX MOYER
ASID

The author is principal of Jan Mayer Design, Berkeley, CA.

Light sculpts a darkened landscape, with each layer of light adding to the scene until all parts form a complete luminous composition. This is why focusing is the most exciting part of the landscape lighting project.

Following are step-by-step details on how to plan for a focusing session:

FOCUSING IS "INTERPRETIVE ADJUSTMENT."

This phase of the landscape project involves:

• properly aiming the fixtures to create the desired lighting effects in the landscape
• balancing brightness throughout the landscape night scene, primarily with the aimable fixtures, but also with decorative fixtures, path lights, lanterns and stationary downlights
• setting the control system equipment levels to balance all layers of the landscape lighting
• documenting the final settings on controls and fixture lamping for future maintenance

Focusing, which must be done after dark, requires that all team members be prepared for the outdoor environment and the nature of the work ahead.

FOCUSING INVOLVES CREATIVE DESIGN.

Decisions made during this process determine the success of the lighting. Approach focusing in an organized manner by making all team members and the clients aware of the importance of it and informing them of the process that will occur.

ADVISE CLIENTS OF SESSION IMPACT.

Clients need to understand their role in the focusing process. Preferably, this should be done during the initial consultation or early in design development. Although the impact will be greater on residential clients than on commercial, both types need to prepare themselves for this intrusive process, which includes, but is not limited to:

• late hours of work potentially interrupting their normal schedule of activities
• noise both from people coordinating/participating in the activities and potentially from equipment brought to the site to aid in the aiming of the lights
• the temporary mess made by equipment and snacks or meals

Any other potential impacts peculiar to a specific project need to be thought out in the early phases and discussed with the client.

ENCOURAGE WORKABLE CLIENT INVOLVEMENT.

The designer should explain that the final design is created during focusing and determine with the clients how much they want to be involved.

Some clients will not want to be involved at all, because they trust their designer's

TOOLS OF THE TRADE

ITEMS TYPICALLY used in a session:

• Thick leather gloves to avoid burned fingers
• Welder's glasses to help deal with the contrast between the brightness of the lamps and the surrounding dark night
• Permanent ink marking pens for recording lamp selections and making necessary notes
• Flashlights, spare louvers, special lenses, and thermoses for coffee

ADDITIONAL TOOLS needed for a project depend on the fixtures, but be advised to bring more than you think is needed. If a fixture requires Allen wrenches, have plenty of spares because they are easy to lose.
CALLING IN A SPECIALIST:
When a mounting height is lower than 20 feet, the focusing process is quickened by setting up ladders and approximate fixture locations. For mounting heights in the 20- to 30-foot range, tree specialists may help the process go more smoothly.

abilities and may feel they don’t possess a strong design sense themselves. Others feel very strongly about the final effects and want to take an active role in the decisions that are made. Not all designers want the client to participate. But if a client does have strong feelings about a project, his or her participation can eliminate the possibility of having to redo the work later due to disapproval of the final results.

The two parties can compromise by agreeing to meet during the evening to review the project’s progress and approve the effects as portions of the design are completed.

BRIEF THE ELECTRICAL CONTRACTOR IN ADVANCE.

The electrical contractor needs a clear understanding of the process and the expectations of his involvement. The contractor needs to know the number of hours anticipated for this work, what specific tasks he or she will be performing, and what equipment should be made available.

Often, other specialists may be included in this briefing. For example, if a project involves many large trees that will have lights mounted in them, tree pruners or tree specialists prove invaluable. They have all the tree climbing equipment and can mount the fixtures in the trees faster than anyone else.

Even when fixture mounting locations are easily reachable, involving the electrical contractor makes sense because the contractor knows the layout of the wiring best and can avert potential disasters. Equipment defects or wiring problems that are not detected during the installation may cause fires and damage the lighting system. With full knowledge of the installation, the contractor can help to prevent any problems.

If the contractor places, aims, and locks the fixtures’ settings, the designer is free to direct the aiming from the perspective of the potential user. This saves time and increases continuity of thought since the designer doesn’t have to keep walking back and forth from fixture to viewing location.

The contractor’s familiarity with the fixtures may help get the equipment locked and/or tightened in its final
MAKE UPLIFTING PLANS: A lift truck is used to mount fixtures 30 to 50 feet up in trees. The contractors need to familiarize themselves with its operation. Before nightfall, they need to determine how they plan to angle the lift truck and mount the fixtures scheduled for focusing that night in each tree.

TEAM SIZE VARIES WITH PROJECT SIZE.

Although focusing generally goes smoothest when several people are working together, perhaps the biggest advantage is the time savings. By sharing the work load among several team members, the length of time needed per evening session can be lessened.

Keep in mind that everyone involved—the client, the designers, and the contractors—will have to be back at work the next day. Minimizing the actual hours per night by using more people per night will be less physically and mentally exhausting for team members over the next few days.

A good team size varies, of course, with the size of the project—from two on a small garden, up to eight people on a large project. Using more people than that makes it difficult for the lead designer to survey all the work occurring during the course of the night. By contrast, when the number of focusing hours per night is too limited, progress becomes slow and continuity of thought is lost from one session to the next.

DETERMINE LENGTH AND NUMBER OF SESSIONS.

A focusing session should run from a minimum of three to four hours per night to a maximum of six to eight hours, with a starting and quitting time determined for each evening. This will help everyone coordinate their week's schedule and set the pace of work for each session.

The team should determine the number of sessions anticipated to complete the focusing. Set up the schedule of evenings with input from all team members, and enough in advance to avoid social or other conflicts. Consider how many nights per week are realistic for the well-being of the people involved, and whether the nights should be consecutive or separated by a one- or two-day break.

USE AN ASTRONOMICAL TWILIGHT CHART.

The focusing schedule is the most important aspect of the lighting system's installation. It is best to plan focusing projects from mid-September through mid-March since darkness falls earlier during the period.

To help schedule focusing, refer to a chart of astronomical twilight, which shows throughout the year when darkness falls at various locations. To use the chart it is necessary to know the latitude of the project and where it falls in its specific time zone.

For example, in the San Francisco area, based on a latitude of about 40 degrees, darkness falls in mid-September at approximately 7:30 p.m., and progressively earlier until the beginning of December, when it comes at approximately 6 p.m. This reverses progressively through to mid-March, when darkness falls at approximately 7:30 p.m. again. In Northern California, mid-summer darkness doesn’t fall until 9 p.m., which makes for long work days. For other areas of the country, the schedule may vary.

MAKE SURE THE PROJECT IS READY.

When is a project ready for focusing? Existing conditions include the following:

- All large plants should be installed. Try to delay installation of ground covers or small delicate plantings to avoid damaging them.
- All preliminary wiring should be completed and fixtures set in their approximated location.

Position more securely than someone less knowledgeable with such construction and installation.

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HOLOPHANE PARKLANE.
SHINES WITH THE LIGHTS ON OR OFF.

Holophane® brings a great new look to outdoor lighting with the ParkLane®. This high-powered fixture's extruded aluminum housing, with internally-welded seams, is available in either painted or anodized finish.

The seamless acrylic prismatic cone/cube helps reduce “puddles” of light at the pole base while projecting light in a wide overall pattern; one wide enough to reduce the number of fixtures and still provide up to a 6:1 spacing-to-height ratio.

The ParkLane luminaire integrates with practically any contemporary architectural theme.

ParkLane uses either metal halide or HPS lamps and is available in 4 mounting configurations: C-bracket, tuning fork, straight arm, and flush mount. Plus, the cube can be replaced with a flat door assembly. In addition, ParkLane is backed by an exceptional 5-year warranty.

For more information, including photometric data on floppy disk or isofootcandle templates, call or write on your letterhead to Al Warner, Holophane, 214 Oakwood Avenue, Newark, Ohio 43055. (614) 349-4116.
mate location, which must be determined beforehand during a walk-through with the designer and contractor.
• All lighting equipment should be tested for proper functioning.
• All additional lighting equipment and/or accessories (i.e., louvers, special lenses, snoots) required should be at the site.
• All related equipment, such as lift trucks, ladders, fastening devices, etc., should be at the site in their proper locations, tested for working order, and ready for use.

PLAN FOR ON-SITE PHYSICAL COMFORT.

It is important to ensure that everyone involved not only have the appropriate tools and equipment, but that they are dressed comfortably for the weather, and that someone has arranged for snacks and/or meals to keep energy levels up.

Of course, the scheduling of work, and proper clothing and food needs must correspond to the area of the country in which the project is located. In the course of a busy day, it is easy to forget or not be aware of how cold it can become at night. For example, during the winter months in parts of the San Francisco area, the weather can range from the mid 50s (degrees Fahrenheit) during the day, to the low 20s or below at night. Also to be considered is the fact that team members must work outdoors in that temperature from four to eight hours.

Comfort and efficiency during the session will be maximized, especially for long sessions in cold weather, if it is determined in advance whether the entire team will stop for a snack or meal, or if food will be available throughout the night. In winter months, warm beverages help to maintain body heat.

COMMUNICATE PROCEDURE TO DESIGN TEAM MEMBERS.

Session procedure considerations include:
• how the equipment should be set up
• the order in which the lighting equipment will be worked with (for example, ground-mounted uplights first, building and tree-mounted downlights second)
• time schedule for working on each area of the project

Determine who will comprise the team and assign tasks. Here's a breakdown of some typical assignments:
• directing the aiming, generally done by the project engineer
• physically adjusting the equipment
• coordinating accessories and/or tools
• procuring food for meals and/or snacks
• documenting the final design

Inform all team members of the approach to each project area, including discussion of the focusing process and the intended design effects.

With a large project, where several teams can simultaneously focus various areas of the landscape, more than one designer should oversee the work. Some large projects do allow one designer to oversee more than one group of people. For example, a site in Napa with many large, mature oak trees utilized two teams of tree specialists, each working simultaneously in separate trees. Since the trees were within shouting distance, it was possible to coordinate the work of both teams. But be warned, when working with more than one team at the same time, it may be difficult to maintain concentration on the design.

DOCUMENT THE FINAL DESIGN.

In order to provide the client with the proper information to maintain the system, the specific lamp installed in each fixture needs to be marked on an "as built," or "lamping," plan. Also, the designer should make notes or diagrams of the direction in which each fixture is aimed and/or what it specifically lights (i.e., a specific plant or plant grouping, a sculpture, the walkway, etc.) The designer should make reference notes of specific aiming angles, additional fixtures, and/or accessories needed to complete the intended design effects. These notes may prove invaluable to the designer on future projects. Notes should also be made of areas or specific fixtures that may need attention in a year or two due to plant growth, and other issues pertinent to the specific job.
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Water Colors
MORNING GLORY: While Abe Feder was setting up light cues one morning at 1 a.m., he heard clicking sounds—tourists from Europe were snapping photos of Rockefeller Center's light and water visual treat.

Water in motion is orchestrated with a multi-colored light show in the Prometheus Fountain at NYC's Rockefeller Center

WANDA JANKOWSKI
EDITOR

The "umbrella of light" created in December 1985 for Rockefeller Center's GE Building (formerly RCA Tower), Promenade, Channel Gardens and Lower Plaza by Abe Feder, Lighting By Feder, delighted New York City's nighttime strollers, but left poor Prometheus—the 18-foot-high golden Greek mythical figure sculpted by Paul Manship—more than upstaged.

The landmark Prometheus Fountain needed a major upgrade and by contrast with its relighted surroundings, it was more evident than ever. The original 1958 lighting equipment could not readily be replaced, and the subtle color scheme had been changed over time by

CREDITS/SOURCES:
PROJECT: PROMETHEUS FOUNTAIN
LOCATION: NEW YORK CITY, NY
CLIENT: ROCKEFELLER CENTER MANAGEMENT CORPORATION
LIGHTING DESIGNER: ABE FEDER, LIGHTING BY FEDER
PROJECT TEAM: MICHAEL J. MCCAMBRIDGE, senior vice president; WILLIAM STODDARD; and DENNIS REHN, ROCKEFELLER CENTER MANAGEMENT CORPORATION
WATER CONSULTANTS: WET INDUSTRIES INC.
PHOTOGRAPHER: ELLIOTT KAUFMANN
LIGHTING MANUFACTURER: GENERAL ELECTRIC COMPANY, lamps, STEPNER LIGHTING CO., retrofit fixtures, SIMES CO., housings, KURZI, BROS., Paralume IV
Digital Control Console
Inaccurate replacement parts.

Enter Abe Feder, in 1988, who once again has given Prometheus center stage, in a synchronized, multi-colored light and water spectacle.

"The fountain lighting equipment and controls were outdated and needed to be replaced," says Michael J. McCambridge, senior vice president, Rockefeller Management Corporation. "We were looking to complement the lighting with water in good taste."

Feder's approach to the relighting was to allow Prometheus to dominate. "The lighting and water are backdrop and trimming for the sculpture," Feder says. "The fixtures are positioned so the colors cast seem to generate from within the statue, and avoid a flat feeling of being 'stuck on.'"

The outstanding limitation of the project was the size of the space. Front to back the fountain measures 16.75 feet. The pool is 34 feet wide. Yet Feder has managed to pack 139 fixtures into the pool and around the perimeter, integrated with a multitude of water jets.

The water configuration that had existed has been retained. This includes arched side sprays of water, and a water wall behind the golden statue.

What's new? Feder designed and had added a curtain of water that rises majestically in front of the sculpture. McCambridge adds, "New nozzles and variable speed pumps have been installed as well."

The 1,000-watt PAR 64 lamps have been housed in the fountain's existing gasketed castings.

First Lights—1958

Though the Prometheus sculpture, created by Paul Manship, had been installed in January 1934 surrounded by a pool of water with arched water sprays flowing in from either side, it was not until 1958 that it had been decided the sculpture should be lit. This marked the first major project undertaken by Abe Feder for Rockefeller Center.

The "wall of water" was added behind the sculpture, and a 12-minute light and water show was devised. "This was long before the introduction of computers," says Feder. "Theatrical dimmers were used that controlled the sequence with timers."

"The thinking regarding lighting back then was far different from what it is today," Feder continues. "Everyone thought of outdoor lighting as subdued and colorless. The only places people were really aware of color and light were in the theater and in television." Feder departed from the norm by using colors—subtle, soft pastels—to highlight the sculpture (see photo in box).

"Standard, accepted procedure was to light from below. So we put a row of lights on the perimeter that glowed at Prometheus," Feder explains. Once again, Feder broke new ground in the selection of lamp type. This marked the first time 500-watt PAR 64 lamps had been used in this type of application.
DINERS’ DELIGHT:
There is always an audience for the Prometheus show.
The fountain is surrounded by the umbrella-topped tables of the Summer Garden Restaurant at
the American Festival Cafe. And since both are situated in the Lower Plaza, passersby on the
street level have a birds-eye view as well.
CURTAIN'S UP: The newly added curtain of water rises up (sequence below) to conceal the 18-foot sculpture as prelude to the finale. The light and water sequence was operating in 1988, and fine-tuned by Feder in 1989.

which are made of bronze to resist pitting and deterioration from the water.

The fixtures have been fitted with split glass filters in a variety of colors. The splits relieve pressure and guard against breakage from the pounding of the water, and the expansion caused by heat from the lamps.

A new computerized, electronic control board has been installed to handle the approximately 140 light and water cues needed for the 26-minute sequence. "The program has been stored, via the newly installed electronic control board, on hard copy computer discs," says McCambridge, "so the next generation will have it as well."

The additional wattage from the increased number of fixtures presented no problems. The initial planning of Rockefeller Center had been so far-reaching, those involved anticipated possible future needs and provided for the eventual increase in power.

Feder approached the creation of the color sequence as he would the planning of a theatrical production. A storyboard was devised and moment-by-moment changes were scripted out.

The finale of the show highlights the crowning achievement of the mythical Greek figure, Prometheus—his bringing fire to man. The wall of water in front of the sculpture climbs and appears stormy grey and yellow. After changing quickly to a fiery red appearance, the water wall drops to reveal Prometheus holding the flame aloft and strikingly bathed in the same fiery glow.

The front water wall has been pitched slightly towards the sculpture, so those seated in the outdoor restaurant adjacent to the fountain aren't splashed. The droplets of water splashed on the sculpture, however, make it sparkle and glisten, and contribute added dimension.

Setting up and programming the fixtures took about three weeks. The show runs continuously and automatically from dusk until about 1 a.m. daily, Spring through Fall.
"PROMETHEUS TEACHER IN EVERY ART Brought The Fire That Hath Provided To Mortals A Means To Mighty Ends—Aeschylus," reads the inscription on the red Balmoral wall behind the sculpture.

Grieved at the gods' neglect of mankind, Prometheus stole one of their most important resources—fire—and gave it to man.

Though Prometheus suffered for his derring-do—he was chained by order of Zeus to Mount Caucasus where each day a vulture consumed his liver, which in turn grew back each night—he reigned triumphant in the end. The vulture was slain and Prometheus was rescued by Hercules.

The pedestal of the sculpture symbolizes earth, the signs of the zodiac that encircle Prometheus represent the heavens, and the outstretched arm of the mythical figure holds the stolen flame high.
when Florida's old Sunshine Skyway Bridge was hit by a freighter in 1980, the State Department of Transportation was able to keep one span open until a new bridge could replace it. But when designers Fig & Muller Engineers, Inc., of Tallahassee, FL, unveiled the new structure, they didn't
"IT IS STARTLINGLY beautiful, which makes it unlike any other bridge of the last generation," says The New York Times architecture critic Paul Goldberger of the St. Petersburg, FL, Sunshine Skyway Bridge.

The idea was to recreate the look of the French Bretonne Bridge that Figg and Muller designed in 1976," says Corbari, president of Corbari Consulting Engineers, Pensacola, FL. "We also wanted to achieve

"ONCE THE TECHNOLOGY was decided, it was up to the engineers to return to the very traditional realms of proportion and scale, to take into account all the things that determine visual coherence and visual grace, and this is what they have done so well."

Architectural Lighting November 1989 33

Sunburst

offer a mere replacement. The new Skyway was introduced as the second-largest cable stayed bridge in the world with a lighting scheme by designer Frank Corbari that has helped make it a striking symbol of the Tampa Bay area.

"The idea was to recreate the look of the French Bretonne Bridge that Figg and Muller designed in 1976," says Corbari, president of Corbari Consulting Engineers, Pensacola, FL. "We also wanted to achieve

A Sparkling Review Of A Rare Structural Gem

The New York Times architecture critic Paul Goldberger gave the Skyway quite a favorable review:

"...THE $220 MILLION project... may well rank as the most impressive piece of large-scale bridge design in this country in half a century."

"ONCE THE TECHNOLOGY was decided, it was up to the engineers to return to the very traditional realms of proportion and scale, to take into account all the things that determine visual coherence and visual grace, and this is what they have done so well."
the same scalloping effect with lighting that the Brotonne Bridge has."

"The Sunshine Skyway Bridge's lighting is unique because it was the first bridge in the United States with a single plane of stays placed along the centerline of the bridge," says Gene Figg, president of Figg and Muller Engineers, Inc.

A conventional suspension bridge calls for the suspension of parallel sets of large cables from two high towers. Smaller cables are hung vertically from the large cables.

Corbari says he achieved the same scalloped lighting effect as the Brotonne Bridge on a tight schedule of two months. Since Skyway's cable-stayed suspension is in the middle of the bridge, the light fixtures were incorporated into the center median of the bridge roadway at the base of the cable stays to reflect up the plane of the stays and away from traffic. No luminaires were affixed up the cable stays.

"I had to place the fixtures on 6-foot-high pipe bases spaced every 48 feet," Corbari says. "Also, lighting the cables 2,400 feet wide and 240 feet high called for a light source that could throw a very wide horizontal and very high vertical beam."

The Brotonne Bridge in France was lit with low-pressure sodium lights. However, Corbari says those lamps did not give him the wattage he needed for the structure in Florida.

"The maximum wattage you can get out of a low-pressure sodium lamp is about 135," Corbari says. "Plus, low-pressure sodium provides poor color rendering. A red car could end up looking blue."

High-pressure sodium lamps were considered but, Corbari notes, they would not give him the beam spread he needed.

Another major consideration was using fixtures that would withstand Tampa Bay's corrosive marine environment.

Corbari's final choice was to use enclosed and gasketed metal halide floodlights made with heavy-duty, die-cast aluminum. Corbari says that since such fixtures are regularly used for lighting oil rigs, ship docks, and other harsh industrial areas, they were ideal for the Skyway project.

"These fixtures can stand up to the marine atmosphere—the salty air, moisture, car exhaust dust, even the temperature factor, which in the bay can range from lows of 20 degrees Fahrenheit to 100 degrees with heavy humidity," Corbari says. "There are also high-wind conditions of up to 130 miles per hour—but my lights can take it."
The metal halide fixtures also provide easy access when it comes time for replacement, Corbari says. The replacement parts can be obtained from any lighting fixture supplier. "These are standard products," Corbari adds, "available 'on the shelf' and the fixtures can be changed with screwdrivers and pliers. The metal halides also offer better color rendition than low-pressure sodium lamps. And because of the positioning—almost straight up—there is no glare hitting the drivers' eyes, even if someone is driving a truck. They just see the yellow stays."

The cable stays had been painted yellow after the installation of the light fixtures. "When the Department of Transportation painted the stays yellow, it completely changed the look," Corbari says. "I thought the cable stays were going to be gray, which would have made the scalloping effect less noticeable. But it looks good with the yellow, kind of like a neon tube in a merry-go-round. I'm happy with the results. The scalloping effect is more pronounced now."

Antonio Garcia, state structures engineer for the state DOT, says the decision to paint the cable stays yellow was made during the middle of the construction phase. "The reason we painted it yellow was for aesthetics—so it would stand out more," Garcia says. "We were also concerned that a blue paint would blend in with the sky and the water—causing visual impairment. Our office developed a series of color shots that showed, using various colors, how the bridge would look during the day and night. Yellow met with management's approval. Plus, Florida is the Sunshine State."

However, Garcia says that when driving on the bridge, people can see only one-quarter of the scallop or fan effect. "You don't get the full effect when you're right on the bridge," Garcia says. "You really only see the bottom of the bridge. And during the day, the effect is reversed—you see only the top of the bridge where the sun hits. The best vantage point is from the water."

THE NEW YORK TIMES stated crossing the main span of the Sunshine Skyway Bridge (left) is almost a religious experience. An aerial view of the structure (below) shows the single row of steel cables that spreads out from the central pylons, which are connected directly to the roadway.
The elixir of light has rejuvenated this Orlando park, transforming it from an eyesore into a safe and lovely recreation spot.

CHARLES LINN, AIA
EXECUTIVE EDITOR

Before its recent renovation, Lake Eola, a recreation area in downtown Orlando, FL, had suffered the same fate as many an urban park—the local criminal element had moved in and used the park as a base for its activities, driving away legitimate users. It was a frightening place to be during the daylight hours, and worse after dark. “The park was there for at least 50 years, but it had never really been maintained,” says landscape architect Annette Chaffon Perry.
Choffon Perry of the firm Herbert/Holbock, Inc. "The sidewalks were broken, and the shrubbery was terribly overgrown. A small amount of night lighting was provided by little 'mushroom hats' on top of concrete poles, but that was it. Since most normal people didn't want to hang out there, the park became a haven for drug dealers, prostitutes, and vagrants."

As part of an adopt-a-park program developed by Orlando Mayor William Frederick, Herbert/Halback donated their time to work with civic, park and recreation groups, the police department, and adjacent property owners. Together, they drew up a master plan that called for drastic measures: the closure of the park, the temporary draining of the lake, removal of overgrown plants, new sidewalks, plazas, lighting, and restrooms.

"We've found that one of the best ways to change the public's perception of a place is to completely shut it down for awhile," Perry says. "That action gets across the notion that this is really going to be a new park—a new Lake Eola. Closing the park gave us the opportunity to get rid of all the people who were literally living there, under the bushes, in the corners and in the restrooms."

"We started by building a new walk that goes all the way around the lake, making it 10 feet wide, so that several people can pass each other comfortably."

It was apparent that the renovated park's new promenade needed good lighting, so people would feel as safe and secure walking around the lake at night as they would during the day. The designers chose a period-style post luminaire used elsewhere in the Orlando downtown area. All of the 15-foot high, fluted pole fix-

How The Glass Block Restrooms Are Made

OPEN-AIR DISCOURAGES LINGERING:
The open-air concept and use of varied-height glass block walls—some as low as 6 feet, 10 inches—is intended to set up the psychological discomfort of feeling observed to discourage lingering in the facilities. The walls are penetrated in their concrete block bases to stimulate air flow, but in such a way as to eliminate sight lines to discreet functions. There are no entry doors. Natural daylighting and the reflective ceiling reduce energy costs.

CONCRETE BLOCKS SUPPORT TRUSS:
The curved, free-standing, glass block walls with 6-inch steel channel frames, capture prevailing breezes. The remaining walls are concrete block with flush joints and a three-coat TNEMEC paint finish, selected so the building simulates the concept of a lacquered box. The large triangular truss is comprised of 4-inch and 8-inch steel pipe, supported by poured concrete columns.

ROOF USES CORRUGATED METAL: The roof is framed by steel bar joists with a single-ply roof membrane on corrugated metal deck. The ceiling is comprised of corrugated metal wall panels with a galvalume finish screwed to a suspended ceiling system. Wall exhaust fans supplement the natural ventilation.
tures have a pair of acorn-style globes, each diffusing a 150-watt metal halide lamp. The fixtures are installed 50 feet apart on alternating sides of the walk.

"When the park reopened, everyone's reaction was, 'Wow, it's almost like daylight,' but we knew that's what it would take to make people feel really secure," Perry says. "The old restrooms also had a bad image associated with them, and were poorly placed, so we decided it would be better to completely tear them down and start over."

The new restrooms use free-standing glass block exterior walls and a suspended roof structure to provide a sense of openness, without sacrificing privacy. At night, security is promoted by a row of incandescent downlights recessed into the ceiling inside the restrooms that backlight the glass block walls. The structure is bright and semi-transparent, allowing park security officers to monitor activity in the restrooms without having to actually enter them. "If people are milling around in there, it really shows up on the outside," according to Perry.

Herbert/Halback also designed several plaza areas as part of the park renovation. "These are very symmetrical and have repeated elements, like palm trees formally spaced down each side," Perry adds. "We used ground-mounted uplights beneath the palm trees, and concrete bollards to outline these areas. In addition, the Orlando Utility Company renovated new lighting and pumping equipment for a fountain in the lake that was a long-established landmark for the city, although it too had fallen into disrepair over the years."

As in any park lighting project, the measure of success lies in whether people have returned to the park at night. "It is incredible, but you can go out there at 10 or 11 o'clock at night, and there will be hundreds of people walking around the lake," according to Perry. "An interesting finding in a recent analysis on who is coming to the park showed that most of the nighttime users don't live or work in the area; they're driving from as far as 25 miles away. Lake Eola is an evening destination point for people in surrounding communities. They really feel good about this park."
COMMUNITY GREEN'S
Gaslight Glow

Low-voltage incandescent lighting in
Westwood Hills maintains gaslight-era
mood and brings safety

CHARLES LINN, AIA
EXECUTIVE EDITOR

The City of Westwood Hills, KS, acquired two small
plots of land unsuitable for development and
turned them into a community green, providing a buffer
zone between a small commercial area and a residential neighborhood, as well as a location for town meetings, weddings, and holiday celebrations. The
city commissioners wanted to make the green a very comfortable place to be at night, but without over-lighting it. The yellow-orange glow of an operating
"WE WANTED TO emphasize the art form that is in nature . . ."
—Roger Doeren

CREDITS/SOURCES:
PROJECT: COMMUNITY GREEN
CLIENT: CITY OF WESTWOOD, KS
ARCHITECT: DUANE CALVIN BENTON
LIGHTING DESIGNER: ROGER DOOREN, IES
ELECTRICAL CONTRACTOR: CHRISTOPHER C. HEDGES
PHOTOGRAPHER: JIM SCZEPANSKI
MANUFACTURERS: PRESCOTTE, low-voltage uplights; KENALL, abuse resistant A-lamp fixtures; GENERAL ELECTRIC, lamps; OSRAM, lamps; SYLVANIA, lamps; RAINBIRD, lighting control system
gaslight from the 1870s, previously installed on the site, represented the mood they wanted lighting designer Roger Doeren to duplicate.

"Initially, I was contacted by the electrical contractor, who wanted my expertise to help him light the flags," Doeren says. "I met with the architect, and walked with him through the green, getting impressions of his vision of what that green could be.

"What resulted was a full-blown plan for lighting the key points on the green, so that a person could comfortably stroll through it at night, sit on the benches, walk across the wooden footbridge and so on."

Initially, the use of high-intensity discharge lighting had been discussed, but Doeren was able to persuade the city council to allow him to use 12-volt tungsten halogen sources for several reasons. "They really wanted less light than we could have provided with high-intensity discharge, and the color better matched the look of the gaslight. But the primary reason was for safety—before we initiated the project a person had been badly shocked while vandalizing a fixture."

With the exception of the fixtures used to light the underside of the footbridge, all the fixtures on the job are mobile, burial-type uplights, each with a tempered glass lens, convex louvers, a built-in step-down transformer, and PAR 36 lamps in a variety of wattages and beam spreads. The transformers are intentionally designed by the manufacturer to deliver only 11.5 volts, which greatly lengthens the life of the lamps.

The fixtures hidden beneath the footbridge are wet-location, abuse-resistant luminaires that normally accommodate A lamps. Lighting designer Roger Doeren located an adapter, which allows heavy-duty, 12-volt automobile signal lamps to be substituted for the A lamps, and fed the fixtures from a transformer located in the same vandal-resistant housing where the meter, control system, and ground fault interrupt circuit breakers are located.
location luminaires specially adapted to house 12-volt automobile signal lamps (see Footbridge Footnote box).

The control system has two photo-initiated circuits. One circuit is used to control the flag lighting. It turns the lighting on from dusk until dawn. The second circuit turns on lighting for the green at dusk, and then turns it off at midnight during the week, and at 2 a.m. on weekends. The system has a battery back-up so it does not have to be reset after an occasional power outage.

Conductors for the lighting are run in one-inch rigid PVC conduit, two feet below grade. "This is oversized for the number of conductors it carries, but makes it possible to add additional lighting as the budget allows in the future without having to do much additional digging," Doeren adds. "The contractor took great pains to route the conduit—and even hand-trenched certain portions—so that it would not disturb the tree roots."

The 120-volt ground fault interrupt receptacles were also located throughout the green, to allow the temporary installation of lighting for holiday or other special occasions. "Again, for safety's sake, these circuits can only be activated by an authorized person who has a key to the circuit breaker box."

"The green has become a great source of pleasure for the community," concludes Doeren. "It's common to see people there after dark."
‘Cans’ Can Do For Downlights

SAM MILLS
AIA, IES

The author is an architect and lighting consultant with his own firm in Oklahoma City.

AN ORDINARY tin can is utilized to create an inexpensive downlight that uses efficient PAR, R and ER reflector lamps.

The term “can light” is often used to describe a round surface-mounted downlight. This candid description has its origin in the obvious similarity to an ordinary tin can. In fact, when budgets are tight and a high level of durability is not required, the use of a tin can works well.

The current cost of a 46-ounce can of fruit juice is just under a dollar and a half—an attractive unit cost for downlights. A typical tin can has rows of semi-circular grooves running around the perimeter for rigidity. These grooves give the can a distinctive appearance, but do not always come in the same number and size. A little discreet checking might be necessary to ensure a consistent ring pattern.

The can should be thoroughly cleaned inside and out and painted with black or gray automotive primer. This flat finish paint on the inside of the can helps minimize reflected glare from the lamp. The outside may be painted to suit any particular design requirements.

Other electrical parts needed include a 3½-inches round or octagonal outlet box, a box cover with a 1⅝-inch diameter hole, and a two-piece screw-ring porcelain lamp-holder (often identified as a “sign” lampholder).

Selecting the best lamp to use is similar to selecting a lamp for any downlight with no internal reflector. A reflector lamp is the obvious choice. The size of the can limits the selection to 30-, 50-, and 75-watt PAR, R, and ER lamps. The ER lamps work well in this application because they focus their light at a point two inches below the bottom of the lamp, allowing all of the light to be utilized without being trapped inside the can. PAR and R lamps, on the other hand, offer a wide choice of beam spreads from narrow spots to wide floods.

Ordinary household lamps (A-lamps) can also be used in this application furnishing soft edged, low intensity light distribution. Avoid using any lamps over 75 watts to prevent over heating.

This unique and inexpensive light fixture offers an interesting alternative to standard available luminaires. It also is well-suited for the do-it-yourself enthusiasts.

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INSTALLATION OF the “can light” involves unscrewing the lampholder ring and washer, and reinstalling them inside the can. The hole in the can is located over the lampholder protruding through the hole in the metal outlet box cover.
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**ARCHITECTURAL LIGHTING SYSTEMS, V-LUME INDIRECT/DIRECT ARM SCONCE** models can use a twin tube 13-watt compact fluorescent, a 250-watt tungsten halogen, or a 150-watt standard A-lamp. Architectural Lighting Systems, Inc., Taunton, MA. Circle No. 47 on product card.
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Give us your most demanding custom lighting requirements — interior or exterior — and our custom lighting engineering team will rise to the challenge. From computer-aided analysis and design to extensive quality assurance testing, Phoenix delivers effective, efficient solutions to your custom lighting problems. For more information, and your free Phoenix custom lighting catalogue, fill out and mail the coupon below. Or contact PHOENIX PRODUCTS CO., INC., 6161 N. 64th St., Milwaukee, WI 53218. Phone 414-438-1200, TELEX 910-262-3898; FAX 414-438-1330.

Send for your free custom lighting brochure today.

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TITLE _________________________________________
COMPANY _______________________________________
ADDRESS _______________________________________
CITY ___________________ STATE ____ ZIP _______
PHONE ( ) ____________________

Mail to: Phoenix Products Co., Inc.
6161 N. 64th St.
Milwaukee, WI 53218

GE LIGHTING'S DOUBLE BIAX FLUORESCENT lamp has a 10,000-hour life and is available in 13, 18 and 26 watts. Ranging from 5 to 8 inches in length, the lamps are available in warm or cool temperatures and all have a color rendering index (C.R.I.) of 82. General Electric Co., Cleveland, OH. Circle No. 48 on product card.

THE DULUX FAMILY OF COMPACT FLUORESCENT LAMPS FROM OSRAM CORP. uses tri-chrome phosphors to reproduce an incandescent-like light and gives the lamps color renditions ranging up to C.R.I. 86. The Dulux family includes the Dulux EL electronic light bulb, Dulux EL Reflector, Dulux S lamps, Double Dulux quad-tube compact fluorescent lamp and the Dulux D single-ended quad-tube lamp. Osram Corp., Montgomeroy, NY. Circle No. 49 on product card.
Catalina. Unique styling? Yes! And for the first time, illuminated bands of vibrant color encircle color-coordinated luminaires to give you greater design flexibility both day and night.

Two opaque and six illuminated color accent bands...plus ten exciting designer colors in baked-on enamel finishes...add a totally new dimension to entrance, walkway and parking area lighting design that can compliment and accentuate the best you can build.

Five superior optics and optional assemblies in single, double, triple or quad configurations allow you to take charge of your lighting patterns. Not just aesthetically pleasing. Not just beautifully practical...but a totally new design element with which to work.

Circle reader service number today for more exciting news on this great new family of Spaulding luminaires...or call TOLL FREE 1-800-221-5666.
Learn How Bodine Can Convert Any Fluorescent Fixture Into An Emergency Light

Many commercial, industrial, or institutional buildings require emergency lighting. In these applications, specify emergency lighting that provides safety, convenience, and code compliance—without detracting from attractive lighting designs.

Bodine's unobtrusive emergency products are installed inside or adjacent to a fluorescent fixture, ensuring the visual integrity of even highly sophisticated interior designs.

The result: emergency lighting that doesn't look like emergency lighting. Problems with occupant panic, vandalism, and installation of wall-mounted auxiliary lighting are eliminated.

Send for a FREE brochure with application, operation, installation, and complete specifying information.
NOSTROMO, A PRODUCT OF BUTLER-RADICE, of London, marketed and distributed in the U.S. by BEACH-DOG, is a low-voltage track light system that can be pre-rolled to any radius to match curves within a room's interior. These disc lamps can take a variety of lamp types and provide a range of light sources. BEACHDOG, Malibu, CA. Circle No. 52 on product card.

WENDELIGHTING OFFERS PHANTOM STRIPS in three models: two for glare-free cabinet lighting and a silhouette strip for lighting coves and counter-tops. The metal strips are made to specified lengths, are available in two standard finishes, and accommodate 5- and 10-watt incandescent lamps in two voltages. Solid brass or stainless steel options are available. Wendelightening, Burbank, CA. Circle No. 53 on product card.

Only Valmont disguises its steel poles five different ways:

(Four of which you may wish to use.)

Architects and designers are having a hey-day with Valmont's new line of steel poles. Lighter weight, less costly to install — now Valmont will deliver your poles, pipe or tubing looking like granite, marble, sandstone — you name it.

For concrete proof, simply circle the reader service number below. For immediate mailing of our full-line of light pole literature (including the unique architectural coatings pictured above), call Valmont today: 402-359-2201.

Architectural Lighting November 1989
REJUVENATION LAMP & FIXTURE CO. OFFERS A SOLID-BRASS Mission dome table lamp, available in a variety of finishes, which include antique, polished unlacquered or lacquered brass, brushed brass, polished copper, japanned copper or polished nickel. Lantern shades are offered in caramel white, green, or pink colored art glass. The UL listed unit is 26 inches high with a 16 inch square dome, and accepts two 60-watt lamps. Rejuvenation Lamp & Fixture Company, Portland, OR. Circle No. 54 on product card.

MAGNI-FLOOD'S MINI-FLOODLIGHT with a multi-voltage ballast utilizes HID light sources and measures 10 inches x 7 inches x 6 inches. The mini-flood is available in 35-watt to 150-watt high-pressure sodium, 50-watt to 100-watt mercury vapor, and 100-watt metal halide. Magni-Flood, Inc., West Babylon, NY. Circle No. 55 on product card.

THE SPECTRUM TORCHIERE FROM THE RAINBOW LAMP CORP. includes a full-range dimmer and is 72 inches in height. The 18-inch glass shade is available in iridescent or frosted ripple glass. Rainbow Lamp Corp., Glendale, CA. Circle No. 59 on product card.

THE 281 SERIES SEMI-RECESSED SPOTLIGHT FROM LIGHTING SERVICES is designed to accommodate 50- and 70-watt PAR 30 tungsten-halogen medium screwbase lamps and is available with glass color filters, spread lenses, and light blocking screens. The series is featured in LSI black, white, and silver aluminum finishes. Lighting Services Inc., Stony Point, NY. Circle No. 60 on product card.
ELA IS OFFERING A LUMINAIRE constructed of cast aluminum. Model 2744 is post mount, and model 2741 is wall bracket. Both may be specified with HID lamps up to 150-watt metal halide. Specify a clear acrylic lens for 70-degree cutoff and photometric control, or a white lens for general lighting. A polycarbonate lens creates a vandal-resistant fixture. ELA Company, City of Industry, CA. Circle No. 56 on product card.

Redwood: A Natural Choice

S1144B3 Redwood Bollard
- Oblique downward lighting pattern in 2X tongue and groove construction
- Available in incandescent or HID

One of many redwood landscape lighting designs in low or line voltage

SYLVAN DESIGNS, Inc.
8921 Quartz Ave., Northridge, CA 91324
(818) 998-6868 / FAX (818) 998-7241

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TRIBBLE

Incandescent wall sconce fashioned from Solid Corian®
UL listed

AAMSco

For more information, call or write Aamsco at
P.O. Box 1019, Jersey City, N.J. 07306-1019
(201) 434-0722 / Fax. (201) 434-8535

Circle No. 24 on product card.
Imagine... preparing a lighting fixture schedule in as little as 30 minutes.

CALFS (Computer Aided Lighting Fixture Schedule) is a software package that aids in preparing lighting fixture schedules.

Consider these features:
- Fast - A typical three-name lighting fixture schedule can now be completed in less than 30 minutes.
- Cost effective - The program's design will reduce fixture schedule labor costs by up to 70%.
- User friendly - All basic operations occur on one master menu screen.
- IBM and compatibles - The CALFS program will operate on IBM-XT, AT, or compatible computers.
- Build as you go - The master catalog of lighting fixtures is built as you acquire data.
- Master catalog - The master catalog allows you to specify up to five similar fixtures for each entry. The CALFS program will soon be supported with databases from COOPER LIGHTING, GENLYTE LIGHTING and HUBBELL LIGHTING.

Ross Fabrap
P.O. Box 54680
Atlanta, GA 30308-0680
1-800-843-2838

Circle No. 25 on product card.

RYTHER-PURDY'S TYPE C/ CONTEMPORARY lighting standard is adaptable to most styles of luminaires. Available in heights from 14 to 40 feet, the western Red Cedar standard is durable and versatile. Ryther-Purdy Lumber, Old Saybrook, CT. Circle No. 57 on product card.

THE "GLASS OVER GLASS" SERIES FROM AMERICAN LANTERN CO. includes a coach-style lantern measuring 42-1/2 inches in height. The fixture features beveled, bant glass and solid brass. American Lantern Co., Newport, AR. Circle No. 58 on product card.
Electronic ballasts
Integrated-circuit electronic ballasts for fluorescent lamps are featured in Advance Transformer Co.'s bulletin. This circuit monitors input voltage and regulates ballast output, maintaining continuous light output. Advance Transformer Co., a division of North American Philips Corp., Rosemont, IL.
Circle No. 40 on product card

Time switch products
A 20-page color catalog features UL listed Digital Time Switch Products for lighting and control applications. These devices offer battery backup, 365-day scheduling and 25-amp contacts. EZ Controls Inc., San Dimas, CA.
Circle No. 41 on product card

Prismatic light control
Holophane's four-page brochure features information on PrismGlo, a fixture that has prismatic light control capabilities. The luminaire offers 90 percent efficiency, quiet ballasts, mounting options, and the UL listing. Holophone Co., Inc., Newark, OH.
Circle No. 42 on product card

Aluminum-framed skylights
The American Architectural Manufacturers Association's (AAMA) "Structural Design Guidelines for Aluminum Framed Skylights" assists architects and engineers in developing design criteria and interpreting design assumptions. AAMA, Des Plaines, IL.
Circle No. 43 on product card

The LIGHTHOUSE
New fixture for low level lighting. Handsome bollard design. Laminated of custom selected, kiln dried Western Red Cedar. Easy access to lamp and ballast compartment. Incandescent, mercury vapor or high pressure sodium.

Write on letterhead for catalog of wood lighting standards and accessories.

Ryther-Purdy Lumber Company, Inc.
174 Elm Street
P.O. Box 622
Old Saybrook, CT 06475
Phone (203) 388-4405

Circle No. 44 on product card
New Packaged Debuzzing Chokes Offer No Noise In No Time...

Extremely quick and easy to install for both new and retrofit applications, Amecon's new line of architectural chokes essentially eliminate noise in dimmers, lamps, and fixtures. The chokes are professionally packaged to dramatically reduce installation time as they mount to standard recessed fixtures, remote areas and wall boxes. They're built with high temperature, high impact, fire retardant UL recognized materials. Attractively priced, they're rated at 50 and 75 watts at 12 volts, and 400 to 750 watts at 120 volts.

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Applications are recommended for all types of architectural light dimmers: accent, decorative, display, and nearly anywhere a noise-rejection system is required. Call or write for new Technical Bulletin/Selection & Design Guide ALC-0689.

Amecon Quality Magnetics & Electronics
Amecon, Inc, 1900 Chris Lane, Anaheim, CA 92805
TEL: (714) 634-2220, FAX: (714) 634-0905

Circle No. 30 on product card.

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STANDARD OR LOW VOLTAGE LIGHTING

NEW!
Mini Truss suspended and surface mount lighting gives architectural lighting design engineers, visual merchandisers and interior designers a new innovative look for contemporary lighting fixtures. Standard voltage halogen bulb or low voltage halogen fixtures are mounted on mini truss. Ideal for creating grid or sectional suspended dividers, for both commercial and residential use. 9 models available.

Write today for our new catalog.

Circle No. 31 on product card.

RECESSED ENERGY SAVING DOWNLIGHTS

Two lamp fixtures available for use with 9 watt or 13 watt parallel tube fluorescents.

High power factor or normal power factor ballasts.

Clear specular Alzak reflector.

Open bottom or regressed prismatic lens.

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36 year young, growing and knowledgeable manufacturer of Cold Cathode Lighting Systems—UL & CSA approved—seeking architectural lighting sales agency on specification level with Architects, Designers, Engineers, Lighting Consultants must read arch. and elec. plans and specs. For the following territories: AK, AR, CA, CN, FL, ID, IA, OH, OK, KS, KY, MS, Mobile, MT, NE, NV, NJ, NM, ND, SC, TN, TX, WV, Wash. DC.

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LETTERS

be strong and rigid enough to resist the abuses to which it may be subjected without causing a risk of fire, electric shock, or injury to persons or property.

These standards also address lamp guards and shields, temperature, voltage, switches and dimmers, overturning, overlampung, abnormal operation, supporting surface, and warning labels.

The Canadian Standards Association (CSA) and the International Electrotechnical Commission (IEC) also have safety standards that require strict lamp shielding.

There are a few exceptions to these safety standards. One is the use of tungsten-halogen lamps encapsulated inside a parabolic aluminized reflector (PAR) lamp, or an encapsulated version of a multi-mirror reflector (MR) lamp, etc.

In conclusion, as responsible lighting professionals, we need to be well informed of the potential hazards of using tungsten-halogen lamps in our lighting designs and pay attention to these warnings. The institutions that I have mentioned here have all requested that we report to them any documented cases of violent lamp failures and consequences, so that they can better represent our real-world experience to the governing bodies.

Tungsten-halogen lamps can be a pleasing light source when used safely.

ROGER D. DOEREN
Lighting designer
Doeren Lighting
Shawnee Mission, KS