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Armstrong

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## ARCHITECTURAL RECORD



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## Letters

### Partnering Makes Sense

When I read the *Wall Street Journal* article you referenced in your March editorial [RECORD, page 9], it sounded so alien to our usual experience with others in the construction industry that the article might have been describing life on Mars.

Of course we occasionally have difficult situations and difficult people to deal with, but these are aberrations, not the norm. We have been doing "partnering" all our professional lives—we just didn't know that was what we were supposed to call it.

We are social friends with contractors, subcontractors, and suppliers; we play golf with them, our children go to school together, and we serve in civic organizations with them. We worship together and we call on each other informally for technical assistance in the pursuit of our work.

I suppose we lead sheltered lives if the conditions and attitudes *The Wall Street Journal* article described are typical elsewhere, and I am immensely thankful.  
*Frank Orr*  
*Orr/Houk & Associates*  
*Architects Inc.*  
*Nashville, Tennessee*

Your March editorial leaves this chapter of the Associated General Contractors of America (AGCA) with some strong mixed emotions. You paint an image of contractors as gunslingers with no interest in commitment, trust, understanding, and excellence.

You label the American Consulting Engineers Council the "civilized method" called partnering. Without minimizing ACEC's activity in this area, AGCA has been the

leading proponent in the construction industry of "partnering" along with the Corps of Engineers.

The next time you write an editorial, do some homework outside the architectural and engineering communities. You may find there is a larger world out there with other members of the construction industry contributing to the industry's well-being also.

One of the biggest single reasons for contentious construction projects is poor-quality design. Too often we have witnessed partnering sessions where the architect whined about having to share the modest cost of the sessions, while others demanded the client pay for their time. Is this called "partnering?"

*Jeffrey J. Zogg*  
*Managing Director*  
*General Building Contractors*  
*of New York State, Inc.*  
*Albany, New York*

### Messturm and Messe Hall

We are disappointed that the photos with the "Frankfurt Campanile" article [RECORD, February 1993, page 70] didn't include the three-part urban ensemble mentioned in Tracy Metz's description. Messturm was designed to work with the other two elements—Messe Halle and the registration pavilion.

*Keith H. Palmer*  
*Murphy/Jahn Architects*  
*Chicago, Illinois*

### Correction

In your Pacific Rim section [RECORD, March 1993, page 16], Jurong Town is *not* a new project; rather the International Business Park is.

*Joanna How*  
*Singapore*

## Calendar

### Through December 31

*"From Mars to Main Street: America Designs, 1965-1990,"* National Building Museum, Washington, D. C. Call Donna Anderson 202/272-3606.

### May 7-31

*Heritage Designer Showhouse and Gardens*, Briarcliff Manor, N. Y., for the benefit of SciencePort, a hands-on science museum. Call 914/337-4287.

### May 14

A/E/C Seminar "For A/E's Only: TQM 101" focuses on unique needs of A/E's and overview of TQM basics. Call Joan Faherty, 212/682/6336. Similar conferences May 21 in Cheyenne (Dee Clary, 307/632-7720); June 8 in Anaheim, Calif. (Kelly Savage), 215/489-8949.

### May 14-16

International Council of Shopping Centers Spring Convention, Las Vegas, Nevada. Theme: "Powered Up . . . Adding Value." Call Karen Vonder Schmalz, 212/421-8181, ext. 315.

### May 18-June 25

"The Architect and the Photograph" exhibition of photography by three prominent architects. The National Institute for Architectural Education, 30 W. 22nd St., New York, N. Y. Call Joan Bassin, 212/924-7000.

### Competitions

New York Coalition of Black Architects/National Organization of Minority Architects' 18th Century African Burial Ground Memorial Design Competition. Registration deadline, June 1; entry deadline, August 6. Write NYCOBA/NOMA, Box 5623, Manhattanville Station, New York, N. Y. 10027.

Benedictus Awards for innovation in architectural use of laminated glass; June 1 entry deadline. Call 202/785-2324 or 302/774-1964 for details. ■

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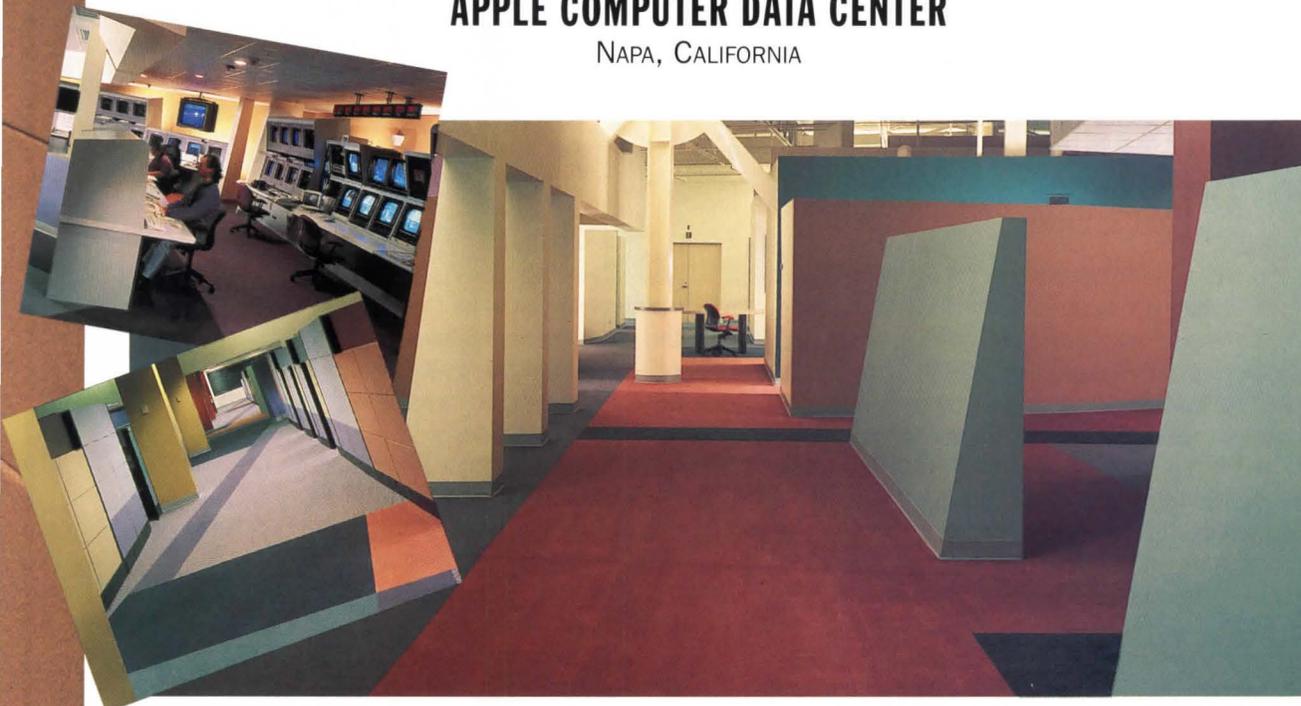
**SEE INSIDE FOR 1993  
CALL FOR ENTRIES**

THE 1992 GRAND PRIZE WINNER

# Phyllis Martin-Vegue/ Simon Martin-Vegue Winkelstein Moris

## APPLE COMPUTER DATA CENTER

NAPA, CALIFORNIA



CHAS McGRATH

**F**OR THE THIRD TIME IN THE DUPONT ANTRON® Design Award's 10-year history, Phyllis Martin-Vegue of Simon Martin-Vegue Winkelstein Moris, the San Francisco-based designer, has led the grand prize-winning team. This year, she won top honors for her design of the Apple Computer Data Center in Napa, California.

Originally built for another tenant, the facility offered huge, drab expanses of uninterrupted floor space. The objective was to break up the space into smaller elements for offices, support services and general circulation. And, to have the new environment reflect Apple's energetic and interactive culture.

The designers' solution was to create an open "spine" down the center of the building which enables employees to interact with each other spontaneously throughout the work day. Central to the office area is a circular hub — featuring common areas such as conference rooms, copy rooms and break rooms. Work stations are grouped in neighborhood clusters.

The designers also felt that the original gray carpet tiles, which had been laid in a straightforward rectangular pattern, were inappropriate for a facility in

the warm, bright Napa Valley. And, since the carpet had to be removed temporarily so the raised access floor could be reinforced, they seized the opportunity to be more creative.

They reused the existing carpet tiles of DuPont ANTRON® Legacy from Milliken & Company, Inc. in the style of "Corporate Square Nova" as a background field. But, they added stripes, bands and other geometric shapes of "Corporate Square Nova" in vibrant, bright accent colors. And they relaid the tiles in a new geometry — rotating the rectangular grid in the circular hub area to reinforce the interior architecture.

The bold use of carpet helps delineate the traffic circulation areas between the work station groupings and the central spine, and the color scheme is carried out on the walls, work station panels and furniture. Overall, the whimsical spatial planes and colors create an open office of implied boundaries that encourages creativity.

**"The space has broken all the traditional rules and allowed flooring to enhance the theme by also carrying the whimsy."**

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## **Private Practice vs. The Staff Architect: Time for Reconciliation**

One of the worst-kept secrets is the strained relationship between architects in private practice and architects who work on the facilities staffs of a corporation or government agency. Causes of tension are basically economic. There's also an issue of empowerment, but in the end it comes down to fees: private practitioners believe that the staff architect takes away work that is rightfully theirs.

*In routine contacts with private practitioners, I hear this:*

- Public/corporate architects who design facilities for their company or agency take bread from the mouths of those in private practice.
- Safely ensconced in a salaried post with security, these architects are less motivated to take design or technological risks, such as recommending emerging or untried firms for outsourced commissions.
- Even when not doing design but focusing mostly on policy-making, programming, and project management, they are tempted to second-guess the private architect in design decisions.

*Public and corporate architects respond that:*

- By virtue of training and in-house connections, they can use their influence to raise quality expectancy among top corporate or public decision-makers and thereby enhance the overall level of design.
- They increase the incomes of private firms by arguing for a fair fee that corresponds to the scope of the work.
- Being familiar with a building type—an office building, a county courthouse, a museum addition, or a new unit in a chain of retail outlets—they are able to anticipate design or technical problems, and thereby guide the private practitioner to do better work.
- By taking care of modest, routine, often unglamorous jobs, such as small renovations and remodelings, they can offer the private architect the more interesting commissions.

In Europe the staff architect's position is by tradition far more powerful—witness the important work done by public agencies in Britain in such areas as housing and transportation facilities. Here at home, a coalition of San Francisco architects has been meeting with city agencies to work out a creative partnership. On the other hand, says architect Arthur Rosenblatt, vice president of the Grand Central Partnership and former vice president of the Metropolitan Museum of Art, not enough architects use their positions in industry or government to champion good design. Either way, the rough edges won't go away anytime soon. Too many careers are at stake, too much income, too many egos.

I have in the past on this page encouraged architects to take up careers in industry or government, and I point out again the great benefits to the nation, to the profession, and to the individuals themselves. The broader and deeper the reach and influence of architecturally trained people in the corporate and public realms of our society, the stronger will be the voice of design among key decision-makers, and the greater the likelihood of giving the public the congenial physical environments so sadly lacking. Private practitioners question the diversion of design commissions to public or corporate design departments. But they must remind themselves that if all corporate design departments were abolished overnight, it would merely cast more architects upon the private sector and stiffen the competition.

*Stephen A. Kliment*

# IT'S HARD ENOUGH TO GET ONE ROOM AT THIS HISTORIC HOTEL. IMAGINE WHAT I

Since 1875, the Sheraton Palace Hotel has been one of San Francisco's most beloved institutions. So when its restoration was being planned in 1989, every effort was made to preserve the details of its original design. Among other things, that meant the replacement of nearly 600 windows.

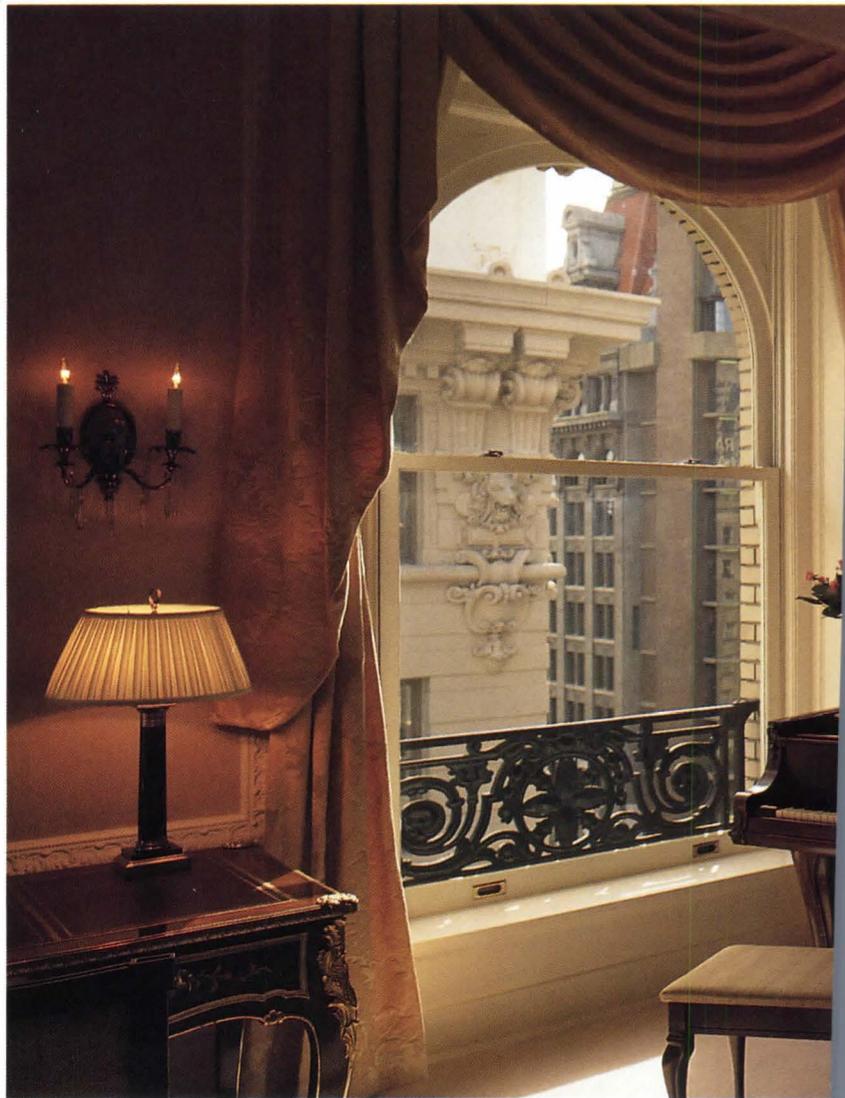
And because of their experience in such projects, Marvin Windows and Doors was chosen. First to receive attention from Marvin and their local distributor were the hotel's

graceful curved glass windows, an area in which Marvin's expertise is particularly well known.

No less of a challenge were the hotel's 585 aging double-hungs. Each demanded the same craftsmanship and attention to detail in order to maintain sightlines and replicate the historical profiles of the originals. And to guarantee their durability and consistency, each would have to incorporate the same performance features, too.

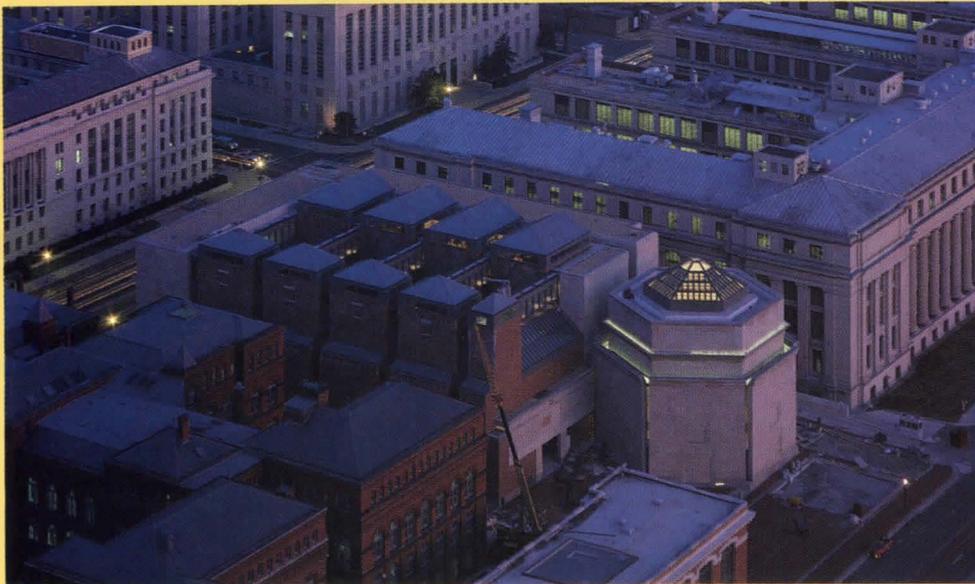
So Marvin suggested Magnum Tilt-Pac replacement sash, known for their strength, energy efficiency and economic advantages. And went on to propose glazing them with a special laminated glass to further insulate the rooms from the noise of the busy streets below.

In all, close to 600 windows in over 30 different sizes were designed and built to exacting, historical



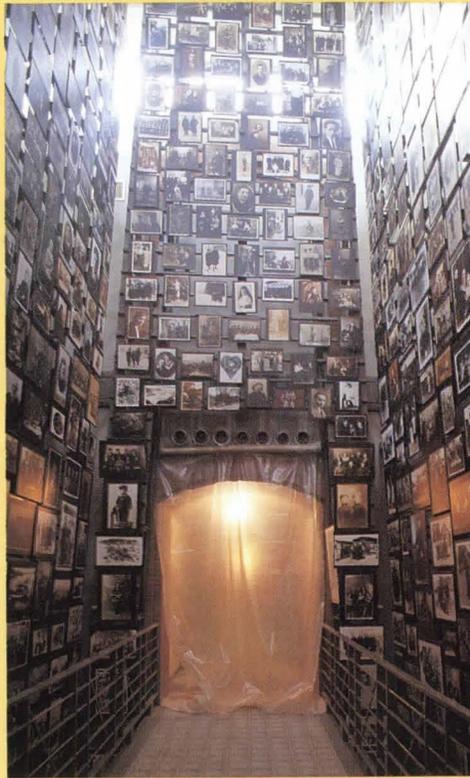
Washington D. C.

## U. S. Holocaust Museum Challenges Literal Architectural Interpretations of History



At first glance, the U. S. Holocaust Memorial Museum, designed by Pei Cobb Freed in association with Notter Finegold + Alexander for a site adjacent to the Washington Mall, appears to mirror the built symbols of American democracy that surround it. PCF design partner James Ingo Freed, however, organizes these elements into a cathartic evocation, even without exhibits, of the physically and psychically disturbed world where the Nazis put to death 12-million civilians—Jews, Gypsies, Poles, Communists, blacks, Socialists, homosexuals, dissidents, Jehovah's Witnesses, Russian prisoners of war, handicapped German nationals—whose origins, beliefs, or condition classified them as enemies of the state. Relying more on abstract geometries than literal response, Freed has left the building open to multiple interpretation, because, as he has said, "No two people experienced the Holocaust alike."

For instance, the design sandwiches tall blocks faced in red brick—which could be interpreted as industrial progress *or* death machine—between formal facades of limestone worked in a way that evokes both the monumental classicism of the Third Reich's public image and the walled-up ghettos and death camps. The Hall of Witness, a three-story central brick void whose openings recall ovens, warps outside illumination through a diagonally peaked skylight of rhomboids and trapezoids. Four glass-clad footbridges floored with glass block connect the guard tower/libraries above the roof peak; a lower walkway runs through a tower covered with roughly 1,500 photographs set in tile (the Tower of Faces, near left), documenting the pre-war days of the residents of Ejszyszki, an 11th-century settlement near Vilnius, where 99 percent of the population was wiped out by the Nazis. Almost detached from the main structure, the Hall of Remembrance (far left, top and bottom), is a luminous contemplation space with cut-out glimpses of the Jefferson, Washington, and Lincoln memorials. ■



© Jeff Goldberger/Esto photos

## Chicago

# 1893 Fair Added to Old Stereotypes

"Grand Illusions" at the Chicago Historical Society critiques the 1893 Columbian Exposition, which gave urban America its grand White-City imagery as well as its racist 19th-century systems of learning-through-comparison that favored elite European culture over blue-collar workers, immigrants, Native Americans, African-Americans, and non-European nationals. The show explores, for example, how cladding the products of U. S. industry and technology in over-scaled Beaux Arts structures (Court of Honor, bottom) created an image of cultural superiority and national unity for a country with an admitted inferiority complex. Under the direction of a Harvard anthropologist, the Midway exhibited non-European people—rather than their achievements—in costume, against a background of primitive or exotic structures, engaged in activities advertised as "savage" (Alaskan Village, below). The Women's Building, whose design exposed 19th-century feminist ambivalence about how autonomous women ought to be, stood at the juncture of "elite" and "savage." The fair was made of plaster and lasted six months; the show runs through July 15, 1994. ■



C.D. Arnold

## Zimbabwe

# Fast-Track University Is National Symbol



Ground was broken in April for the 500-acre National University of Science and Technology in Bulawayo, designed by Mwamuka, Mercuri, the Bulawayo architecture firm that won the master plan competition, Davis Brody & Associates, New York City, and Tibbalds Monro, London. Designed to play a crucial role in the rapid industrial and technological growth—and international profile—of Zimbabwe, the school will accommodate activities now scattered around the city by 1996, and a full complement of 9,500 students plus 2,000 faculty and staff by 2005. Formal brick,

stone, and precast-concrete elements marking the tight academic/administrative core (above) give way to vernacular materials such as stucco as the campus spreads into lower densities and rustic landscapes. Thick walls, lightweight-metal reflective roofs, dense plantings of trees, and shady arcades combine to mitigate intense heat; landscaping will provide a balanced ecosystem to withstand cycles of drought and heavy rainfall. Automobile-intensive facilities such as the National Sports Centre are sited at the campus periphery. ■

## California

# Monterey Conference Endorses Risk

"Architects are simply not allowing themselves to fantasize about architecture like the public does," Mack B. Scogin told the 11th biennial Monterey Design Conference, organized by the AIA California Council around the theme "Limits/No Limits." The event included architects, a physicist, a critic, and an attorney who called upon architects to design beyond conventional limits and not to assume clients would criticize their ideas. Scogin, a principal at the Atlanta firm of Scogin Elam and Bray and chairman of the Department of Architecture at the Harvard

Graduate School of Design, recounted his experiences with clients, and showed slides to indicate that gracious high-ceilinged environments with angular elevations and imaginative floor plans can be delivered on tight budgets. "We have not discovered limits for architecture in a democracy," he said. Pritzker winner Fumihiko Maki (opposite) discussed his treatment of the roof as the "fifth facade." The conference was dedicated to the late architect John K. Miller, senior partner at the Santa Rosa firm, Roland/Miller Associates. *Susannah Temko*

## Briefs

**National Endowment for the Arts**

Richard Meier and Charles Gwathmey are among 35 members of the creative community who have petitioned President Clinton to appoint actress Jane Alexander to head the National Endowment for the Arts. New York City art dealer Richard Feigen claims receiving unsolicited calls daily from people who want a say in choosing what they consider to be their only creative arts and design representative in government.

**School Days**

- Diane Ghirardo, outspoken critic of male- and white-domination in the profession, becomes president of the Association of Collegiate Schools of Architecture (ACSA) in January 1994. *Aaron Betsky*
- The University of California-San Diego is defunding its year-old architecture school; dean Adele Naudé Santos reportedly is negotiating to save the school as a research program. *A. B.*

**Boycott Divides Community**

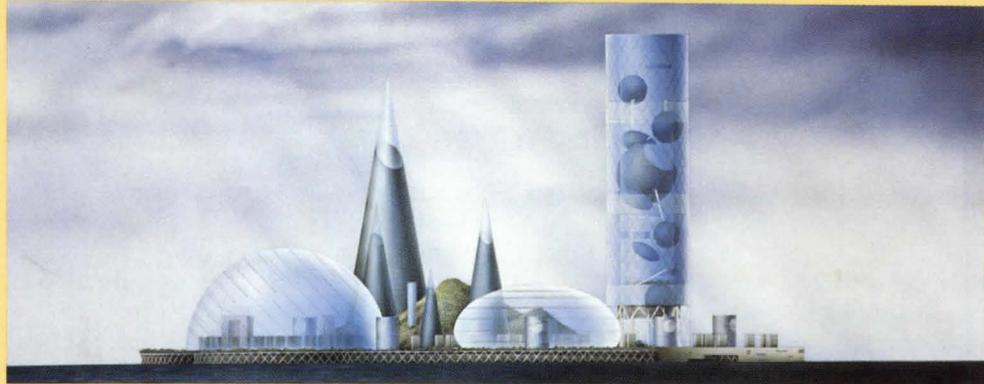
The AIA board of directors has condemned Colorado's Amendment 2 denying civil-rights protection to homosexuals, but voted 29-9 to proceed with meetings planned in that state, and to pursue "proactive" tactics instead. Observers claim the decision counters AIA Task Force on Diversity recommendations, and the pro-boycott stance of the Organization of Lesbian + Gay Architects and Designers (OLGAD), CACE (AIA chapter directors), and local AIA chapters such as Boston, Louisville, New York, and Seattle.

**History Lessons**

- The S&L scandal has stripped one of the world's most celebrated interiors from Philadelphia's 1932 PSFS building by Howe & Lescaze. The FDIC has stored the furnishings pending auction; the paneling is in place.
- The scramble to rid East Germany of embarrassing monuments leaves an Alexanderplatz Marx/Lenin statue in place, but demoted by the softening effects of greenery.

**Competitions**

- AIA/Cedar Shake & Shingle award deadline is July 9. Write 515 116th Street NE, Bellevue, Wash. 98009; 206/453-1323.
- McGraw-Hill has published a 400-entry *Awards Directory* for the design and construction industries, which costs \$125. Contact Intermountain Contractor, P.O. Box 26237, Salt Lake City, Utah 84126-9965, 801/972-4400, Fax: 801/972-8975.

**Shin Takamatsu Takes Mid-Career Turn Away from Brash Assertion***Atsushi Nakamichi*

In "Shin Takamatsu," at San Francisco's Museum of Modern Art, the Kyoto architect's early projects—full of jutting zoomorphic and robotic parts that hold their own amid the intensity of Japanese cities—give way to bigger buildings enveloping geometric ele-

ments to fit in with a larger environment, as in "Future Port City" (above). The Takamatsu-designed installation features a cross-shaped walkway elevated over golden stones and flanked by models mounted on mirror-covered bases. *Susannah Temko*

**Awards****Fumihiko Maki Wins 1993 Pritzker Prize**

The 1993 Pritzker Architecture Prize goes to Fumihiko Maki, a student of Kenzo Tange, the only other Japanese architect to receive the self-styled Nobel in its 14-year history. The award, which consists of a \$100,000 grant and a medallion, will be presented by Jay A. Pritzker, president of The Hyatt Foundation, at a June 10 ceremony at Prague Castle in the Czech Republic. In its formal citation, the jury—J. Carter Brown, Giovanni Agnelli, Charles Correa, Frank Gehry, Ada Louise Huxtable, Ricardo Legorreta, Toshio Nakamura, and Lord Rothschild—praised Maki as "an architect whose work is intelligent and artistic in concept and expression, meticulously achieved. He is a Modernist who has fused the best of both eastern and western cultures to create an architecture representing the age-old qualities of his native country while at the same time juxtaposing contemporary construction methods and materials . . . He uses light in a masterful way, making it as tangible a part of every design as are the walls and roof. In each building, he searches for a way to make transparency, translucency, and opacity exist in total harmony." *K. D. S.*

**This Month**

**1993 Dodge/Sweet's First Construction Volume Update**

**Construction Volume First 1993 Update.**  
*Page 30.*

Dodge-Sweet's first update of its 1993 *Outlook* for new contracts continues to predict a slow recovery, led by housing, and describes the Clinton Administration impact on construction, which it predicts will be mostly in the area of lower interest rates.

**Part Three in a Series:**  
**Construction Administration—**  
**What to Look For On-Site.** *Page 32.*

A checklist of items by trade type gets the novice started and teaches the seasoned professional new tricks.

**Specifications Series: Casements and Draperies.** *Page 34.*

One type of fabric window treatment commonly used in commercial installations is explained and outlined in a short-form specification. ■

*By Robert Murray*

With the data for 1992 now in, the tenuous nature of the construction industry's first full year of recovery has come into clearer focus. Construction contracting had started the year in bold fashion with surging house-building and public-works activity. But growing consumer unease at midyear took the momentum out of housing, and fiscal constraints at both the federal and state levels removed public works from its expansionary role. Neither housing nor public works witnessed improvement during the fall; meanwhile, nonresidential building continued to erode.

By 1992's fourth quarter, lower interest rates and rebounding consumer confidence enabled single-family housing to once again assume its typical role of leading a construction recovery. The 8-percent gain reported for total construction in 1992 stems mostly from a 22-percent surge in the value of single-family starts, with little support coming from elsewhere.

The potential gains for public works never fully materialized due to budgetary stress, which also took its toll on institutional building. And about the best that could be said for the commercial and industrial market in 1992 was that its rate of decline was not as steep as in recent years. For those whose fortunes were centered on house building, 1992 turned out to be a decent year; for those with an interest in nonresidential building, it was just one more tough year to struggle through.

The other measure of the construction industry, the Commerce Department's index of buildings put in place, exhibited similar behavior in 1992, with a slight lag. Activity reached a peak in the second quarter, slipped back over the summer months, and then regained strength at year's end. The rebound of construction put in place for the year as a whole, at 6 percent, was in keeping with the modest advance shown by construction contracting.

How does this first full year of recovery compare with the first year of recovery in the previous two cycles? Clearly, it was much more subdued—very much in step

with the slow-growth 1990s. The 8-percent gain for total construction stands in contrast to a 24-percent gain in 1983, and a 21-percent gain in 1976. One striking comparison is that back in 1976 and 1983 the income-properties group, commercial building and apartments, had completed its decline and was headed back up. This time around, however, this overbuilt sector was still in retreat, sliding an additional 6 percent.

**The new administration's impact**

In the original *Outlook* forecast for 1993 [RECORD, November 1992, pages 29-34] housing and highways were cited as offering the best potential for near-term expansion. This forecast remains essentially intact, supported by the initial intent of the Clinton economic program.

The recent drop in long-term interest rates, spurred by the Clinton Administration's belief that this will stimulate all businesses, offers the most immediate support to the construction industry. Fixed mortgage rates in March fell to 7.5 percent, a level not reached since the early 1970s. Early 1993 results for single-family housing have yet to show much of a response, due to harsh winter weather and some slippage in consumer confidence. But with strong demographic support still present, single-family housing should bounce back as 1993 proceeds. For the year as a whole, single-family starts are expected to climb to 1,075,000 units, a gain of 12 percent.

While the support for housing might be viewed as an indirect benefit of Administration policies, the \$16-billion economic stimulus package would offer a more direct boost to at least public-works construction. With an additional \$3 billion devoted to transportation projects, the supplemental appropriation would bring highway construction up to the level authorized in the 1991 transportation legislation. The stimulus package encountered Congressional delay in mid-April, but the highway portion is likely to come through relatively unscathed as this package achieves its final shape. Accordingly, public-works construction is projected to show a 9-percent gain this year. Other sectors of the construction industry derive minimal benefit from the Administration's

*Housing and public works remain the major elements of the current slow recovery.*

economic package, at least at the state- and local-government level, which has put the gradual upward trend for this type of construction on hold for now. Nevertheless, the level of institutional building in 1993, at 375-million square feet, will be only 7-percent below the most recent peak two years ago.

The overbuilt commercial categories in 1993 continue to face the same problem of high vacancy rates and depressed property values. With the sluggish recovery of the general economy, there has been only a slight reduction in the excess supply of space, even with record-low building levels for offices, hotels, and apartments. Store construction remains the bright spot, drawing support from its typical lagged relationship to the housing market and the shift away from traditional retailing towards discount outlets and specialty stores. Store construction managed a 7-percent gain in square footage last year, and a similar moderate rise is expected in 1993.

Overall, the construction market is projected to show another 8-percent gain in 1993, with single-family housing providing most of the improvement, and secondary support coming from public works. The decline of the commercial building market may have run its course, but any sustained upturn is unlikely for 1993. ■

*Prepared April 1993  
Robert Murray, Vice President,  
Economic Affairs  
F. W. Dodge Construction Statistics  
and Forecasts; McGraw-Hill Construction  
Information Group*

**1993 National Estimates** Dodge Construction Potentials First Update April, 1993

1992 Actual 1993 Forecast Percent Change 1993/92

**Nonresidential Buildings**

Floor Area (millions of sq. ft.)		1992 Actual	1993 Forecast	Percent Change 1993/92
Office Buildings		85	82	- 4
Stores and Other Commercial		185	195	+ 5
Other Commercial		189	188	- 1
Manufacturing Buildings		93	85	- 9
<b>Total Commercial and Mfg.</b>		<b>552</b>	<b>550</b>	<b>-</b>

Educational		145	145	-
Hospital and Health		76	72	- 5
Other Nonresidential Buildings		158	158	-
<b>Total Institutional and Other</b>		<b>379</b>	<b>375</b>	<b>- 1</b>
<b>TOTAL NONRESIDENTIAL BUILDINGS</b>		<b>931</b>	<b>925</b>	<b>- 1</b>

Contract Value (millions of \$)		1992 Actual	1993 Forecast	Percent Change 1993/92
Office Buildings		\$ 11,455	\$ 11,300	- 1
Stores and Other Commercial		11,742	12,650	+ 8
Other Commercial		9,368	9,625	+ 3
Manufacturing Buildings		8,317	7,850	- 6
<b>Total Commercial and Mfg.</b>		<b>\$ 40,882</b>	<b>\$ 41,425</b>	<b>+ 1</b>

Educational		\$ 16,394	\$ 16,825	+ 3
Hospital and Health		10,781	10,425	- 3
Other Nonresidential Buildings		18,060	18,375	+ 2
<b>Total Institutional and Other</b>		<b>\$ 45,235</b>	<b>\$ 45,625</b>	<b>+ 1</b>
<b>TOTAL NONRESIDENTIAL BUILDINGS</b>		<b>\$ 86,117</b>	<b>\$ 87,050</b>	<b>+ 1</b>

**Residential Buildings**

Dwelling Units (thous. of units)		1992 Actual	1993 Forecast	Percent Change 1993/92
Singlefamily Houses		962	1,075	+ 12
Multifamily Housing		159	175	+ 10
<b>Total Housekeeping Residential</b>		<b>1,121</b>	<b>1,250</b>	<b>+ 12</b>

Floor Area (millions of sq. ft.)		1992 Actual	1993 Forecast	Percent Change 1993/92
Singlefamily Houses		1,691	1,910	+ 13
Multifamily Housing		169	185	+ 9
<b>Total Residential Buildings</b>		<b>1,860</b>	<b>2,095</b>	<b>+ 13</b>

Contract Value (millions of \$)		1992 Actual	1993 Forecast	Percent Change 1993/92
Singlefamily Houses		\$100,516	\$115,150	+ 15
Multifamily Housing		9,899	10,975	+ 11
<b>Total Residential Buildings</b>		<b>\$110,415</b>	<b>\$126,125</b>	<b>+ 14</b>

**Nonbuilding Construction**

Contract Value (millions of \$)		1992 Actual	1993 Forecast	Percent Change 1993/92
Transportation Construction		\$ 31,418	\$ 35,200	+ 12
Environmental Construction		15,587	16,150	+ 4
<b>Total Public Works</b>		<b>\$ 47,005</b>	<b>\$ 51,350</b>	<b>+ 9</b>
Utilities		\$ 5,925	\$ 6,100	+ 3
<b>TOTAL NONBUILDING CONSTRUCTION</b>		<b>\$ 52,930</b>	<b>\$ 57,450</b>	<b>+ 9</b>

**All Construction**

Contract Value (millions of \$)	Total Construction	1992 Actual	1993 Forecast	Percent Change 1993/92
		\$249,462	\$270,625	+ 8

*Regional Estimates chart on next page*

## First 1993 Update

continued from previous page

## 1993 Regional Estimates Dodge Construction Potentials

Construction Contract Value (millions of dollars)	1993			1992		
	Preliminary	Forecast	Percent Change 1993/92	Preliminary	Forecast	Percent Change 1993/92

## Northeast

CT, ME, MA, NH, NJ, NY, PA, RI, VT

Nonresidential Building				Residential Building			
Commercial and Manufacturing	\$ 6,985	\$ 6,975	-	Singlefamily Houses	\$12,012	\$13,400	+ 12
Institutional and Other	9,362	8,950	- 4	Multifamily Houses	2,025	2,150	+ 6
<b>Total</b>	<b>\$16,347</b>	<b>\$15,925</b>	<b>- 3</b>	<b>Total</b>	<b>\$14,037</b>	<b>\$15,550</b>	<b>+ 11</b>
<b>Nonbuilding Construction</b>	<b>\$11,096</b>	<b>\$12,100</b>	<b>+ 9</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$41,480</b>	<b>\$43,575</b>	<b>+ 5</b>

## North Central

IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI

Nonresidential Building				Residential Building			
Commercial and Manufacturing	\$ 9,210	\$ 9,850	+ 7	Singlefamily Houses	\$22,951	\$25,650	+ 12
Institutional and Other	10,728	10,500	- 2	Multifamily Housing	2,636	2,900	+ 10
<b>Total</b>	<b>\$19,938</b>	<b>\$20,350</b>	<b>+ 2</b>	<b>Total</b>	<b>\$25,587</b>	<b>\$28,550</b>	<b>+ 12</b>
<b>Nonbuilding Construction</b>	<b>\$11,465</b>	<b>\$12,575</b>	<b>+ 10</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$56,990</b>	<b>\$61,475</b>	<b>+ 8</b>

## South Atlantic

DE, DC, FL, GA, MD, NC, SC, VA, WV

Nonresidential Building				Residential Building			
Commercial and Manufacturing	\$ 7,301	\$7,575	+ 4	Singlefamily Houses	\$24,360	\$29,750	+ 22
Institutional and Other	8,202	8,825	+ 8	Multifamily Housing	1,919	2,450	+ 28
<b>Total</b>	<b>\$15,503</b>	<b>\$16,400</b>	<b>+ 6</b>	<b>Total</b>	<b>\$26,279</b>	<b>\$32,200</b>	<b>+ 23</b>
<b>Nonbuilding Construction</b>	<b>\$ 9,352</b>	<b>\$ 9,525</b>	<b>+ 2</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$51,134</b>	<b>\$58,125</b>	<b>+ 14</b>

## South Central

AL, AR, KY, LA, MS, OK, TN, TX

Nonresidential Building				Residential Building			
Commercial and Manufacturing	\$ 6,298	\$ 7,175	+ 14	Singlefamily Houses	\$16,197	\$19,900	+ 23
Institutional and Other	6,388	7,000	+ 10	Multifamily Housing	762	1,025	+ 35
<b>Total</b>	<b>\$12,686</b>	<b>\$14,175</b>	<b>+ 12</b>	<b>Total</b>	<b>\$16,959</b>	<b>\$20,925</b>	<b>+ 23</b>
<b>Nonbuilding Construction</b>	<b>\$ 8,238</b>	<b>\$ 9,200</b>	<b>+ 12</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$37,883</b>	<b>\$44,300</b>	<b>+ 17</b>

## West

AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY

Nonresidential Building				Residential Building			
Commercial and Manufacturing	\$11,088	\$ 9,850	- 11	Singlefamily Houses	\$24,996	\$26,450	+ 6
Institutional and Other	10,555	10,350	- 2	Multifamily Housing	2,557	2,450	- 4
<b>Total</b>	<b>\$21,643</b>	<b>\$20,200</b>	<b>- 7</b>	<b>Total</b>	<b>\$27,553</b>	<b>\$28,900</b>	<b>+ 5</b>
<b>Nonbuilding Construction</b>	<b>\$12,779</b>	<b>\$14,050</b>	<b>+ 10</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$61,975</b>	<b>\$63,150</b>	<b>+ 2</b>

Prepared by the Economics Department, Construction Information Group, McGraw-Hill Information Services Company, Robert Murray, vice president, economic affairs.

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## Part Three: What to Look for On-Site

By Ann Bayard Ketterer

The following are examples of how the observing architect checks for general competency of construction, as well as for conformance with drawings and specifications during the installation of specific materials.

## Concrete

Even if an engineer has been hired to observe concrete operations and make required tests, the architect also must look at concrete as part of site observation.

- Make sure that slump and other tests are done at required intervals.
- See that test cylinders are correctly stored.
- Note reinforcing on the site as well as in the work; there should be enough stored on the job to complete subsequent pours without delay.
- Observe location and construction of control, isolation, and construction joints.
- See that concrete color and finishes meet specified requirements.
- Note that curing methods are the ones specified and that temperature-control and moisture-retaining measures are continued throughout the curing process.
- If anything seems irregular, such as extremely wet concrete or concrete poured from an excessive height, question it and notify the engineer.

## Masonry

- During the installation of unit masonry, check bond pattern, joint size, and tooling, as well as unit color, size, and other specified characteristics. Look for reinforcing, bond-beam construction, lintel bearing, anchors, flashing, weep holes, and other requirements stated in the construction documents.
- In freezing weather, look for provisions to heat the masonry materials.
- Note if units are wet prior to installation.
- Be sure that required dampproofing has been applied to basement walls prior to backfilling.
- Throughout the masonry work, take note of the location of units that are stacked prior to installation to be sure that they are not stored on floors where they could cause de-

Ms. Ketterer is an architect experienced in project management and contract administration.

*Part three in a series on construction administration covers what to look for on site.*

flection or failure of the permanent structure.

#### **Wood framing**

- Check member sizes and spacing, noting anchors, connectors, end-bearing, and other specified requirements.
- Look for temporary as well as permanent bracing and for wood that is sound, straight, and dry.
- Note clearances from chimneys and fireplaces.
- Be sure that framing members are not cut or notched in a manner that would leave them without sufficient strength to carry design loads.
- Check grade markings for compliance with the specifications (see sidebar).
- Be sure that treated wood is used where required and contains stamps or end-tags showing the recommended use, type, and amount of chemicals used, and the standard to which the product complies.
- Look for manufacturer's recommended spacing between units of plywood, oriented-strand board, and other sheathing and decking panels.
- Notice whether lumber is stored off the ground and under cover.

#### **Painting**

- Check primers and finish coats for color, coverage, texture, and other requirements of the contract documents.
- See that surfaces to be painted have been properly prepared and are clean and dry. (Waiting 30 days before applying paint to a newly plastered surface may seem to cause delay, but this is an application requirement for many types of paints and primers.)
- Confirm that spaces to be painted are ventilated and are warm enough to meet the minimum application temperatures required by the paint manufacturer.
- Make sure that exterior paint is applied during weather that is not damp or wet.
- Note that windows, floors, and other surfaces are protected from paint spray or other damage, and that personnel in the vicinity of spray guns are wearing approved respirators.
- Look for new, unopened paint cans; labels may show that the brand name, type, and color meet the requirements of the specifica-

tions, but if the paint cans are rusty, or have labels with paint drips on them before painting starts, the paint may have been improperly stored, may be contaminated or extremely old, or may be another brand of paint that has been repackaged in a can labeled as the required one.

#### **Drywall**

- Observe that the installation technique produces the fewest possible joints, unless, for reasons of strength, more joints are specified.
- If paper surfaces are broken around a nailhead, make sure that an additional nail is driven approximately two inches away.
- Note that double-ply systems are properly nailed and glued and located where required.
- Be sure that ceiling supports are not suspended from pipes, ducts, or other non-structural items.
- If sheets of drywall appear damaged, they should be replaced, limiting patching to only minor errors.
- Test that spaces to be finished are warm enough to meet the minimum application temperatures required.
- Look for corner beads and other accessories.
- See that joint tape and compounds are applied in the specified number of coats with the required drying times between coats.
- Assure that gypsum board is stored in dry, well-ventilated buildings and not brought into the construction area until it is completely closed in and the temperature can be maintained above freezing.

As architects observe each trade to make sure that the materials and workmanship conform with drawings and specifications, they must also watch for related conditions that—although not always specifically covered in the contract documents—influence the quality of the project and its timely completion. By looking carefully at the entire construction process, observing workmanship, attitudes, and management coordination as well as materials and installation, architects can determine whether the project is being built under conditions that promote good workmanship, good construction practices, and adherence to schedule.

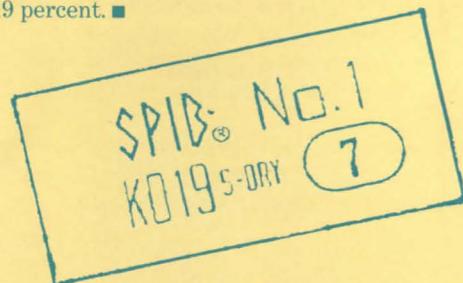
## **Knowing Lumber Marks**

Some master specifications suggest that lumber be specified by stress values. For example, Fb (minimum extreme fiber stress in bending) = 1500 psi, with E (minimum modulus of elasticity) = 1,500,000 psi. If lumber is to be specified by stress value, the architect must determine the correct strengths needed, a species of wood that can provide them, and its ready availability.

Predimensioned lumber will have grade stamps on it that give a lot of useful information (see below), but only machine-graded, individually tested lumber will actually have the Fb and E marked on the wood. The E and Fb values are shown in a grade stamp that also includes the words "machine-rated" or "MSR" as well as the mill name or number (lower right corner), the species identification, the grading agency trademark, and the moisture content of the wood at the time it was manufactured. Machine-graded wood is also visually inspected before the grade stamp is applied.

The stress values for each species of wood can also be found in reference books such as the supplement to the *National Design Specification* published by the National Forest Products Association. The specifications should state the species, size, grade (upper right on stamp), and moisture content of lumber (lower left) that meet the stress requirements so that compliance can be easily checked.

The grade of lumber will be chosen by stress values, but remember that these values vary for each species and are also determined by size and moisture content within a species. "SPIB" is the logo of the Southern Pine Inspection Bureau, the agency that maintains supervision, testing, and inspection of southern pine. "KD19 S-Dry" shows that the wood has a maximum moisture content of 19 percent. ■



# Specification Series: Casements and Draperies

By Maryrose McGowan

Although definitions vary, casements are commonly sheer or semi-sheer and draperies are opaque, pleated, and often lined. Curtains are unconstructed, unlined, and are less usual in commercial applications.

The selection of fabric window treatments is often based purely on appearance. However, you need to know window and glass types, solar orientation, and shading coefficients early in the design process to coordinate them with hvac cooling-load calculations and fenestration design. Make sure the window treatment will not impede hvac functions by blocking vent openings or misdirecting air flow.

## Shading coefficient

SC is a value derived from solar-optical properties—transmittance, reflectance, and absorptance—of the window system. Because the effectiveness of an internal shading device depends on its ability to reflect incoming solar radiation back through the fenestration, reflectance is the most important factor in reducing heat gain. The optimum drapery or curtain for reducing heat gain will have high reflectance and low transmittance and absorptance.

Drapery manufacturers may be able to provide values for these properties, although they are seldom asked for such information. The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) provides a guide for estimating the probable SC of a drapery and glass window system when not available from the manufacturer. Classes are based on drapery openness and reflectance and can be approximated by eye using ASHRAE's guide. Some manufacturers refer to these values as fabric designator.

The openness factor is the ratio of open area between threads to total area of fabric. It is designated by a Roman numeral:

- I. Open weave, over 25 percent open.
- II. Semi-open weave, 7 to 25 percent open.
- III. Closed weave, 0 to 7 percent open.

Maryrose McGowan is the specifier for *MASTERSPEC Interiors Library* and is based in Cambridge, Massachusetts.

The yarn reflectance is designated by a subscript:

- D. Dark-colored yarn, 0 to 25 percent.
- M. Medium-colored yarn, 25 to 50 percent.
- L. Light-colored yarn, over 50 percent.

## Drapery tops or "headings"

- Pinch pleats or French pleats are traditional for pleated draw draperies and require drycleaning and the most stack space. Stack space at the bottom will be larger than at the top and is estimated by dividing the width of the opening by 3 and adding 12 inches.
- Stack pleats require one-half the stacking space of pinch pleats and allow laundering. Available fullnesses are 60, 80, 100, and 120 percent.
- Roll-pleat draperies (see illustration, opposite page) are fabricated from flat panels which are easily laundered and pressed. Fullnesses are 60, 80, 100, and 120 percent.
- Accordion-fold draperies (illustration, this page), like roll pleats, have the same appearance from both sides. This type requires the least amount of stack space and is available in 80-, 100-, and 120-percent fullnesses.

## Drability

Upholstery fabrics do not usually drape well and fabrics intended for other uses may not be suitably light-resistant. Request or purchase two to three yards of the drapery fabric under consideration and hang it to see how well it drapes. If the fabric must be treated for flammability, check a treated sample. If the fabric requires a lining, hang a lining sample with the draping sample.

Linings protect the fabric from fading and deterioration from ultraviolet exposure.

- Plain-woven linings may have silicone compounds applied to slow the rate of moisture absorption from condensation on the window. Sateen linings are the most popular.
- Metallic-coated lining fabrics increase opacity and solar-heat deflection. Self-lined draperies have vinyl coatings or film sheetings attached to back surfaces.

Weights in the hems of casement and drapery fabrics improve draping qualities and include lead-weight tape or evenly distributed small plastic-coated dead weights can be stitched into place. ■

## Guide Specification PART 1. GENERAL

### 1.01 References

- A. Standards organizations referenced:
1. American Association of Textile Chemists and Colorists (AATCC).
  2. American Society for Testing and Materials (ASTM).
  3. National Fire Protection Association (NFPA).

### 1.02 Submittals

- A. Shop Drawings: Show location, drapery style, headings, anchorage details, and location of drapery pulls.
- B. Samples
1. Drapery, lining, and interlining material: full width, not less than 36 inches long, showing full pattern repeat, with specified treatments applied.
  2. Drapery track, minimum 18-inches long.
  3. Bottom- and side-hem intersection (include weights).
- C. Maintenance data: dry-cleaning or laundering instructions.

### 1.03 Quality assurance

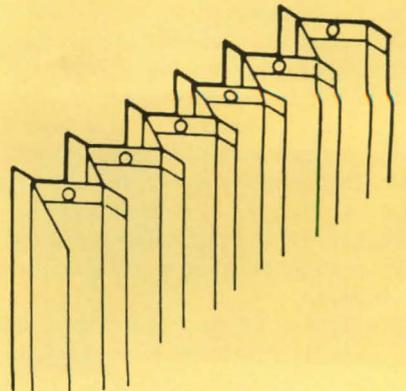
- A. Surface burning characteristics: NFPA 701, small-scale vertical burn test.
- B. Mock-ups: Erect before ordering fabric.

### 1.04 Project conditions

- A. Field measurements: Verify dimensions to receive draperies before fabrication.

### 1.05 Maintenance

- A. Extra materials: Deliver to owner full-width drapery- and lining-fabric yardage and drapery pulls equal to 5 percent of amount installed.



Drawing: Drapery System, Inc. drawings

**In This Issue**

Architecture has to work harder than ever to establish its value, carve out its niche. This issue shows that resourcefulness is not a lost art. Our increasingly turbulent world intruded on the design of Perry Dean Rogers & Partners' U. S. Embassy in Amman, Jordan, in the form of strict new security requirements (page 66). The firm's response seeks to reconcile security with diplomatic welcome. Another sign of the times: the demand for detention facilities continues to rise. Our *Building Types Study 705/Correctional Facilities* (page 94) documents some of the thinking (above all a recognition of the increasingly diverse inmate population) that may improve management and reduce construction and operating costs. Architecture's place in Graham Gund's Fernbank Museum in Atlanta is more clear-cut: its Great Hall is a suitably civic setting for a variety of meetings and celebrations (page 80). In contrast to the playful monumentalism of Gund, the wedge-shaped cornice of a skyscraper by Kohn Pedersen Fox stabs the sky (page 74). Unabashedly modern, the carefully calibrated massing of this complex for Marathon/IBM draws together Montreal's heterogenous skyline. Unsettled times propel some architects on a search for what is truly essential. The Russian translation of *Polinya*, for which Toyo Ito's Hotel P was named (page 88), aptly describes the image in the architect's mind: "the middle of a white glacier where a pool of unfrozen water remains." *J. S. R.*

*Manufacturers' Sources listed on page 117*

# Ambivalent Symbol



*With security concerns paramount, Perry Dean Rogers's embassy in Amman reflects an increasingly turbulent world.*

*United States Embassy  
Amman, Jordan  
Perry Dean Rogers & Partners  
Architects*



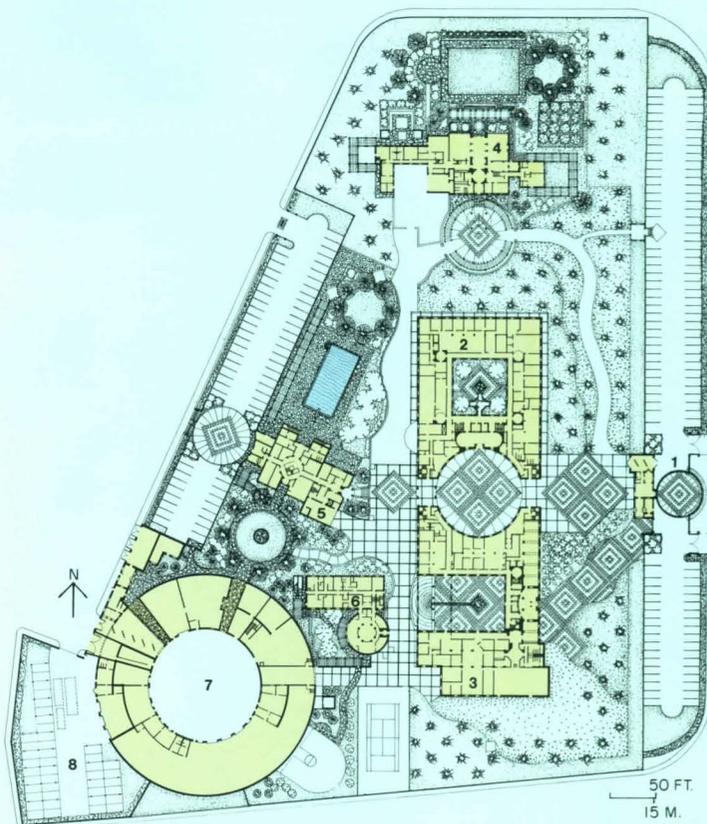
It's hard to consider the architecture of U. S. embassies without reflecting on the 1983 destruction of the Marine barracks and embassy in Lebanon by a terrorist truck bombing. With hundreds of marines and staff killed, the catastrophe set off a soul-searching that produced strict new congressional mandates for the design of consular facilities. While the debate as to whether the elaborate security measures are worth their great expense continues, Amman's new embassy compound represents the difficulty of reconciling security with diplomatic welcome.

At the time of the bombing, Perry Dean Rogers was being considered as architect only for a new embassy residence in Jordan. The new security requirements caused the State Department to bring together facilities from several different locations, creating a new compound fortified with full perimeter walls, deep building setbacks, secured entrances monitored by Marine guards, and small external windows. [For more on embassy security, see RECORD, August 1992, pages 36-37]. To find a site large enough to meet these needs meant that the embassy had to move to the edge of the city from its center, a location both less convenient and less important symbolically.

Architects of other recent embassy projects have had some difficulty meeting antiterrorist guidelines while representing the building as an embassy rather than a bunker. Perry Dean Rogers drew on local building traditions: "We didn't have problems with the security directives because it's so hot you don't want large openings," comments partner Charles Rogers. The embassy is an architecture of walls: rough cut or honed (which reveals the delicate figuring of the Jordanian stone); uncoursed fieldstone and one-third running bond. The structures within the compound, built as primary geometric forms, pick up the sharp, powerful light. The chancery, the symbolic as well as administrative center of the compound, rises over the perimeter walls as a formidable masonry block, its tower-like corners evoking fortifications (previous pages). Public areas, such as offices for information and development, commercial attachés, and visa applications, are located in an annex (site plan).

Though the stone surfaces echo the monochromatic landscape, the severity of the architecture is tempered by grillwork drawn from local prototypes, tinted-concrete paving that abstracts traditional fabric patterns, and trellises and awnings painted bright colors inspired by Bedouin clothing. Though these elements are deployed in a consistent way throughout the compound's five buildings, connections between individual structures are much less clearly integrated. (The architects aligned buildings to the irregular site's edges.)

The project's contextual touches suggest that Americans want to learn from the Middle East's rich and ancient culture. In contrast, the embassy building boom of the '60s gave us an image of *pax Americana*: open, confident, forward-looking, but arguably indifferent to local conditions. Even in the skilled hands of Perry Dean Rogers, the Amman Embassy is defensive, inward-looking, its message about America ambivalent. It's an apt reflection of America's uncertain place in a radically altered world. *James S. Russell*

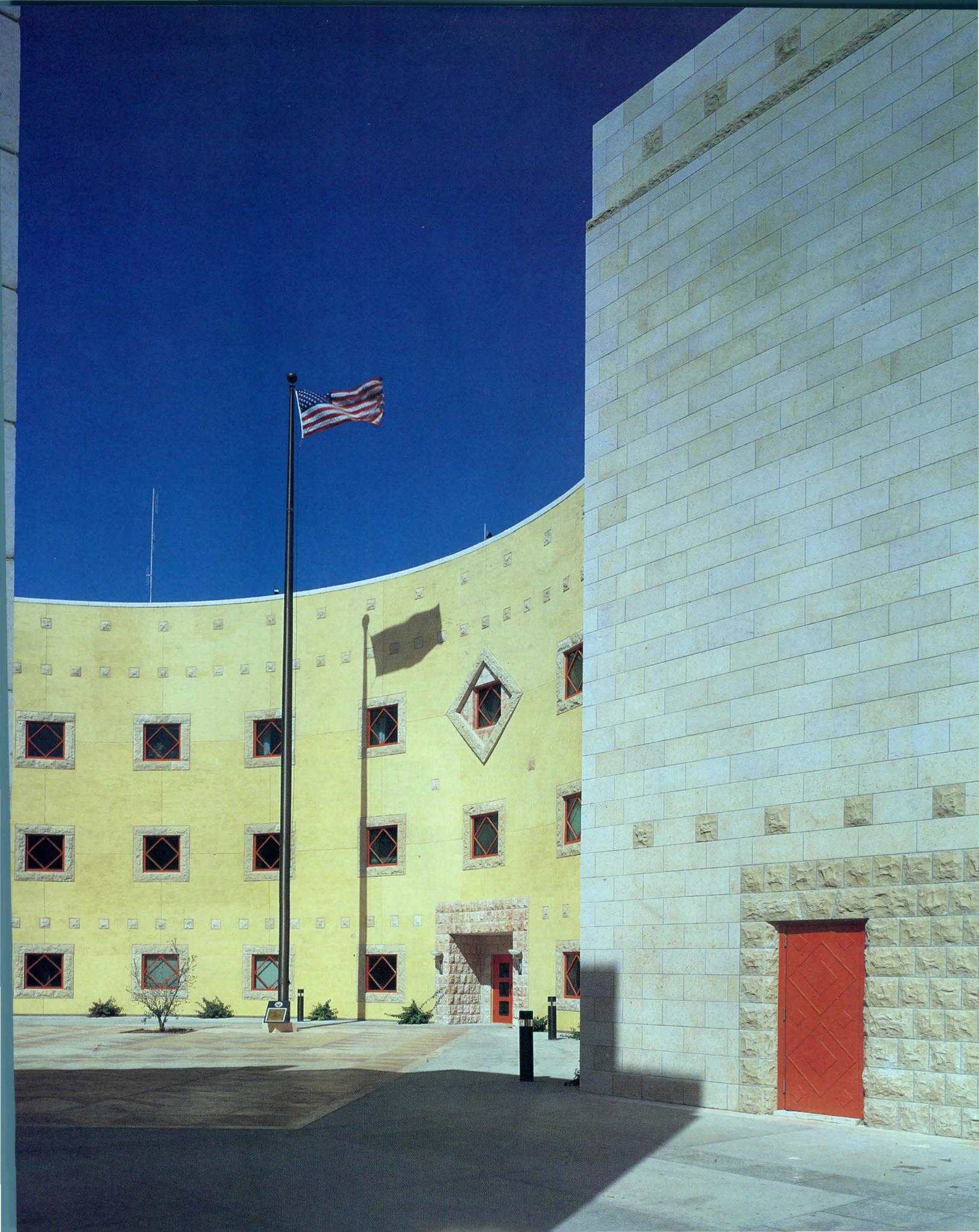


1. Main gate house
2. Chancery
3. Chancery annex
4. Ambassador's residence
5. American Club
6. Marine guard quarters
7. Service annex
8. Motor pool

*Strict security requirements, which included deep building setbacks from adjacent streets ("standoffs" to dissipate terrorist-bomb explosions), meant that the new embassy compound needed a large site, one that could only be obtained on the developing edge of Amman. The 9-ft-high perimeter wall is interrupted at the entrance by a trellised metal fence, which invites the eye into the courtyard of the chancery (previous pages—a guarded sally port is just outside the photo). Grilled windows on this elevation are tempered triple-layered glass. Two massive piers and paired stone drums mark the central ceremonial entrance that leads to a circular courtyard, faced with yellow stucco, inside the chancery (opposite).*

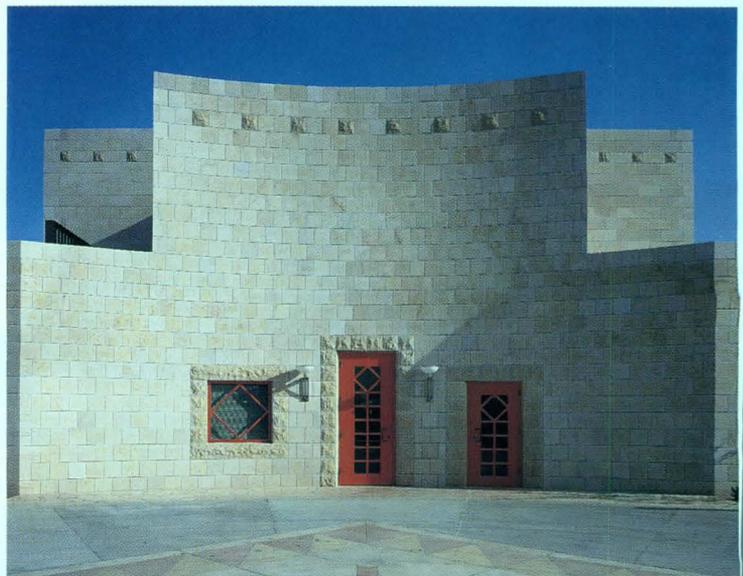


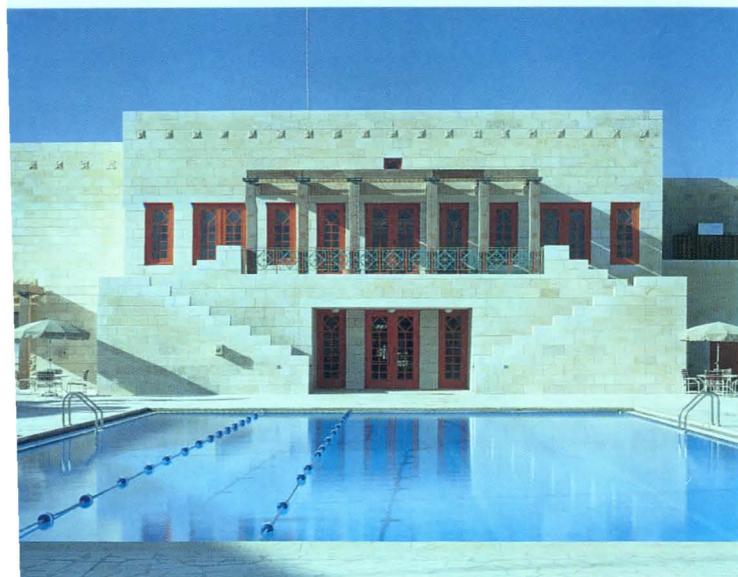
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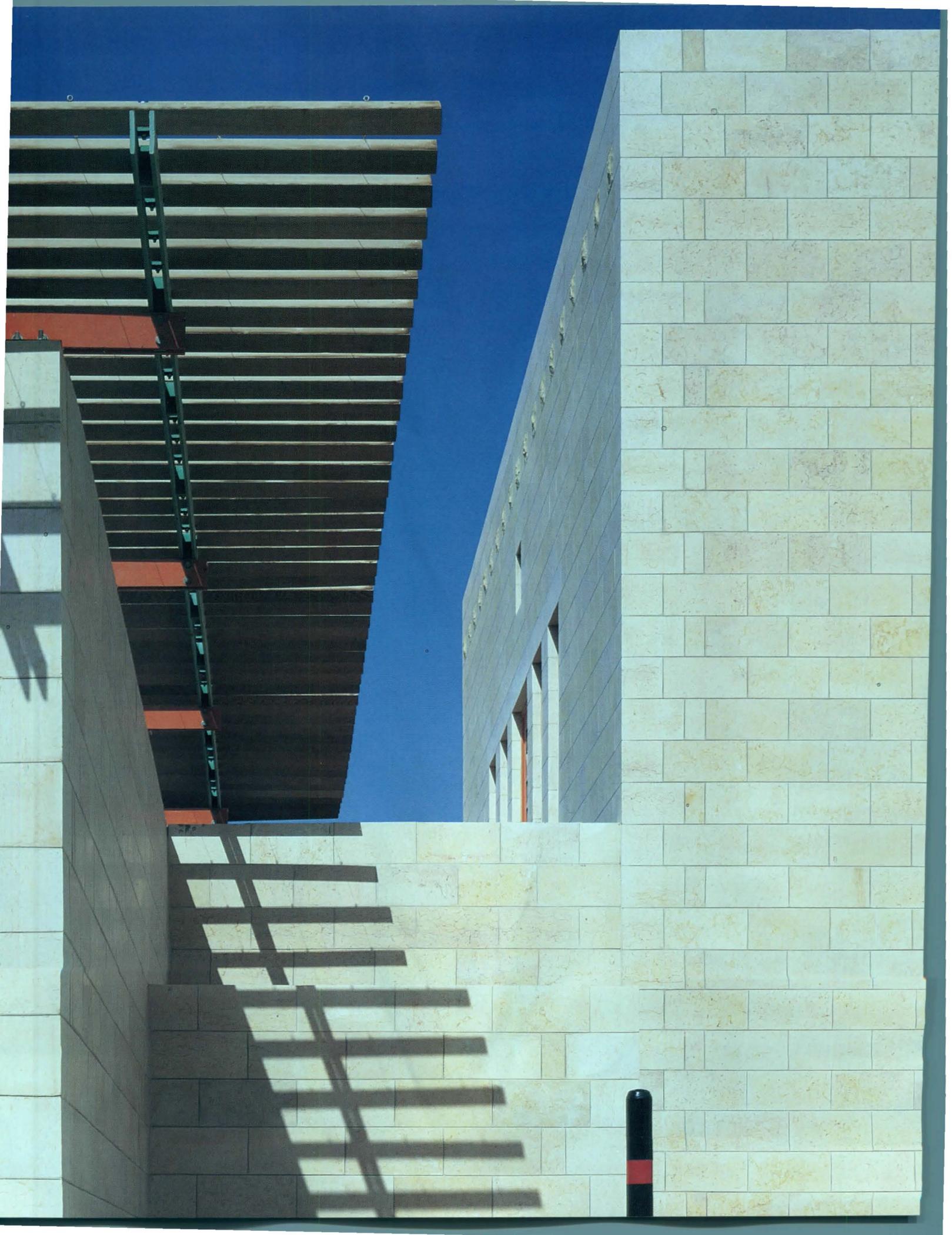


*Aligned to the chancery, the compound's second most important building is the ambassador's residence (garden side above). The ground floor contains a suite of public rooms that, divided, are suitable for receiving small groups of visitors or, opened together and to the gardens, make entertaining several hundred guests possible. Private quarters occupy the upper level.*

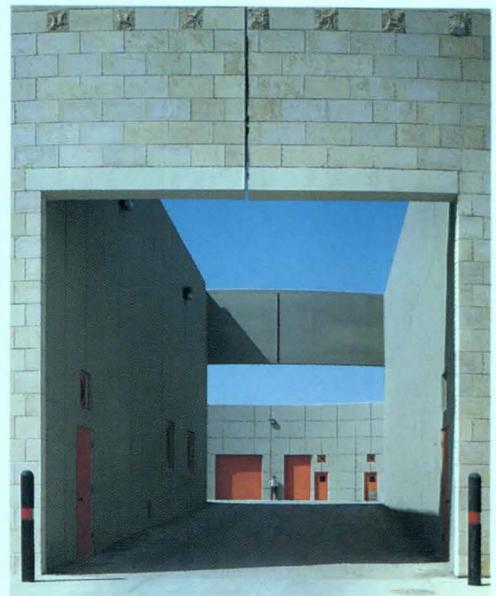
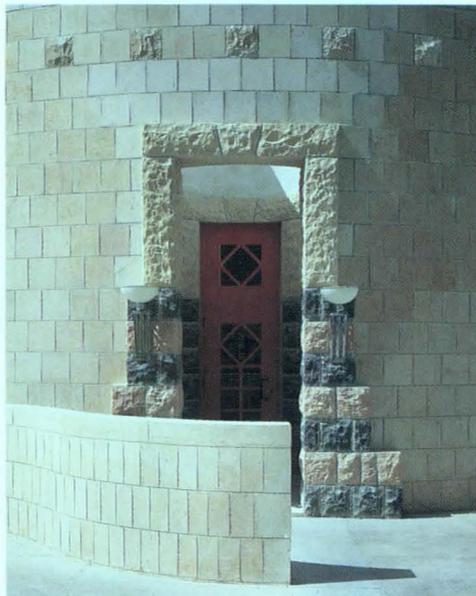
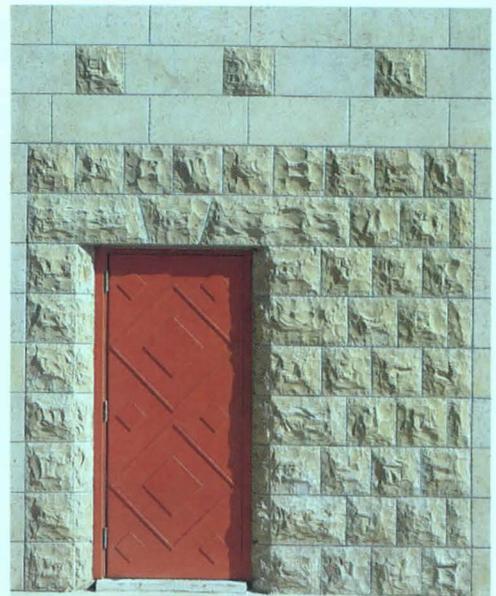




*Served by its own parking and secured entrance (opposite bottom), the American Club is a recreational facility open to all visiting citizens. Protected by trellises and walls, the club faces a garden and pool (left). Lushness is husbanded here; dry-climate planting is used in most areas of the compound.*

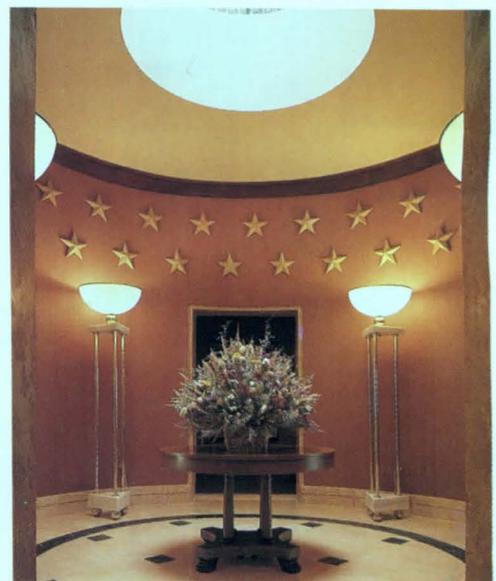


Perry Dean Rogers resolved the seemingly opposed intentions of security and a more conventionally American openness and informality through local architectural tradition, which derives its strength from powerful, unbroken geometric forms tempered by small-scale and surprising occasions for exuberant ornament—such as doorways. A trellis, for example, contrasts with the massiveness of planar walls (opposite). The sharp light picks out delicate textures in the honed finish of local stone (top left), which contrasts with rough fieldstone garden walls. Rough-cut quoins decorate the portal to the marine-guard compound (middle left) and surround an embossed metal door (top right). The door's color is often used locally in fabrics. Middle right: view into the service annex. Bottom: the vestibule (right) and reception rooms (left) in the ambassador's residence.



**Credits**

*United States Embassy  
Amman, Jordan*  
**Owner:** Department of State  
**Architect:** Perry Dean Rogers & Partners—Charles F. Rogers, Peter A. Ringenbach, principals-in-charge; Dell Mitchell, principal-in-charge (interiors); Gabriel Yaari, David N. Storeygard, Thomas J. McCarty, Thomas Hess, Treffe LaFleche, Richard Terrell, Bruce Hutt, Robert Vigiant, Koonshing Wong, Liliane Wong, Anna Wu, project team; Catherine Suttle, Theresa Harriman, interiors  
**Consulting Architect:** Jafar Tukan & Partners (Amman)  
**Engineers:** LeMessurier Consultants (structural); BR+A/Bard, Rao + Athanas/Sullivan Partnership (mechanical, electrical/plumbing/fire protection)  
**Consultants:** Jerry Kugler Associates (lighting); Peter Walker (landscape)  
**General Contractor:** American International Contractors



# Urban Diplomat

*Marathon/IBM Building  
Montreal, Quebec  
Kohn Pedersen Fox Associates  
Design Architect  
LaRose Petrucci Associates  
Architect of Record*





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©Richard Payne



*Marathon/IBM's interlocking forms allude to surrounding buildings. Tinted green glass picks up the color of the copper dome of a nearby landmark church. The long building and a steel trellis (bottom) define two edges of an entry plaza.*

**D**esigned in 1988 and recently completed, the 50-story, 1.6-million-square-foot Marathon/IBM tower by Kohn Pedersen Fox (KPF) is not just a meticulously detailed *tour de force* but a contextual diplomat urging the combative Montreal skyline into a peaceful whole. The new building also redefines KPF. Taking the lead in corporate Postmodernism during the 1980s, the firm branded itself with a much imitated trademark style and urban approach. The firm's commanding Montreal effort, which recalls its Modernist origins, signals that KPF has molted, and emerged transformed.

At a distance, Montreal's most imposing skyscraper looks like several buildings. The architects have broken the notion of the high-rise as a point tower and closed container, creating a complex assembly of volumes, each referring to neighboring buildings through shape, color, and height. A one-building composite that is extended across the skyline, Marathon/IBM was reconciled to its more egocentric neighbors by linking them visually into a formal community. Its multiplicity of scales mitigates the behemoth's potentially crushing impact. In its urban context, there is also a distinct historical challenge. I. M. Pei's Place Ville Marie is nearby—the cruciform tower built by William Zeckendorf which for a generation set Montreal's standard. Whereas Place Ville Marie represents a simple Euclidean geometry realized in elegantly monochromatic materials with disappearing details, KPF has generated a much more free-form design, with expressed joints and connections and differentiated forms and materials playing off each other—the bowed facade against orthogonal blocks, a predominantly glass curtain wall against one with more stone, aluminum against wood, fired stone against polished. The eye actively roams this building, propelled by its massing and drawn up, down, and across by its surface patterns. William Pedersen, the partner-in-charge of its design, opened the most closed of building types, the high-rise, by mixing the informal and formal. By its quality, presence, urban mission, mechanical expression and detail, it claims lineage from unbuilt Constructivist skyscrapers.

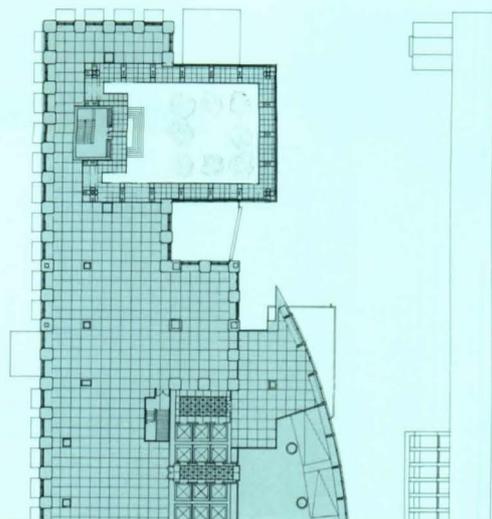
Beyond the complex massing and open form, there is a subtext involving window frames. Thin and recessive in one facade, they are prominent in another, and in the winter garden emerge as full-blown columns. These always-changing secondary frames, in turn, metamorphose into a hardware system of handrails and canopies applied throughout the building. The hardware brings the window frames from the 50-story architectural field down to elements people touch. Bolts emphasize the mechanical connections, giving a level of small-scale detail to a building richly developed at other scales.

Conspicuously handsome and beautifully crafted, Marathon/IBM is also experientially rich. Unlike most container buildings, where visitors are either inside or outside, the ground floor extends beyond the main envelope, with several levels, connecting stairs, and a ramp. The main floor and mezzanine, with restaurants and stores, seem less object than experience, a complex topography programmed like a city street. The building escapes any sense of being a closed tube engineered for air-handling.

Pedersen has orchestrated a difficult whole that is formally complex, programmatically diverse, and urbanistically both grand and intimate, without making the whole appear strained or arch. Now that it has been built, the building's complexity appears to be obvious and inevitable: its resolution and elegance make it seem effortless and even simple. *Joseph Giovannini*

*Joseph Giovannini is a New York-based architect and critic.*





1



2



3

*A ramp outside the tower's main structural columns (opposite) sweeps by the bowed front wall of the entry pavilion, leading to the subway and to the elevator concourse to the right of the columns. Doubled rails and supports for the balustrade and paired steel columns at the window wall help break down the scale. Beveled edges seem to sculpt volumes from the transparent glass inset in the balustrade. Columns are detailed to recall the classical tripartite order.*

*A mixture of materials banding the floors and walkways enlivens the entry, giving the space a richness (1). A small bamboo forest grows in the garden court that occupies a pedestrian path between the street and elevators (2), and recalls the public court in the New York City IBM tower. A colonnade leads down a corridor lined with benches (3).*

#### **Credits**

*Marathon/IBM Building  
Montreal, Quebec*

**Design Architect:** *Kohn Pedersen Fox Associates Architects—A. Eugene Kohn, partner-in-charge; William Pedersen, design partner; Sudir Jambhekar, senior associate partner/project manager; Richard Clarke, associate partner-in-design; Glen Da Costa, job captain; John Koga, Stephanie Spoto, Miriana Doneva, Carlos Menendez, Bruce Eisenberg, Carol Buhrmann, project team*  
**Architect of Record:** *LaRose Petrucci, Associates—Giles LaRose, partner-in-charge; Charles Lamy, associate-in-charge*

**Engineers:** *LeMessurier Consultants (structural design); Pasquin, St.-Jean and Associates, Inc. (structural engineers of record); St.-Amant, Vizina, Vinet, Brassard (mechanical/electrical)*

**General Contractor:** *Magil Construction*



**G**raham Gund practices an architecture that is a playful simulation of the architecture of the past. A child's rebus, you might call it. Cut out simplified words and pictures from a child's book of architectural history, shuffle them, then paste them up to form a new pictorial message. Such lighthearted simulation makes Gund the perfect architect for the new Fernbank Museum of Natural History. For the museum is largely simulation too—a simulation of the natural environment of Georgia, astonishing in its accuracy.

At 160,000 square feet, Fernbank is the biggest natural history museum south of the Smithsonian. Yet it had to be tucked unobtrusively onto a site carved from the backyards of former mansions in a toney neighborhood of Atlanta. Gund solved that problem by pushing the building deep onto the property and keeping it low at the entrance, the only part you see from the street. Only at the back does the museum express its full height. Here Gund arranged a terrace, a café, and a public atrium so that all look onto a wooded ravine, creating a grander version of the backyard barbecue terrace of a suburban home. The ravine is Fernbank Forest, a 65-acre preservation area, and at its farther end stands an older facility, Fernbank Science Center, which acts with the new museum as the yin and yang of a single complex.

Gund may be the last of the truly committed generation of Postmodern architects. At his best, he creates work that is at once monumental and playful. From the entry side, Fernbank is a big symmetrical building: a starched-shirt facade. You're left in no doubt of its civic importance. Yet it isn't pompous. The entrance is an oversized cave-like arch, the roof-line is enlivened by a row of shapes that look vaguely like cut-out frogs or ice-cream sundaes, and there's a row of hey-look-at-me-I'm-not-holding-anything-up columns across the front. Everything strikes the right note: grandeur subverted by whimsy. A child's view of adulthood.

Indoors, a big lobby organizes the visitor services and information systems with great clarity, then thrusts you forward into a three-story skylit atrium—the "Great Hall"—that provides access to everything else. Here tall steel columns rise and sprout like trees into beams and trusses, in a reminiscence of the great glass-topped halls of Victorian museums. Besides architecture, there's not much to look at in the Great Hall, since it was designed so it could be rented out for weddings, conferences, and the like.

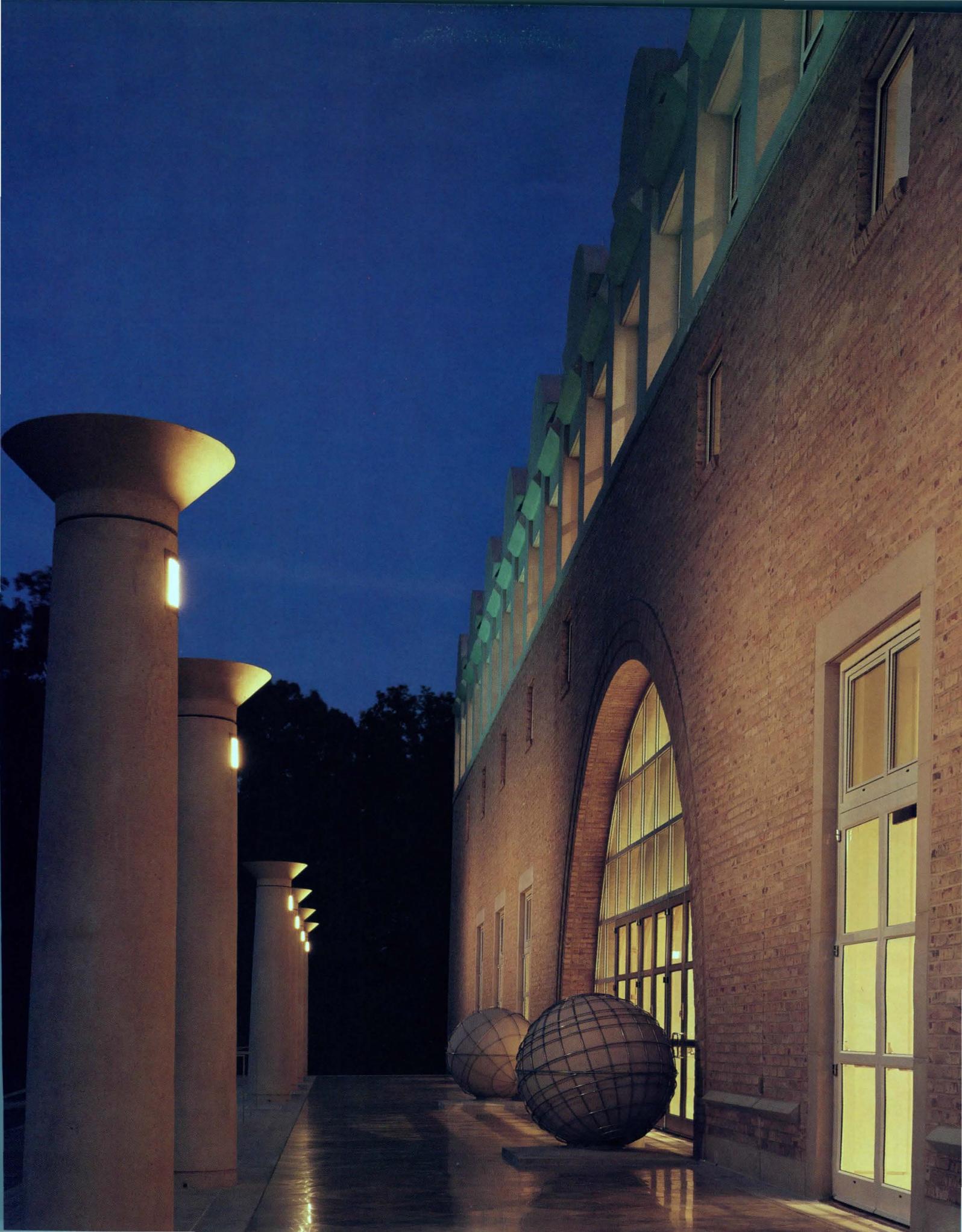
Gund's office didn't design the museum's exhibits. They're a collaboration among staff and outside consultants led by New York exhibit designer Edwin Schlossberg. A museum for the age of media, Fernbank is the farthest thing imaginable from a grandpa's attic of catalogued fossils and dried plants. At its heart is the permanent theme exhibit, "A Walk Through Time in Georgia." Strung through 15 galleries, this is an eerily lifelike simulation of native granite outcrops, plateaulands, swamps, and barrier islands, all executed with magical accuracy. Will such make-believe entice visitors to explore Georgia's actual swamps and mountains? Or will it prove to be a substitute for reality? Has life been tamed into entertainment? You may find yourself worrying about such questions. But it's a worry fed by dumbstruck admiration for the skill of the simulators.

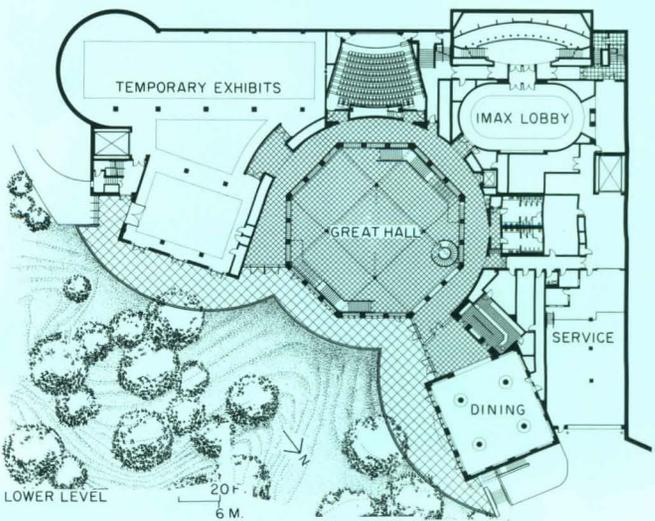
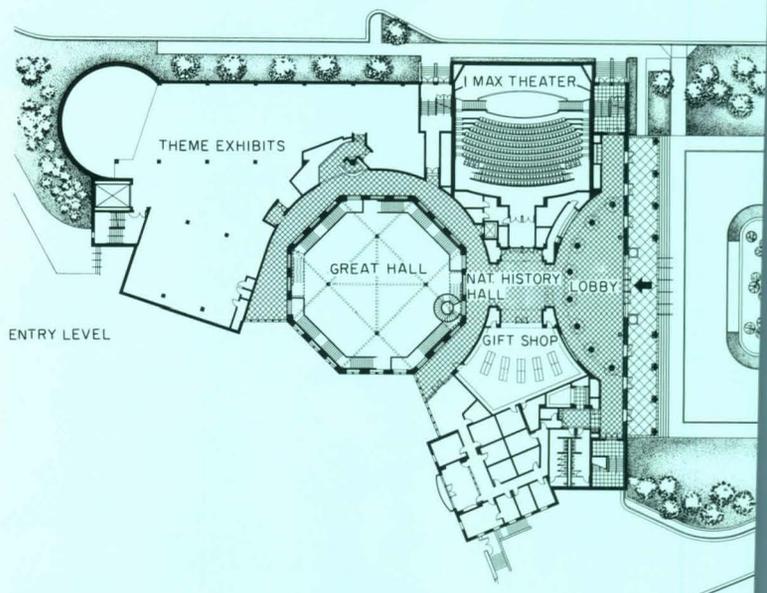
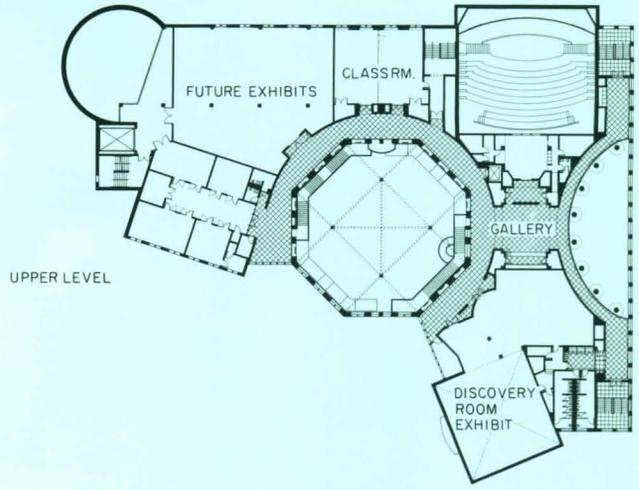
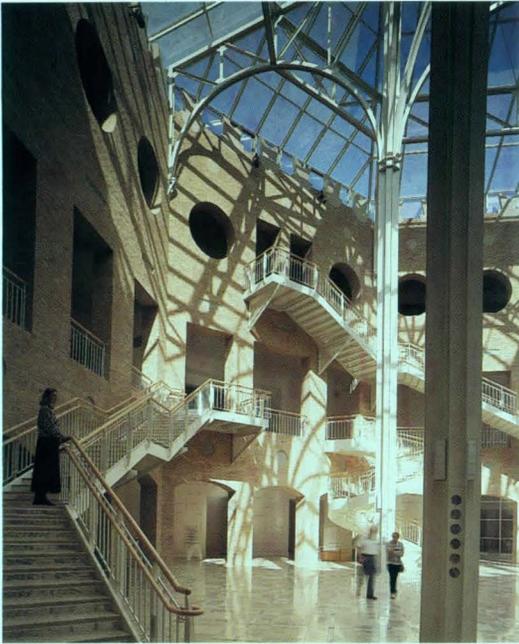
Fernbank also includes an IMAX theater, a large gallery for temporary exhibits, classrooms, a gift shop, workrooms, and offices. Up on the top floor there is a special section for small kids, a bright plastic world that's perhaps a little bit too much like a playground at McDonald's. *Robert Campbell*

© Jonathan Hillyer photos

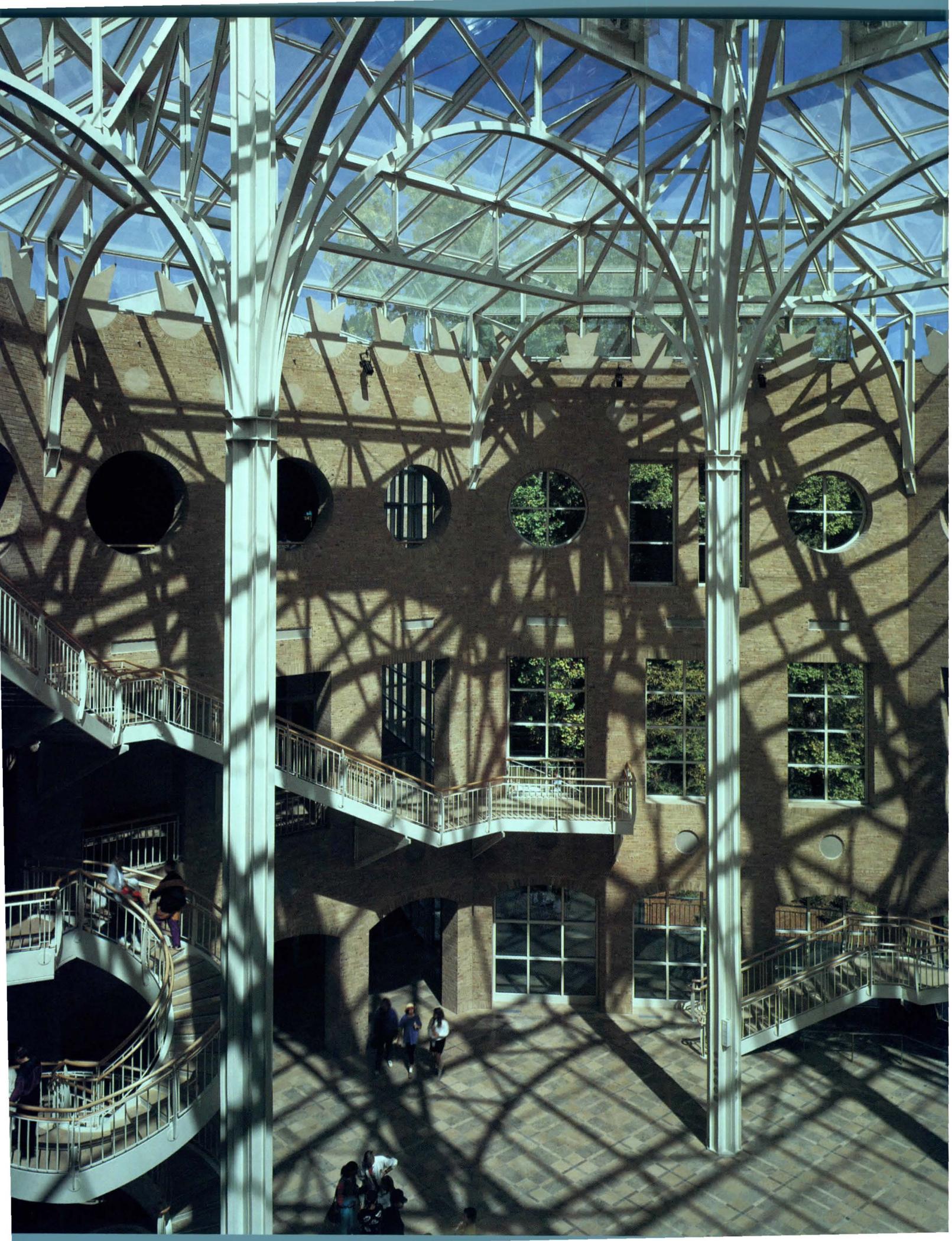


*Topless columns are employed as lighting standards to illuminate the facade at night (opposite). An oversized arch flanked by giant spheres serves as the entrance. Both arch and columns announce a theme of playfully inflated formality at Fernbank's public facade (opposite and above). Orange/tan brick, with beige precast trim, recalls materials of nearby houses. At its rear (top) the building relaxes and bends to shape a terrace that overlooks a 65-acre natural hardwood ravine preserved as Fernbank Forest. The rear facade's large glass areas, which face east and are shaded by trees, light the Great Hall and cafeteria.*





*Steel columns (top) sprout like trees in the octagonal "Great Hall" and exfoliate into trusses that support a glass roof and pattern the interior with shadow. Steel stairs (above) climb the wall. Floor plans (right) show how the Great Hall serves as the major organizing element for the three-story interior. Permanent exhibits, the cafeteria, and access to the IMAX theater are at entry level. Special exhibits are below, while workshops and childrens' area are above.*





*The entrance hall displays a back-lit frieze of flora and fauna (opposite, top) and a crescent of mushroom columns (above). Floors in public areas, indoors and out, are finished in tiles of fossilized German limestone on which can be discerned the ghost imprints of prehistoric life forms. The cafeteria (opposite, bottom), with bentwood chairs by Frank O. Gehry, opens to a terrace overlooking the forest. All major functions, such as the entry to "A Walk Through Time in Georgia" exhibit (right), open from the Great Hall, which can also be rented for corporate and private functions.*





**Credits**

*Fernbank Museum of Natural History*

*Atlanta, Georgia*

**Owner:** *Fernbank, Inc.*

**Architect:** *Graham Gund Architects—Graham Gund, principal-in-charge; David Perry, principal; John Prokos, project architect; Alec Holser, associate; Donald Self, Jonilla Dorsten, Mary Horst, Katie Barrows, Tom Maloney, Ken Roberts, Dominic Pedulla, Martin Dermody, Jim Tsakirgis, Ping Mo, design team*

**Engineers:** *LeMessurier Consultants (structural); R. G. Vanderweil (mechanical/*

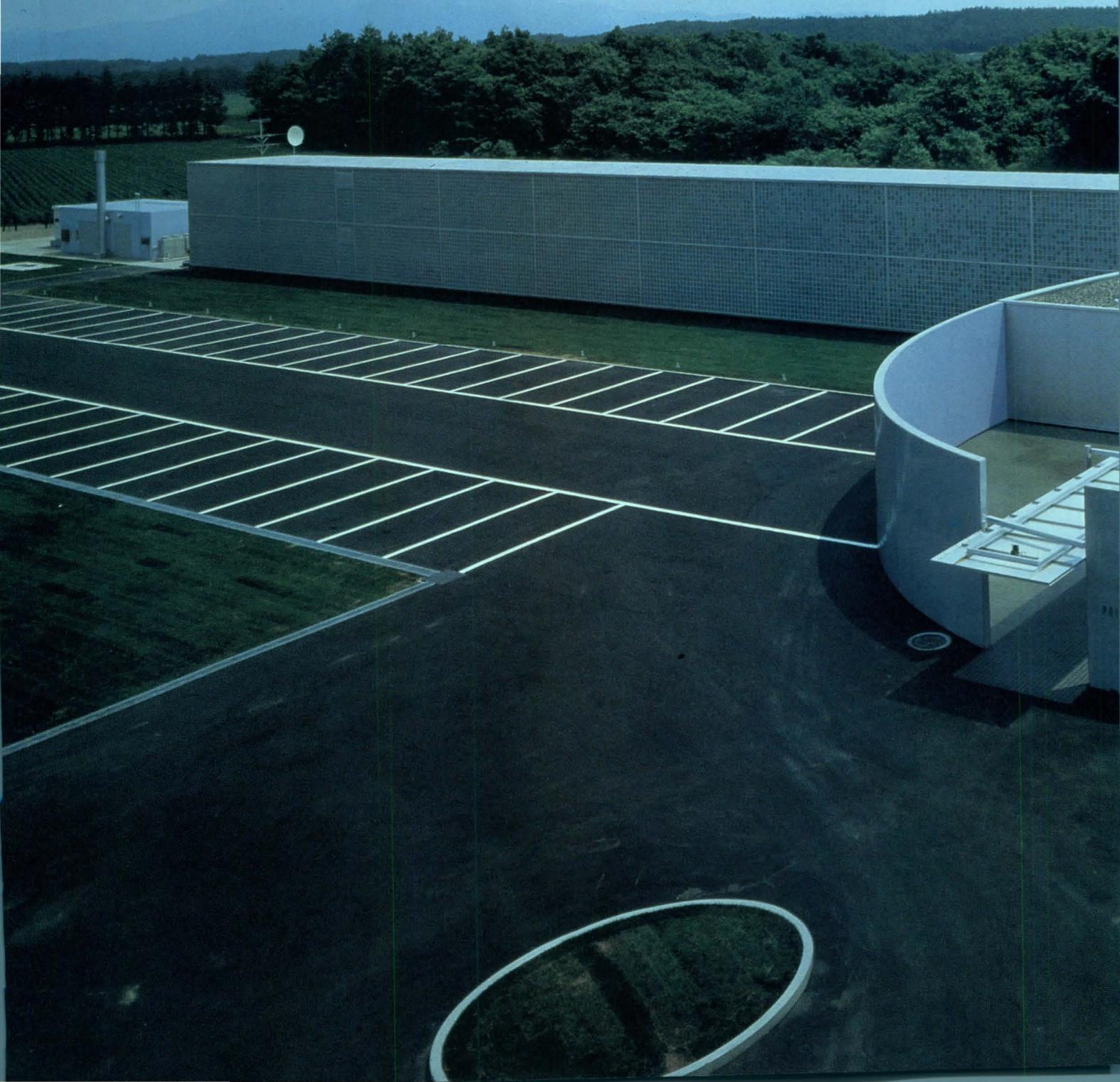
*electrical/plumbing); W. L. Jorden & Co. (civil)*

**Consultants:** *Edwin Schlossberg Inc. (exhibits); Harold Cutler P. E. (codes); Mark Kalin Associates (specifications); Howard Brandston (lighting); Cavanaugh Tocci Associates (acoustical); Jon Roll & Associates (graphics)*

**Landscape Architect:** *Roy Ashley & Associates*

**General Contractor:** *Beers Construction*

# Northern Exposure



*Located in northern Japan,  
Toyo Ito's Hotel P is a bold  
counterpoint to its rural site.*

*Hotel P  
Kiyosato, Hokkaido, Japan  
Toyo Ito & Associates  
Architects*







In Japan, where mountains and urban sprawl predominate, architects seldom have the opportunity to design buildings for undeveloped rural settings. But Tokyo's Toyo Ito had this chance when the owner of Hotel P decided to abandon his city career to open an inn on Hokkaido, the country's northernmost island. Located on the outskirts of Kiyosato, an agricultural town of 6,000, Hotel P occupies a spectacular site, where potato and wheat fields fan out as far as the eye can see and mountain peaks loom in the distance.

"The first impression I had was that one cannot be too sentimental in dealing with this vast Hokkaido plain," recalls Ito. His initial move was to create a simple 15,000-square-foot "urban air bubble" consisting of two geometric pieces: an ellipse of public spaces and a two-story bar of guest rooms. Though small, the hotel's Platonic forms cut a bold silhouette against the landscape. This stark contrast is reinforced by concrete and glass block that give the building an industrial appearance. By juxtaposing these elements against the natural setting, the design makes both first-time visitors and lifelong residents sharply aware of the area's innate beauty.

Inside, the reinforced concrete and steel frame structure strikes a balance between protected sanctuary and gateway to the great outdoors. To diffuse the ellipse's inherent centripetal nature, Ito divided the space into six "stripes," which run parallel to the guest room wing and contain the check-in area, restaurant, and offices. Moving from the entrance, which bridges a shallow reflecting pool, to the outdoor terrace with its views of Mt. Shari, patrons lose sight of the curved, concrete wall that all but seals the space inside. Within the ellipse, the hotel's inner workings are separated only by glass "screens" that filter natural light and landscape views from the terrace and courtyard garden. The result is an interior that is at once closed and open, natural and artificial.

While public spaces were kept fluid, the hotel's 26 Western-style guest rooms were located in a 230-foot-long bar for privacy and to guarantee mountain views from every room. Single-loaded corridors faced with glass block mediate the transition between public and private. By cantilevering the hall's second floor slab, Ito enabled the glass block wall to be built as a virtually sheer plane, subdivided only by slender steel bars to resist Hokkaido's gusting winter winds. The opaque glass wall obscures vistas into and out of the hotel, but magnifies subtle changes in light as it filters the sun's rays throughout the day. At night, the wall casts a luminescent green glow against the dark sky.

Appropriate to a building so close to the former Soviet Union, the hotel's name was derived from the Russian word *polyinya*—translated as the middle of a white glacier where a pool of unfrozen water remains. Like its namesake, the building resists melding into its surroundings; instead, it stands out against winter's snow-covered plains and summer's green fields like an inviting oasis.

*Naomi R. Pollock*

#### Credits

*Hotel P*

*Kiyosato, Japan*

**Architect:** *Toyo Ito & Associates, Architects*

**Engineers:** *K. Nakata and Associates (structural); Kawaguchi Mechanical Engineers (mechanical); Yamazaki Electrical Engineers (electrical)*

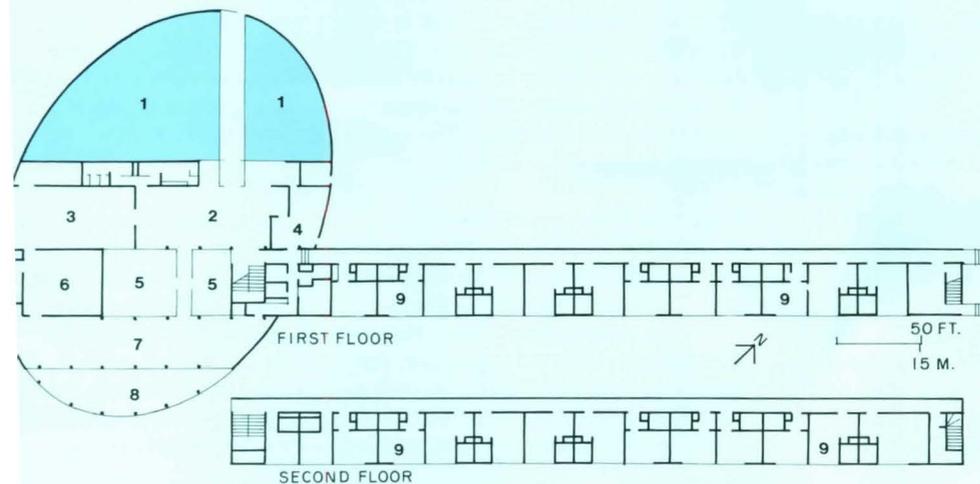
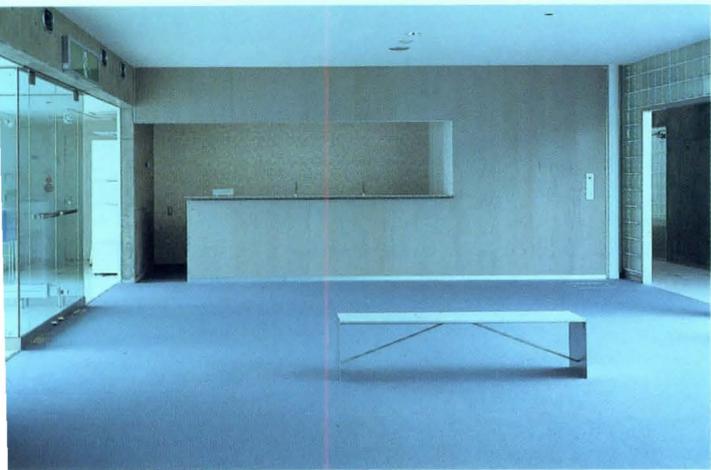
**Consultant:** *Lighting Planners Associates*

**General Contractors:** *Ishii Gumi and Sankyo Kensetsu*

*Tomio Ohashi photos*



*The Hotel's P's public functions are contained in an ellipse, while guest rooms are housed in a linear block (previous pages and top). A canopied "bridge" leads guests from the entrance, across a 2-inch-deep reflecting pool, to a lobby enclosed by an aluminum paneled wall. Interiors are accented by simple furnishings such as the Ito-designed table in the lobby (opposite left). Painted white, the guest rooms are neutral backdrops for mountain views (opposite right).*



1. Reflecting pool
2. Lobby
3. Conference room
4. Office
5. Garden
6. Kitchen
7. Restaurant
8. Terrace
9. Guest room

# Corrections Architecture Evolves

**R**ecent court orders to relieve prison overcrowding along with record incarceration rates have hit local, state and federal jurisdictions hard, just when financial belt-tightening is the rule. This has fueled a building boom in corrections facilities and caused corrections officials to adopt new types of inmate management that allow inmates to be housed in facilities which are more economical to build. At the same time, much attention has been focused on the development of special facilities for an increasingly diverse inmate population including youth, women, the sick and aged, whose special needs are not accommodated by conventional facilities.

## Orders from the courts

In January of 1990, the Status Report of the American Civil Liberties Union's National Prisons Project reported that 40 states plus the District of Columbia, Puerto Rico, and the Virgin Islands were under court order to remedy overcrowded conditions in state prisons. In each case, these conditions were found to violate the Eighth Amendment to the U. S. Constitution, which bans cruel and unusual punishment.

These court orders, along with increased numbers of arrests and convictions, caused state correctional systems to spend \$6.8 billion on prison construction in 1991-92, according to the *Corrections Compendium*, a Nebraska-based corrections newsletter, and are expected to spend \$5 billion in 1992-93. The decrease in spending is due to funding crises in some states, not necessarily a decrease in need. In some states losses in operating funds have been so severe that brand-new facilities have been mothballed or operated at less than capacity.

## Stretching the dollar

Jurisdictions have rethought traditional approaches to corrections to make funding for the construction and operation of jails and prisons stretch further, among them:

- *More specific inmate classification.* It is no longer possible to place every inmate in a maximum-security cell. By more accurately assessing the types and numbers of inmates in a given class that a jurisdiction is likely to house once a facility is built, the design of costly over-secure detention facilities can be avoided. Direct supervision jails (below) rely on better inmate classification.

- *Privatized corrections facilities.* Private facilities are funded by investors and can be built without voter referendum, sometimes without a local government incurring any debt. Jurisdictions simply sign a contract guaranteeing they will use a facility in exchange for getting it built. Critics of privatizing correctional facilities charge

among other things that the corporations running them have an inherent conflict of interest, and might pressure jurisdictions into lengthening prison terms to keep them full. Still, the privatized corrections industry is thriving.

- *Video conferencing.* In the past, some jurisdictions have maintained huge transportation systems so offenders could be bused under guard to and from court. The high costs associated with these systems have prompted some jurisdictions to construct video facilities so that hearings may be conducted by closed-circuit television.

- *Programs that keep people out of prison.* Public and privately operated alternative sentencing options available to judges include intensive supervision, drug testing, electronic monitoring, community service, "shock" camps, community residential centers, and day reporting centers. These, too, rely on more accurate inmate classification.

## Direct supervision

No trend better illustrates how correctional philosophy ties together officer-inmate behavior and architectural design than the direct-supervision jail. This type of jail represents an effort to reduce construction, staffing, and maintenance costs through a different style of inmate supervision and facility design that has gained wide acceptance over the past 10 years.

The two more traditional styles of inmate management, intermittent and remote surveillance, share several characteristics. Inmates are locked up where they can't be directly observed most of the time. The periods when they are not under observation is when most vandalism and other trouble occurs. Inmates are locked in cells and officers are isolated from them in secure control stations, except when they are patrolling cells. Tensions run high. Cells and equipment are expected to be heavily vandalized, and so each cell is outfitted with expensive high-security lighting, plumbing, door-equipment, and hardware. The security-control stations are expensive to build and equip.

Under the direct-supervision management style, inmates are allowed out of their cells into common dayroom areas, and are directly in contact with and under the constant supervision of corrections officers. This decreases tensions dramatically, and allows officers to intervene immediately if and when trouble starts. The design of the direct-supervision jail is pod-like, the same as the remote surveillance type, but the equipment, such as light and toilet fixtures, doors, hardware, and furniture is more likely to be high-quality commercial-grade, rather than costly destruction-proof models, which are said

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## *Corrections architecture is active, evolving, with special facilities for the sick and aged emerging as new building types.*

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actually to have the effect of challenging inmates to destroy them. Jurisdictions that have adopted direct supervision report that not only are inmate-correctional officer tensions eased considerably, but that there is far less facilities maintenance and fewer equipment repairs than in comparable facilities outfitted with high-security-grade equipment operated under traditional management styles. A National Institute of Justice *Construction Bulletin* reported almost five years ago that some \$200,000 per 48-bed housing unit could be saved in construction and equipment costs by adopting the direct-management approach.

### **Special correctional facilities types emerge**

The rise in incarceration rates has brought an increasingly diverse inmate population: women, youth, the elderly, sick, and mentally ill. These special prison populations often need specially designed facilities in order to receive effective care economically. The Federal Medical Center (FMC) at Butner, North Carolina, the first of six new regional hospitals planned for the Federal Bureau of Prisons (FBOP), exemplifies the trend. It will administer medical services to all of these special inmate populations less expensive than transporting patients to community hospitals and keeping them isolated and under guard during treatment. The facility will specialize in psychiatry and oncology and is currently in design development by Odell Associates of Charlotte, North Carolina.

The \$85-million hospital's plans call for 306 beds for medical care, including medical, surgical, critical care, women's, and other units. Psychiatric care will include an additional 206 beds. Other prison facilities already exist at Butner, some of which will accept inmates for convalescence after they have been discharged from acute care at the FMC. Provisions are made for a 248-bed cadre unit to house inmates assigned to work in support areas at the hospital.

"I think everyone in our business is trying to contain high health-care cost, not just the costs of transporting and guarding patients," says John Gomberg, project administrator from the FBOP. "We see a cross section of America in prison. A lot of our inmates have drug-related problems, some need dialysis, an older population has chronic problems. We have a population that's HIV positive, a population that has tuberculosis and requires isolation, and we have high-security inmates, too. Still, this facility has the potential to create a significant cost savings and improve health care for a significant portion of our prison population."

### **The bottom line**

"Overall, as bad as things are, I think we've seen a lot of improvements," says architect Kenneth Ricci, of Ricci and Associates, whose

corrections practice concentrates on counties and the smaller states. "We've seen the treatment movement of the 1960s, the development of prisoners' rights law and voluntary standards in the 1970s, and unfortunately, we've seen the overcrowding of the 1980s and early 1990s. But that is evolution and that is positive.

"A lot of architects did not like corrections. They thought the architect was a tool of oppression. I don't feel that way. I've been in enough prisons, I know how bad they can be. But as architects, we're attempting to bring sensitivity to user needs, whether the user is the correctional officer or the inmate. Both types of users need to feel a sense of security. We're saying that the public as well as the user has an interest in design, that the facility should be both secure- and staff-efficient." *Charles Linn*

### **For more information**

There are a number of excellent sources of information for those involved in corrections facilities design:

#### *The National Criminal Justice Reference Service (NCJRS)*

The National Institute of Justice, (NIJ) the criminal justice research arm of the U. S. Department of Justice, maintains the National Criminal Justice Reference Service, a series of specialized clearinghouses that can provide information on juvenile justice, Bureau of Justice statistics, the NIJ AIDS Clearinghouse, and the National Victims Resource Center.

Part of NCJRS is the Construction Information Exchange, a federal initiative that provides information on construction and costs for jails and prisons built since 1978. It publishes the National Institute of Justice *Construction Bulletin*. For more information contact:

The National Institute of Justice/NCJRS

PO Box 6000, Rockville, Md. 20850. Call 800/851-3420 or 301/251-5500.

The *Corrections Compendium* is an excellent source of information on all corrections-related topics, and often includes copiously detailed surveys of corrections activities in all 50 states and the Federal Bureau of Prisons, including information on the amount of money spent bi-annually on prison and jail construction.

*Corrections Compendium*, CEGA Publishing, PO Box 81826, Lincoln, Neb. 68501. Call 402/464-0602 for subscription information.

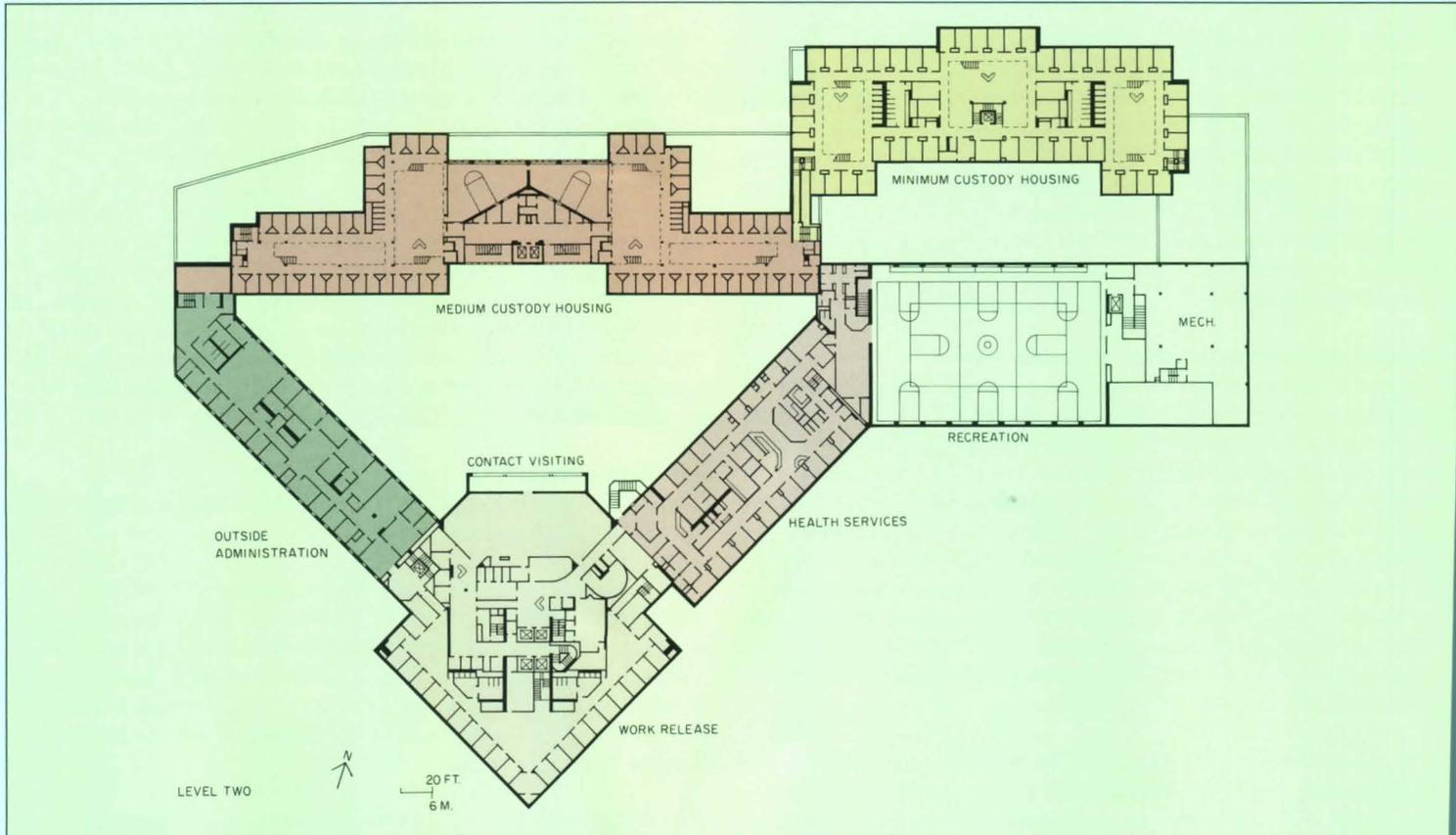
The American Institute of Architects sponsors the Architecture for Justice Committee. For further information about the committee, call Todd Phillips, staff director, 202/626-7366. ■

# Suffolk County House of Correction

Boston, Massachusetts  
*The Stubbins Associates, Architect*

Replacing Boston's 90-year-old Deer Island facility is the 420,000-square-foot, \$110-million Suffolk County House of Correction, a direct-supervision prison on 7 1/2 acres in South Boston. The Stubbins Associates's concept was to maximize use of outdoor space by interweaving housing with exercise fields. The result is a campus of seven buildings arranged to make

courtyards. Programmed for 824 beds, the facility has separate zones for minimum-, medium-, and maximum-security confinement; housing groups are larger for the more lenient classification. Housing for minimum- and medium-security inmates, who make up the bulk of the population, is along the site's north edge, forming a rusticated pre-cast-concrete perimeter wall.

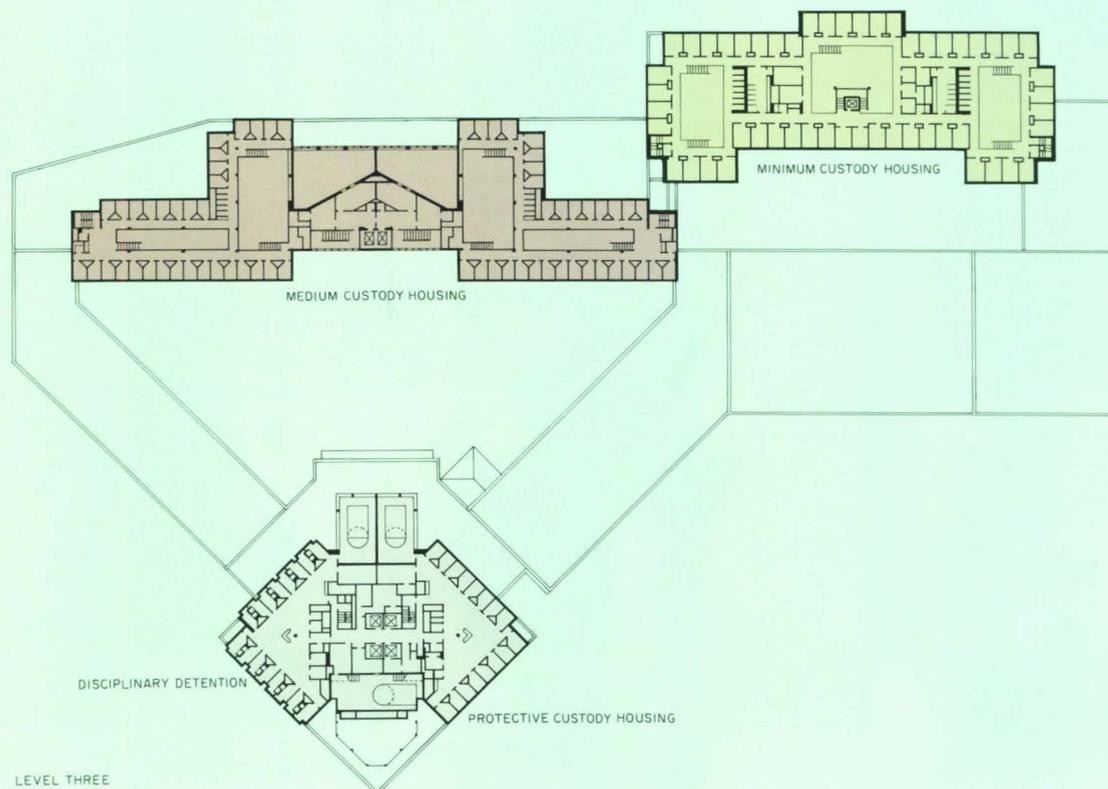


Grouped around communal day rooms (plans below and opposite) are individual cells set 20 feet above grade. The cells are 16 feet by 16 feet or 16 feet by 20 feet. Windows are in pairs vertically and horizontally to create "a public scale." An 11-story tower accommodates intake, special observation, disciplinary detention, substance-abuse treatment, and protective-

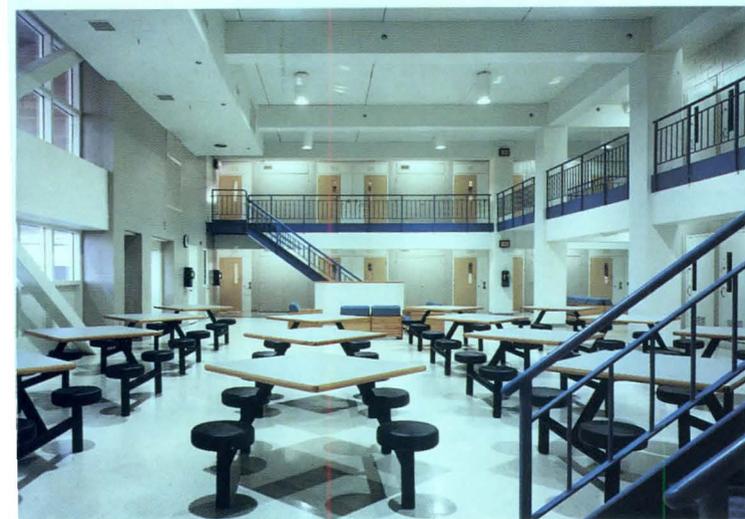
custody requirements; the assignment of upgraded permanent housing is based on inmate behavior. Drug-treatment and medical facilities, particularly for inmates with AIDS, have been expanded since the project's completion.



©Edward Jacoby photos



LEVEL THREE



#### Credits

*Suffolk County House of Correction*  
 Boston, Massachusetts  
**Client:** Division of Capital Planning and Operations, Commonwealth of Massachusetts  
**Architect:** The Stubbins Associates—W. Easley Hamner, principal-in-charge; C. Ronald Ostberg, project designer; Roy A. Pedersen, project architect; Peter Blewett, technical coordinator; Patrick McCarthy, production coordinator; Michael Gilligan, landscape director

**Engineers:** LeMessurier Consultants (structural); Syska & Hennessy (mechanical/electrical); Bryant Associates (civil); Haley & Aldrich (geotechnical)  
**Consultants:** James H. Webster (correctional facilities planner); Buford Goff & Associates (security); Cerami Associates (acoustical)  
**General Contractor:** The George Hyman Construction Company

# Women's Correctional Institution

*New Castle, Delaware  
Tetra Tech Richardson, Architects  
Grad Associates, P.A.,  
Associated Architects*

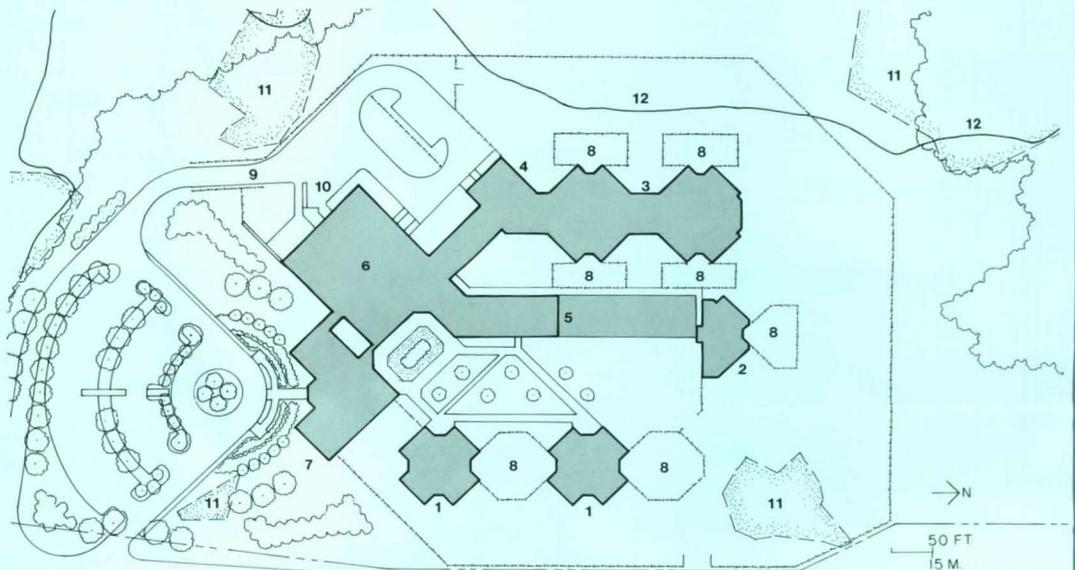
This 120,000-square-foot complex occupies seven buildings on a 14-acre site. One of WCI's missions is to boost inmates' self-esteem by means of counseling, education, and job training. A video hookup with a local community college will provide courses-for-credit. Since the average inmate has two or more children, family counseling is stressed. There are two over-

night suites to allow children occasionally to spend the night with their mother. The costliest areas of WCI are the cores, which were developed for 400 inmates, twice the initial population, to allow for expansion. Cost-per-bed nevertheless stayed within the national average for prisons. Early occupancy was essential, and the entire facility was completed in the 18



*Hugh Loomis Photography*

1. Minimum-security housing
2. Medium-security housing
3. Pre-trial housing
4. Medical/dental intake
5. Educational/vocational
6. Support services
7. Administration
8. Recreation yard
9. Sally port
10. Service area
11. Wetlands
12. Flood plain



months it typically takes merely to do the programming and design. The complex is both a prison and a jail, and since the two populations may not mix, circulation was a challenge, especially with shared use of core areas. The solution exploited WCI's geometry, which allows for cost-effective, separate, unduplicated circulation. To enhance the "learning" over the

"prison" feel, razor-ribbon fencing was eliminated, cameras and detection devices made less obvious, steel bars and doors omitted, and minimum-security inmates have keys to their cells to allow free movement. S.A.K.

**Credits**

*Women's Correctional Institution  
New Castle, Delaware*

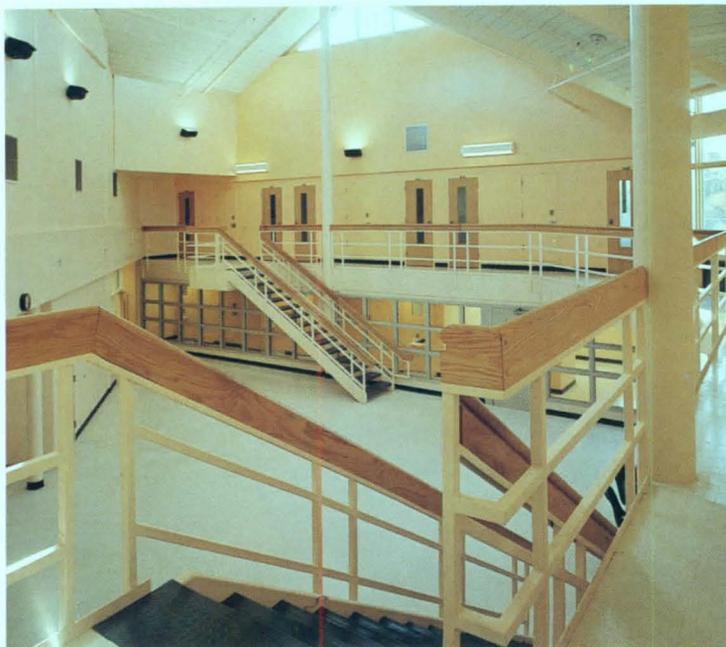
**Owner:** State of Delaware  
*Department of Corrections*  
**Architects/Engineers:** Tetra  
*Tech Richardson*

**Associated Architects:**  
*Grad Associates, P.A.*

**Engineers:** Joseph R. Loring &  
*Associates (mechanical,  
electrical)*

**Consultants:** Carter Goble  
*Associates, later Scarlett  
Carp & Associates*

*(programming); Zaralban &  
Associates, Inc. (food service);  
Arnold Goldberger (security  
systems); Healy Management  
Services, Kitchell CEM  
(construction management)*



*Smallness of scale marks the main entrance for visitors and staff (opposite). This informal, environment is seen in the main lobby (above), the day-room in the chronic-care unit (top left), and a cluster commons in the minimum-security housing unit (left). The security system was stretched to provide monitoring, safety, and containment of inmates.*

*Exterior materials consist of ground-stone faced concrete block and precast concrete, with metal siding and a metal standing-seam roof.*

# Betty Lou Lamoreaux Juvenile Justice and Family Law Center

Orange, California

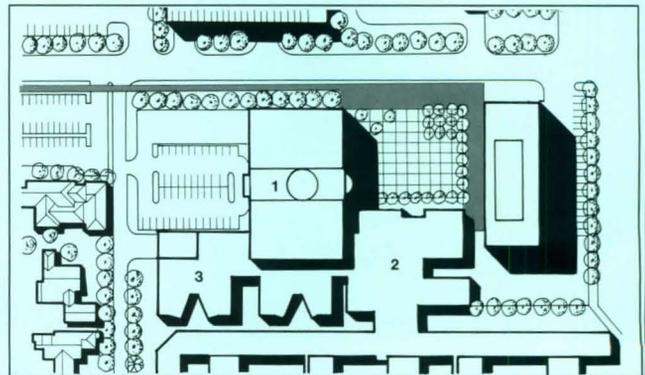
*EKONA, Architecture + Planning, and  
Dan L. Rowland & Associates, Architects*

A set of three buildings linked together, this juvenile justice center combines courts, administrative offices, and detention facilities. The design of the 300,000-square-foot complex reflects the progressive ideas of Betty Lou Lamoreaux, the retired juvenile-court judge who not only gave her name to the project but was an important participant in the programming

and design process. Along with representatives from the county's General Services Agency, the juvenile courts staff, the probation department, and the maintenance department, Lamoreaux called for a justice center that would provide a humane environment for young offenders while at the same time impressing them with the gravity of the law. The resulting



1. Courts building
2. Administration building
3. Intake building



© Jeff Goldberg/Esto

buildings combine light-filled interiors with a strong civic presence. Faced with an unexceptional suburban site with an existing six-story government office building and an old juvenile-detention facility, the architects used the new buildings to form a public plaza (opposite and bottom) that helps organize the complex and gives it a sense of place. Anchoring

this plaza is the new seven-story courts building (on right of photo, opposite) whose dome-topped central rotunda announces its function as an important civic facility (below). Defining an adjacent edge of the plaza is the new two-story administration building (bottom and on left of photo, opposite) which, like the courts building, has a granite-clad base with

stucco above. Tucked behind these public structures is the new two-story intake building where juvenile offenders are processed and held. All of the buildings in the justice center are steel-frame structures with a number of energy-conservation features—including automatic interior-lighting controls, a computerized energy-management system, and a thermal-energy

storage system that makes ice during off-peak hours, stores it in underground vaults, and then recycles it as chilled water during the day. Because the justice center must serve several different groups of users—some of whom must be strictly separated from each other—the architects devised three distinct circulation systems: for the public, the accused, and the judges and court

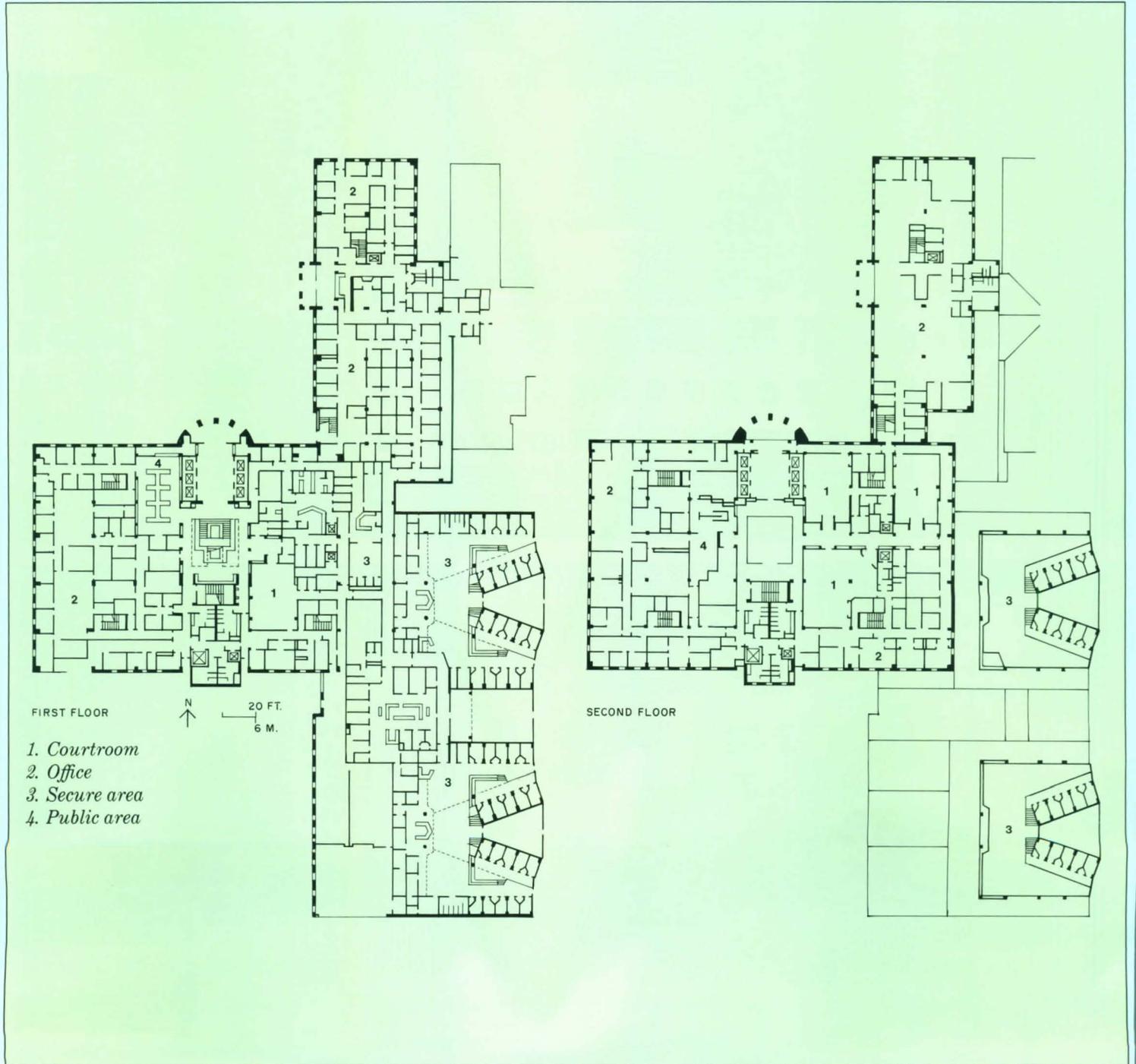


employees. In the courts building, the public enters from the plaza and is oriented by a central seven-story atrium. Judges and the accused enter from the rear of the building through separate, secured sally ports and circulate vertically by means of separate elevators. The building accommodates 15 juvenile courtrooms on the second, third, fourth, and fifth floors, as well

as 13 family-law and probate courtrooms on the sixth and seventh floors. To improve communication between judges and make better use of shared support spaces, the architects clustered judges' chambers. The plan also pairs staff office space with courtrooms on each floor, separating the two functions on either side of the atrium. If needs change in the future,

some of the office space can be changed into courtrooms. In the intake building, each of two dual-level housing "pods" has 30 cells that can accommodate either single or double bunks. In designing this building, the architects followed the direct-supervision model, in which cells are arranged around a dayroom and unarmed security personnel roam freely among the accused

and convicted (opposite). To maintain sight lines, each pod is designed as twin triangles emanating from a central control desk. Wedged between the triangular spaces are outdoor recreational areas. Clerestory windows and polycarbonate glazing around doors to outdoor areas bring lots of natural light into dayrooms. "We wanted to create an environment that



could contribute to rehabilitation," says Christ Kamages, the partner-in-charge-of-design for EKONA Architecture + Planning. According to Kamages, the double pods reduce staffing needs and allow greater flexibility in grouping different kinds of offenders. Materials in the building were selected for durability and ease of maintenance. C. A. P.

**Credits**  
*Betty Lou Lamoreaux*  
*Juvenile Justice Center*  
*Orange, California*  
**Owner:** *County of Orange,*  
*California*  
*Board of Supervisors*  
*General Services Agency*  
**Architects:** *Dan L. Rowland*  
*and Associates and EKONA*  
*Architecture + Planning—*  
*Randy Bosch, partner-in-*

*charge, administration; Christ*  
*J. Kamages, partner-in-charge,*  
*design; Tim Craig, project*  
*manager; Harry Drake, project*  
*architect; Fakoop Popal,*  
*project captain; Rolland*  
*Alexander, Robert Dollar, Todd*  
*Bentley, Robin Burr, Mark*  
*Creedon, Peter Hourihan,*  
*Patricia Dougherty, Sandra*  
*Turnbull, project team*  
**Engineers:** *OLMM Structural*

*(structural); Ludovise and*  
*Associates (mechanical/*  
*plumbing); Robert Bein,*  
*William Frost and Associates*  
*(civil); Toft, Wolff, Farrow*  
*(electrical)*  
**Landscape Architect:**  
*Heimberger Hirsch Associates*  
**General Contractor:** *Gus K.*  
*Newberg*  
**Construction Manager:** *Heery/*  
*Vanir*



# Product Literature / Window Treatments

For more information circle item numbers on Reader Service Cards.



#### 400. Custom solar control

A manufacturer known for school-room shades and projection screens now offers Flexshade Systems, a commercial window treatment that allows for almost unlimited flexibility in solar control. Opacity options range from sheer to blackout. Draper Shade & Screen Co., Inc., Spiceland, Ind.



#### 401. Pine and hardwood shutters

A 12-page catalog illustrates custom- and standard-size shutters installed for light control, privacy, and as an architectural-design element, and highlights recessed louver-bar and zero-clearance styles. Window treatments are proportioned to fit the requirements of each application. Pinecrest, Minneapolis.



#### 402. Commercial installations

The Kirsch window-treatment product line includes vertical and horizontal blinds; roller shades in cotton cambric, vinyl, fiberglass-laminate, and custom fabrics; and drapery hardware and track systems for many applications. Motorized operation is available for any traverse system. Cooper Industries, Kirsch Div., Sturgis, Mich.



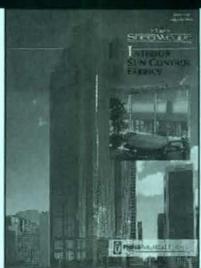
#### 403. Retractable solar screen

This sunscreen mounts on the outside of any glass window or patio door, blocking heat before it hits the glass. Alternatively, the mesh-fabric screen can fit on the inside, to filter solar radiation and glare while allowing a view. Operation can be manual, or automated with sun and wind sensors. Insolroll Shutter & Shading Systems, Boulder, Colo.



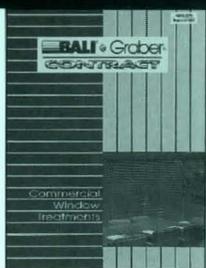
#### 404. Energy-efficient options

An architectural catalog provides data on thermal values, light- and sound-control qualities, and fire retardance for all of this maker's metal, fabric, and honeycomb contract window treatments. A new product is a pleated shade made of integrally fire-resistant fabric. Hunter Douglas Window Fashions, Upper Saddle River, N. J.



#### 405. Shading fabrics

New vinyl-coated polyester and fiberglass fabrics designed for interior and exterior shading of commercial windows are particularly appropriate for large-scale and curved applications. Fabrics come in a range of openness factors. Architectural binder and swatch cards available to specifiers. Phifer Wire Products, Inc., Tuscaloosa, Ala.



#### 406. Contract windows

A 36-page Bali-Graber catalog gives solar, optical, shading, and fire-resist values for a full line of contract window coverings, including metal and wood blinds, vertical blinds in fabric, vinyl, and aluminum, and pleated and cellular shades. Clear detail drawings demonstrate operation and installation of each style. Springs Window Fashions, Montgomery, Pa.



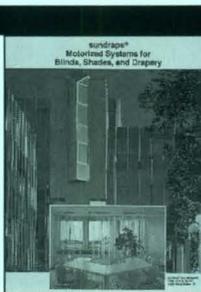
#### 407. Acoustically absorbent

A new custom window treatment, the CASblind consists of individually adjustable vertical vanes of sound-absorbent fabric-wrapped fiberglass. The blind can fit windows up to 10-ft high by any width, and is said to be easily removed and reinstalled for window cleaning. Blind edges can meet or overlap. Corporate Acoustic Systems, Ltd., Poughkeepsie, N. Y.



#### 408. Responsive blinds

A 28-page design guide describes window treatments to provide complete seasonal solar control as well as to diffuse sunlight for glare-free illumination all year. Control options include the Litemaster, a computer module that synchronizes the slat tilt of up to 30 blinds in response to the angle and intensity of the sun. Levolor, Sunnyvale, Calif.



#### 409. Motorized coverings

Bautex specializes in making window treatments (blinds, shades, roller blinds, and draperies) compatible with headrail drive units. Catalog illustrates complex architectural window treatments, including telescoping-rod technology that can operate shading systems between non-parallel tracks, such as a domed atrium. Bautex USA, Inc., Dallas.



#### 410. Computerized sun screening

Manual, motorized, and electronic shading systems are designed to architectural specifications. An eight-page catalog illustrates applications such as the National Museum of Canada, details the soft-fold Skylighter shade for skylights and greenhouse, and charts openness factors of ThermoVeil shade cloth. MechoShade, Long Island City, N. Y.

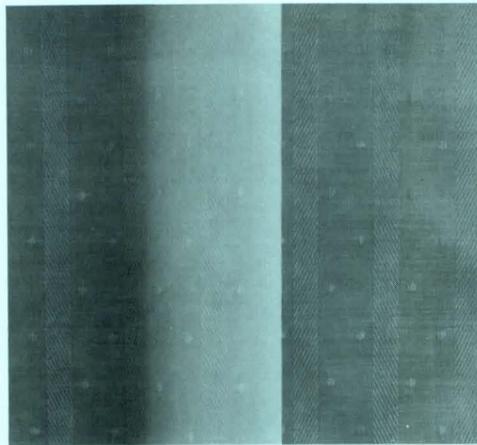


#### 411. Between-glass blinds

Brochure describes the Magneflex blind, which can be installed between the panes in hermetically sealed IG units, and details an expanded range of magnetic operators. No outside mechanical connection is needed to operate either horizontal or vertical slats. Sizes up to 60 by 96 in. Custom Glass Products, Salisbury, N. C. *Continued on page 111*

## New Products

For more information, circle item numbers on Reader Service Cards

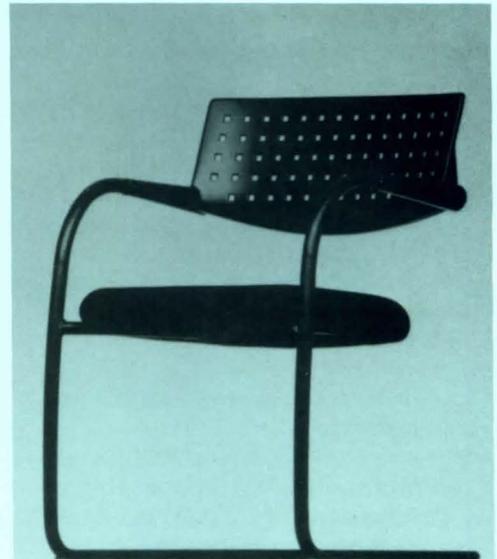


### 307. Executive option

Although introduced last year as "non-hierarchical seating," the 4 O'Clock task-chair line has now been expanded to include a higher-back model, with a head-cushion effect. Vecta, Grand Prairie, Tex.

### 308. Silk-blend casement

Based on a 19th-century dress-silk pattern, 86-in.-wide sheers are woven in Italy of a 45/35/20 blend of wool, polyester, and silk. Described as affordable, the draperies have a small-scale repeat in either ivory or gold. Gretchen Bellinger, Inc., Cohoes, N. Y.



### 309. One-part cantilever

The Visavis chair by Antonio Citterio and Glen Oliver Low simplifies the elements of classic, 60-year-old cantilever seating. Its tubular-steel frame is joined at two points to give the back and seat more flexibility. Backrest is FRP; the chair weighs 19 lb. Vitra Seating, Inc., Long Island City, N. Y. *Continued on page 113*



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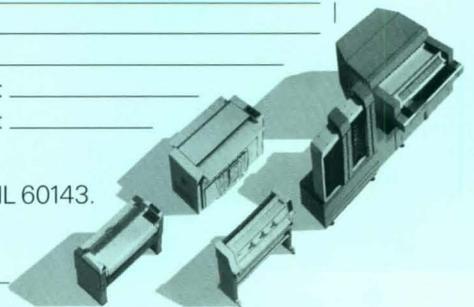
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Circle 31 on inquiry card

**Product Literature/Window Treatments**

**SilentGliss**



**412. Quiet curtains**

A SilentGliss catalog explains how this Swiss-designed motorized window treatment offers innovative solutions to complex light-control problems, such as curved-track draperies and heavy-weight stage curtains. Charts match motor option with fabric, blind, or shade types. Silent Gliss USA, Inc., Loganville, Ga.

**413. Window-control systems**

Data sheets explain devices designed for the operation of out-of-reach windows and vents, such as clerestories high up on a wall. Windows can be opened by crank, chain, or screwjack, operated either by hand or by electric motor. Clearline, Inc., North Wales, Pa.



**414. Fire-resistant shades**

A two-volume sampler contains fire-resistant fabrics and materials for Bali/Graber vertical- and horizontal blinds and pleated-shade window treatments. Appropriate for commercial and institutional applications requiring listed products. Samples are mounted on removable decks that display all color choices. Springs Window Fashions, Middleton, Wis.

**415. Cellular window treatments**

A brochure illustrates the Symphony shade, a nonwoven double-honeycomb configuration said to offer superior insulating performance. Shades are available in both solid colors and printed patterns, and specialty shapes such as arch-tops and quarter-rounds. Comfortex Corp., Cohoes, N. Y.



**416. Automated light control**

Serena is an unusual, motorized treatment for windows and walls that contains up to four surface covering materials in a single unit. Electronically controlled shades of different transparencies filter daylight, reduce glare, block unattractive views, insulate glass, and totally block light for presentations. Lutron, Coopersburg, Pa.

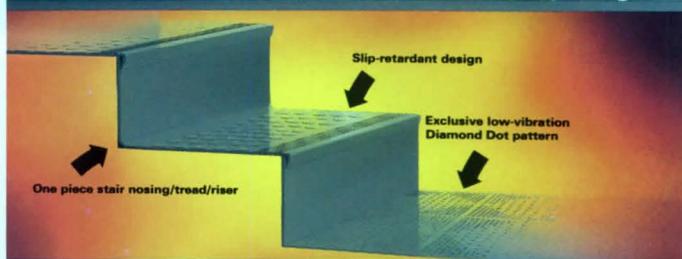
**417. Interior/exterior shading**

An eight-page Sol-R-Veil catalog highlights architectural window treatments installed at the Metropolitan and Guggenheim museums, demonstrating how the different shading materials control heat and glare while retaining daylight and the view to the exterior. Sol-R-Veil, Bronx, N. Y.

*Continued on page 115*

*For more information, circle number on Reader Service card*

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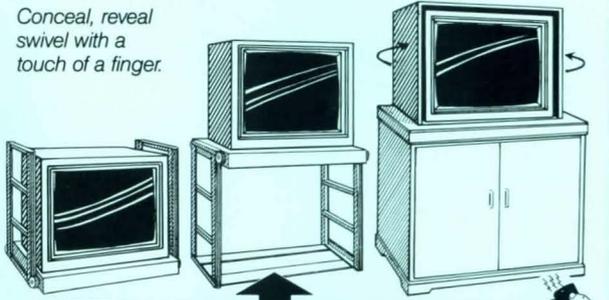
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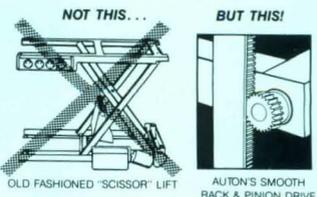
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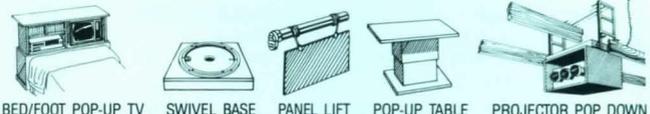
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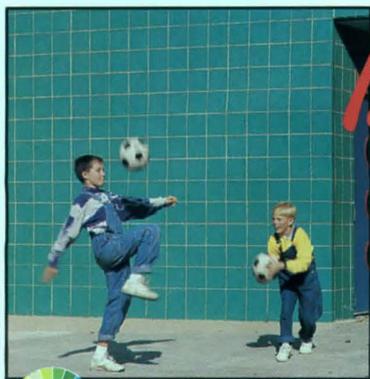


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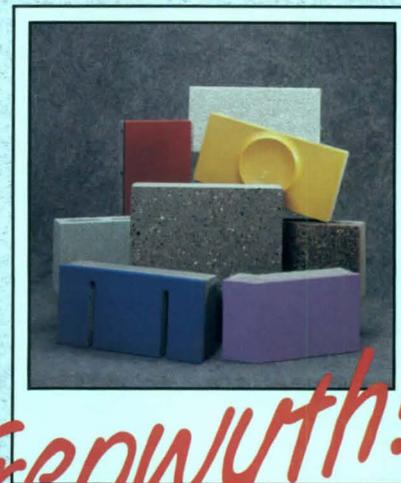
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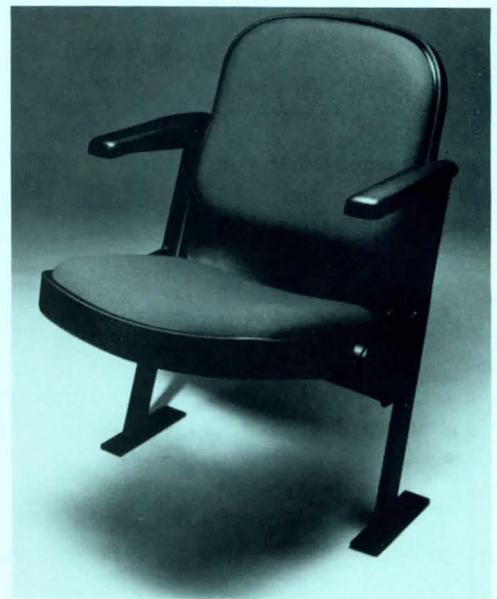
**310. Pen-plotter replacement**

The DesignJet 650C is a new color/monochrome inkjet plotter said to produce superior-quality D- or E-size plots at pen-plotter prices: the D-size version lists for \$8,495. The plotters operate at either final- or draft-mode speeds, suitable for a daily volume of 20+ plots and the occasional 100-plot day. Hewlett-Packard Co., San Diego.



**311. Maximum-security acoustic ceiling**

The WilSecure ceiling is made of 16-gauge steel to withstand vertical loads of 600 lb in either direction. Its tight joints can't conceal contraband, and the perforated panels, backed with wrapped acoustical blankets, have a NRC of over .95. A new product for this fabricator, the ceilings are made to field measurements, and are said to be economical for this level of security, maintenance, fire resistance, and acoustic requirement. Wildeck, Inc., Waukesha, Wis.



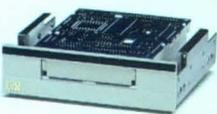
**312. Upholstered auditorium seating**

Described as offering high-quality comfort at a competitive price, the JG/Ovation chair is built with a double-wall foam-filled molded shell said to be virtually indestructible. Standard features include several spacing options, armrests, counter-weighted tip-up, and a hidden structural hinge. JG Furniture Systems, Inc. Quakertown, Pa. ■

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**B**elieve it or not, this beautifully designed but otherwise apparently ordinary building is the future.

You can see it has windows everywhere. But what you can't see from this picture is the complete absence of perimeter heating. There is none.

Yet the building is incredibly comfortable. The indoor temperature is constant from room to room, floor to floor, season to season. There are no drafts. There is never a condensation problem. Ever.

And it is bright and warm, even cozy in the Reimer Tower in Burlington, Ontario, Canada even in the worst weather conditions imaginable. And when the sun shines in, the heat stays out. No sweat. Not in this building.

What's the big idea? Engineering genius and high-tech precision manufacturing, that's all. This revolution in building construction is the direct result of combining R-8† glazing units and super-insulated aluminum frames with incredibly strict manufacturing controls.



The Reimer Tower in Burlington, Ontario features VISIONWALL curtain wall without any form of perimeter heating.

Today over a billion dollars worth of buildings worldwide have been constructed using the VISIONWALL system. And every day, more and more designers, architects and engineers are discovering how easy it is to confidently work with windows as a feature element, even in the most difficult environmental and regulated conditions, using the VISIONWALL system.

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# VISIONWALL®

## Tricking the Body Clock

Researchers have known for a while that controlled exposure to unusually bright light can reset circadian rhythms—or body clocks—so that shift workers won't nod off at dangerous times, and the rest of us can stop falling into trances at four every afternoon. The theory involves a cluster of cells at the back of the brain that, when stimulated by light signals from the eye, helps to regulate drowsiness. Now, a team of Harvard scientists has patented a mathematical model that fine-tunes the required exposure time. With light 50 to 100 times brighter than room level, sleepy-time reportedly can be moved forward or back as much as three hours with one treatment, 10 hours with two. Patent licensee Light Sciences, Inc., of Braintree, Massachusetts, has just begun to investigate incorporating the methodology in task lighting for office workers.

### IESNA Annual Conference

The Illuminating Engineering Society of North America (IESNA) holds its annual conference August 8-12, 1993, in Houston. Events include sessions on liability and legislation, recycled light, lighting for museum galleries, and light and color-restoration lighting for the aging eye.

### Trainer Course

Independent Testing Laboratories, Inc. (ITL) will conduct a three-day "Basics of Lighting" course in Boulder, Colo., May 24-26, 1993. Call 303/442-1255, Fax 303/449-5274. ■

## "Glorified Roof" Creates an Oasis for Commuters



Paul Hester

Just west of the city limits, the Mission Bend Transit Center and Park & Ride brings a welcoming glow to the beginnings and ends of the commuting day. Horizontal space-frame wings gently rotate toward the Teflon-coated fabric central vault to gather passengers from a high-pressure sodium-lit parking lot into an oasis of metal-halide clarity. Architect Rey de la Reza inserted custom uprights into the column/roof connectors so that all illumination bounces from the ceilings to the waiting areas, and picks out the lacy tree-like forms of the structure,

which he calls "a glorified roof." The true-white metal halide also properly renders the backdrop grove of 30 palm trees, specifically chosen because they can be transplanted at any stage in their lives to accommodate additional rail components. The flat space frames alternate opaque and translucent coverings so that the interior glow pours upward during the dimmer hours, and natural light washes over the seating areas during the day. Separate circuitry keeps the facility mildly aglow during off-peak hours. ■

## Rock-Concert Fixtures Turn Chihuly Plastics into Glass

When a stage set of twice-human-size plastic sculptures has to convince the audience that it's glass, a director who also teaches lighting at UCLA can come in handy. The lively glow that Neil Paul Jampolis cast on glass master Dale Chihuly's acrylic sculptures for the Seattle Opera recently rescued Debussy's "Peleas et Melisande" from its reputation as a crowd-luller, and drew audible gasps from the audience. Jampolis used 30 automated theatrical fixtures with movable mirrors, templates, and diffusers that adjust the focus, color, and intensity of each

lamp to continually change the lighting of each sculpture. "Glass tends to reflect light as point sources," says Jampolis, "so we dimmed down to reflect rather than light the object." To amplify the glassy appearance, he stretched a very fine black bobinet veil between audience and stage to concentrate points of light and intensify the sparkle of metallic trim on the costumes he designed. Suspension of belief was so complete that one reviewer wrote, "you'd swear there is more animation in the glass pieces than in the plot." ■



Claire Garoutte

## Great Danes

*Louis Poulsen, Inc., of Copenhagen and Miami, is introducing several new fixtures at Lightfair this year.*



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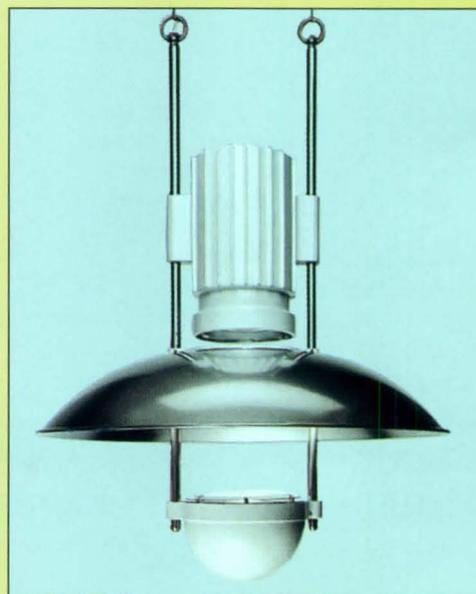
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### 313. Architectural impact

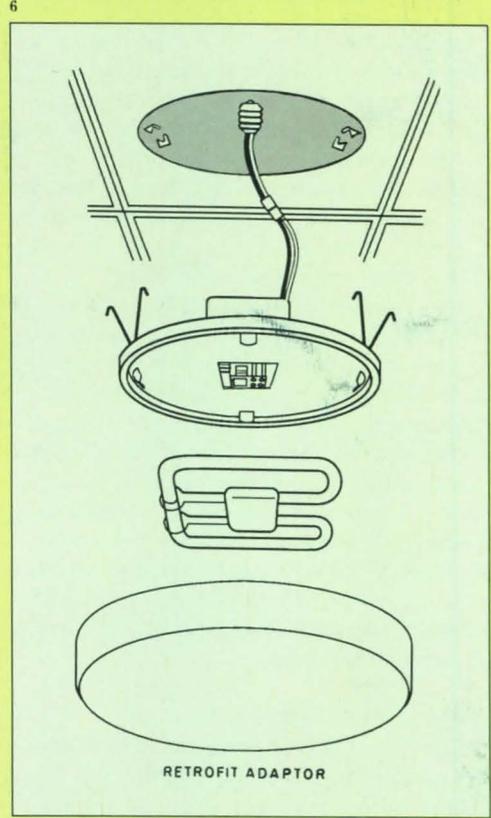
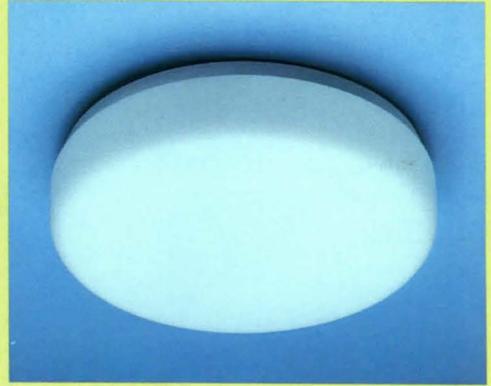
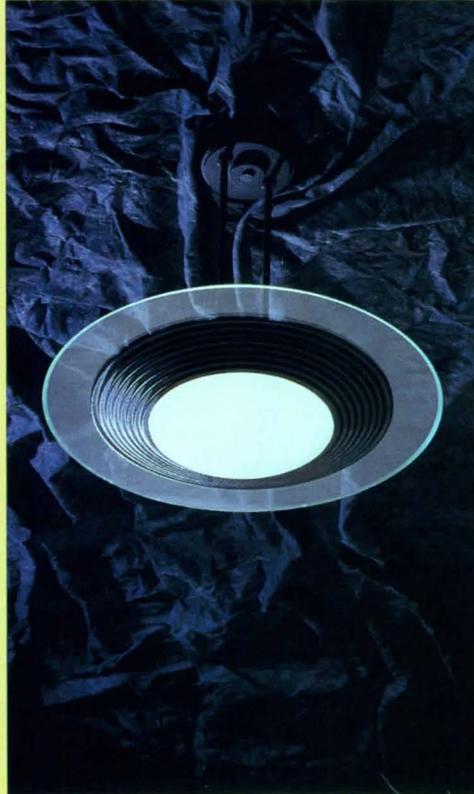
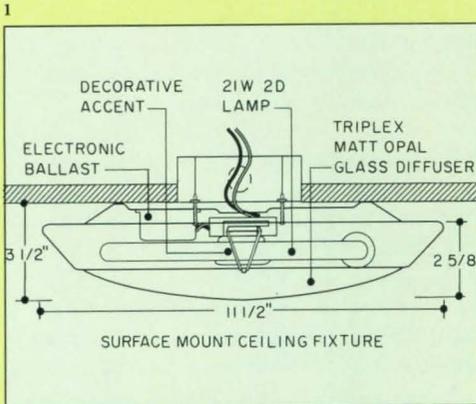
1. Named for the colonnades surrounding temples in ancient Greece, Dipteros is offered as a bollard (pictured) and in a shorter version for parapets. Louis Poulsen design.  
 2. A weatherproof edition of the original Joachim Lepper light, the Saturn Wall Maxi takes either incandescent or compact-fluorescent lamps. Made of cast aluminum in a black- or white-enamel finish.  
 3. The bollard version of Jens Møller-Jensen's popular Orbiter fixtures lacks the prominent planetary central disc of others in

the line, but still carries the design theme through to the exterior of a project. Materials are cast and fabricated aluminum in the finishes shown, with a polycarbonate lens; accepts several types of HID sources.  
 4. Contoured reflectors joined by aluminum stems add shadow and contrast to Oslo, available both as the pendant shown and as a sconce. The design is said to eliminate visual dead spots between the ceiling and the luminaire, without generating reflections on VDT screens. Lamping: four 27W CF.  
 5. Shown here as a "stander," Columbus

bulkhead lights have been built with special attention to vandal resistance, with a stainless-steel guard in front of a polycarbonate lens. A triangular, perforated-metal diffuser reduces observed glare, directing most of the HID or fluorescent light downwards.  
 6. Developed for the high ceilings of the Munich airport, Louis Poulsen's large aluminum pendant directs up- and down-lighting from a 500W halogen or double-ended metal-halide lamp. Reflectors can be specified for either wide- or narrow-beam spread.  
 Louis Poulsen, Inc., Miami. ■

# Special Delivery

*New fixture and reflector designs promise to extract every possible lumen from GE's 2D compact-fluorescent lamp*



**314. New firm, new fixtures**  
 Jack Zuckerman, CEO of CSL, a Los Angeles manufacturer known for decorative halogen lighting fixtures, has established a new company, Alta Illumination, specifically to make and market luminaires for the butterfly-shaped 2D lamp. A miniature fluorescent (3.70-in. wide by 1 1/2-in. thick in the 10W version) invented by Thorn and used widely in Europe, the 2D was acquired by General Electric and introduced to the U. S. market last year. The unique shape of the lamp—an almost-continuous, uniformly

illuminated curve—demanded a totally new reflector in order to create a fixture with enough punch to match the 65-LPW efficacy of the 2D. The 2D's shape does not block light from the illuminated surface as does the quad fluorescent, and it has a larger lit surface. Available in sizes up to 38 watts, the 2D comes in two color temperatures: a coolish 3500K, and an incandescent-like 2700K. Alta's first products are surface-mount ceiling fixtures (1 and 2), and retrofit kits for open-reflector downlights (6, 7), as well as a shallow (3 5/8-in. deep) housing

with an integral electronic ballast (3). Also, there's a wet-location recessed 2D showerlight. Diffusers are matte-opal and marbled French-made Triplex glass, or UV-stabilized acrylic in regular, shallow, and fluted styles. The downlights have been followed by more-decorative fixtures, including a pendant (4) with an acrylic ring edge-lit from the center, and a 2D version of CSL's Intimacee sconces (5), shaded by hand-blown Murano glass in cobalt blue, frosted, rose, and granite-marble. Next: 2D office lighting. Alta Illumination, Valencia, Calif. ■

## Plan Ahead When Specing Custom-Lighting Fixtures

By Stephen Blackman

"Custom lighting" has several different meanings. In its most basic sense, it means buying a stock fixture but requesting the distributor order it with a custom option, such as a special lamp or color. The next level is communicating a request directly to a manufacturer for a modification not found in its current product line—for example, asking a decorative chandelier manufacturer to revise a residential fixture into an extra-wide multitiered chandelier to hang in the atrium of a hotel.

At the highest level, custom lighting means designing a fixture from scratch and having it built by one or more specialized fabricators. This is most often done in applications where the significance of the project calls for a functionally specific fixture or one that esthetically complements the architecture.

### *What's the first step in designing custom lighting?*

First, decide if the project really demands a custom fixture. Look closely at the extra time and money required before deciding. Describe the specific circumstances that demand a custom fixture, and decide what the fixture must do and what can be eliminated. This is a balance between the function and esthetics of the fixture versus the constraints of the budget and schedule for the project. Always investigate whether an appropriate fixture already exists before re-inventing the wheel.

### *What else should the fixture do?*

After functional, esthetic, and budget considerations have been established, the fixture design must also take into account the other qualities necessary to create a properly functioning fixture. These are usually overlooked in the original design and include:

Safe shielding and protection of lamps and electrical components; conformance to UL standards and local codes; ease of transport, installation, relamping and maintenance; lamp efficiency; photometric performance.

*Stephen Blackman is president of Blackman Design Associates, Scotch Plains, New Jersey*

### *Is the fixture affordable?*

The designer must establish a realistic allowance for custom fixtures from the total job budget. Try to get a current price for production fixtures similar to those required by consulting with the manufacturer of those fixtures. Describe the additional work or materials needed—often a hand sketch will do—and ask for a preliminary estimate. Some manufacturers give an estimate as a "ball park" figure. Others use a historically based percentage up-charge for such work.

On more involved projects many fabricators are more than happy to give some initial guidance in exchange for the possibility of getting the actual job. Regardless of who is asked, designers should still seek cost and design advice. Of course, budgets should always have a built-in contingency for unanticipated costs.

### *How do you estimate delivery time?*

To do this, the project must be broken down into phases and time estimated for each phase.

**Phase One.** The fixture must be designed conceptually. The budgets must be established and presented to the client.

**Phase Two.** The fixture must be developed and drawn, often by a third party. Allow time for revisions, submittals, and approvals of samples between the fabricator, designer, and the client.

**Phase Three.** This is the production phase. It has the most variables. The project may require that tooling be made before fabrication begins. Time is also required when a few craftsmen hand-build many fixtures. Even when tooled for quick high production, it can take weeks for some manufacturers to fit a custom project into their production schedules.

**Phase Four.** Shipping and installation also requires a careful time estimate. A design that requires specialized installers will add time. Additional time should be added in against last-minute revisions, installation irregularities, fixture fine-tuning, or malfunctions.

### *Can the fixture be shipped and installed?*

Although a seemingly obvious question, it is often overlooked. Will the finished fixture be able to be broken down for shipment? If so, can it be shipped through normal parcel carriers? Is its shipping size beyond normal carriers limits? Will it require its own truck or flatbed? Will the fixture fit through the building door? Can power be easily supplied to the fixture location? Is this location properly prepared to support the weight of the fixture? Will this fixture cause any local union or electrical-code violations? Will other building trades on site accidentally soil or damage the fixture? The best way to anticipate problems is to work out answers to these questions early on.

### *What should you include in the client presentation?*

A proper presentation should establish the functional and esthetic purposes for the fixture. The presentation should show a conceptual representation of the fixture adaptable to changes that may be required later. It is easier to refine a concept as it progresses in development than to ask a client to abandon a fixture design that they have fallen in love with. The presentation should also include a realistic preliminary budget and production schedule.

### *What about fixture development?*

Although architects and designers are certainly capable of developing and engineering fixtures, this may not be a cost-effective use of their time. Lighting designers, manufacturers, or specialty custom-fixture fabricators are often better suited to the task with their already-excellent knowledge of available fixtures, budgets, lighting technology, and manufacturing techniques.

If the project's requirements are very straightforward, working directly with a manufacturer can be very cost effective if it already does similar types of work. In this case, the designer will probably assume most of the responsibility for the initial design and later coordination of the installation. As an alternative, a specialty custom-fixture fabricator, who can give practical advice from the start and will be responsible for the total engineering and assembly, may be right for some jobs.

*There are certain "right" questions designers should ask themselves before committing time and money.*

*How do you select a fabricator?*

Many companies offer custom-lighting fabrication. Here are some questions to ask when deciding if a fabricator is appropriate for a given project. Is their past work similar to it? Will they offer the necessary level of engineering support? What is their reputation and how do their references check out? Remember this is the first and last time they will produce this fixture—but a poor job can have a lasting effect on the designer's reputation.

*What design documents does the fabricator need?*

The fabricator should be given as detailed an explanation of the design intent and concept as possible, including a written spec sheet detailing the fixture's performance, material, finish, and functional intent, along with any color or material samples to match. Do not over-detail design drawings. Fabricators do their best when given plenty of leeway in determining the most efficient method of fabrication and assembly.

*What does the fabricator provide?*

After reviewing the specifications, the fabricator should provide the designer with shop drawings, specifications, and submittals of actual material samples or finishes. These should be fully scrutinized, as changes during production will prove costly. Requesting prototypes or samples of components before production can be good insurance against later problems.

*What is the most economical material and fabrication method?*

Sheet-metal fabrication is by far the most economical. It is easy to find qualified fabricators from small-quantity hand fabricators to those with precision computer-controlled machinery. Sheet-metal fabrication is relatively quick and it should be considered.

*What about tooling?*

The term "tooling" encompasses all of the special metal-forming dies, patterns, forms, and so on required to produce the fixture. Generally, tooling must be custom-made for each job and is expensive. On the other hand, when fixture quantities are substantial, tooling may speed up production and significantly lower individual fixture costs.

If the fabricator determines tooling is required and it proves to be too expensive, the designer may have to redesign around cheaper manufacturing processes. These include computer-controlled lasers or waterjets for cutting intricate shapes and silhouettes in sheet materials or using existing tooling, such as existing spinning chucks for round metal shapes or existing extrusion dies for decorative aluminum extrusions. A significant amount of time and money can be saved by consulting with fabricators and determining if they already have tooling similar to that which is needed.

*Which processes should you avoid?*

Although cast metal and formed glass are very desirable in custom fixtures, they should be avoided. High pattern costs, long lead times, poor tolerances, and high finishing and labor costs are just some of the possible problems. It is sometimes easier to buy existing fixtures and cannibalize parts than to make them from scratch.

*Who coordinates the project?*

The designer's designated representative should coordinate the people involved in the fabrication of the project, method of delivery, and installation of fixtures. It cannot be stressed enough that one person should be the bridge between the fabricators, installers, and the client in conveying the original intentions and requirements for the fixture.

*Who's responsible for problem-solving?*

The scope of responsibility for each party should be clearly established at the start of the project. Malfunctioning lamps, scratched or dented finishes, crooked alignment, fixture overheating, and other problems are common on many jobs. Although a repair may be the responsibility of one of the fabricators or installers, the biggest cost may be actually be to the designer in terms of time and energy lost rectifying the problem, or in damage to the designer's reputation.

Custom-lighting fixtures usually provide high visibility to a project and the final results usually makes all the effort worthwhile. By investing more time in planning ahead and asking the right questions early on, often a lot less time and effort is required in the long run. ■



1



2



3

*Custom fixtures can allow for some cost savings. The custom pendant and sconce at top and center use vacuformed acrylic for the shade and cast polyester resin instead of glass and granite. The use of off-the-shelf electrical parts saves additional cost. The sconce on the bottom has a custom slumped-glass shade, but is otherwise made of standard electrical parts.*

## Spreading the Light Around: Innovations in Distribution

By Lindsay Audin

Each light fixture model has a proper spacing-to-mounting-height ratio (S/MH) to ensure consistent illumination. Fixtures with a S/MH of 1.2, for example, should not be spaced apart more than 1.2 times their height above the task (typically 30 inches above the floor). When recessed into a 9.5-foot ceiling, that's 7 feet above the task and no more than 8.4 feet apart ( $7 \times 1.2 = 8.4$ ), measured center-to-center.

Spacing fixtures further apart may create noticeable variations in illumination on task surfaces. Typical design methods provide only average illumination levels, and no indication of such differences.

### Creating the problem

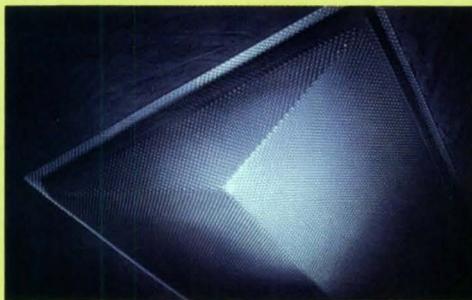
Contractors—and some designers—often minimize installation cost by using a few large fixtures, sometimes spreading them too far apart, e.g., two four-lamp fixtures used where four two-lamp fixtures would have yielded more even illumination. Perception of brightness is fixed by the brightest area, so such variations may actually make part of a space appear to the eye to be darker than indicated by a light meter. These differences may also be accentuated by dark colors on walls and furnishings.

Specular reflectors and parabolic wedge louvers typically narrow fixture beam spread, reducing the S/MH, and further aggravate the problem. Relocating fixtures is usually cost-prohibitive and may require additional fixtures, so the net result may be a cave-like environment not conducive to occupant comfort or productivity.

### Early solutions

Several new lens patterns were developed in the 1980s to improve appearance where fixtures in overlit spaces had been delamped. Such reductions in light levels also further accentuate uneven light levels, so these lenses "filled in" dark areas at task level by more widely distributing the light, while "hiding" the shadows in fixtures where lamps were removed. Other lenses cut VDT screen glare by narrowing beam spread in one plane (oriented perpendicular to the screens) while widening it in the other, filling in *potential* dark areas

*New lenses offer designers more latitude in layouts—and more even illumination—by providing greater control of light distribution.*



*Pyramid-shaped lens distributes light evenly.*

to the sides of VDT operators.

These asymmetrically-patterned flat lenses have proven useful during lighting upgrades and for new fixtures equipped with sophisticated reflector designs. Specular reflectors, for example, may make fixtures appear more glary (even when they do not change the S/MH), but adding such a widespread lens can reduce the fixture's apparent brightness while distributing light more evenly. Asymmetric lenses may, however, create beam patterns on walls, and glare in some locations, so try them in a test room prior to a large purchase.

### Better answers

Two more innovations are now available for both existing and new fixtures. Developed to allow re-use of existing (but poorly spaced) fluorescent pendants, a new widespread specular reflector and lamp-relocation system raises the S/MH of fixtures from the usual 1.2 (or less) up to 1.5. Returning to our example, this system increases allowable fixture spacing (from the initial 8.4 feet) to 10.5 feet, or (alternatively) creates more even illumination where variations previously existed between fixtures.

The second innovation adapts a lens shape previously seen only on recessed HID downlights. Looking like an upside-down pyramid stretched along one axis (see photo), this lens has up to 40 percent more surface area than a flat lens of the same width. While its surfaces send more light out at higher angles, the extra area of the lens mutes its brightness (known more precisely as "luminance") to a more acceptable level. The ends of the lens are also angled, so light distribu-

tion at a fixture's ends may also be improved, especially when the fixture's original lens created beam patterns or a "hot spot" on a nearby wall.

When existing fixtures are not properly spaced, widening distribution opens the door to another trick now being used by clever designers: field experience shows that measurably lower light levels can be made acceptable if variations are minimized, thus, less installed wattage is required. Beware that this opportunity does not exist in spaces, such as merchandising, where major variations in levels may be essential to their function.

### A tough test

A basement hallway used for locker storage provided a good test of these two technologies. The existing two-lamp recessed one-by-four fixtures were up to 18 feet apart in a 10-foot ceiling, yielding a 6:1 ratio of illumination when measured at floor level under and between fixtures.

As part of an energy-efficiency upgrade, a widespread specular reflector was added. The light level ratio dropped to about 2:1, greatly reducing variations. General appearance improved, and more light was placed on lockers previously in the dark.

The pyramid lens was then added and the levels became even between and below the fixtures (i.e., a ratio of 1:1), further improving appearance and locker illumination. Elimination of dark and light spots "fooled" the eye into accepting a lower light level since no bright spots existed to cause the pupil to shrink.

### The bottom line

Widespread reflector kits (or fixtures) cost about the same as standard versions, but widespread lenses come at a premium, usually \$18 to \$30 apiece. Relocating or adding fixtures could yield the same result, but at a much higher cost. When improvements in distribution were needed, using these lenses and reflectors cost about a third of those other options. ■

*Lindsay Audin is the energy manager for Columbia University.*

# Product & Literature Spotlight

Here are some products, services, brochures & technical literature available in the architectural lighting market today. To receive your copy of any of them, just circle the key number on the Reader Service Card corresponding to the number under the advertisement.

## Illumination Design



PHOTOGRAPHY: LEE GORDON

Project: The Roof Gardens  
 "Architecture is the play of masses brought together by light" Le Corbusier

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For more information regarding our services please contact:

Ms. Liz Weiss  
 ID Illumination Design Inc.  
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**ID Illumination Design Inc.**

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## Lexington Aluminum Lighting Standards

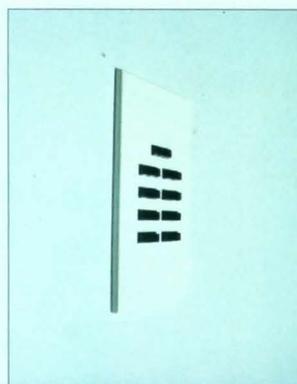


Cost-effective, durable, attractive, & strong describe Lexington Standard Corp's aluminum lighting standards. Available models include round tapered/straight/decorative, square straight, hinged, & embedded. The wide range of finishes & colors appeals to architects; contractors appreciate the ease of installation; distributors are attracted to the economical prices; owners enjoy a product that's virtually maintenance-free.

**Lexington Standard Corp.**

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**Silverlight Corporation**

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# Product & Literature Spotlight

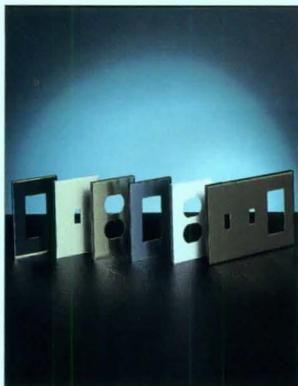
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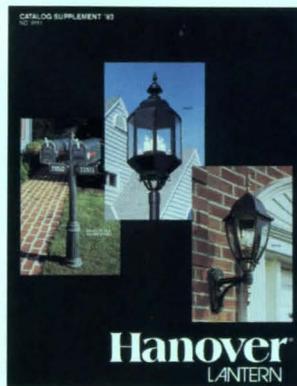
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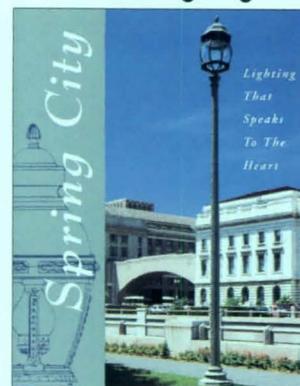
## Hanover Lantern Catalog Supplement '93



Hanover Lanterns' 1993 catalog supplement contains a selection of newly designed cast titanium/aluminum lighting fixtures which feature clear bent beveled glass, solid brass finials, spindles & candle clusters. Also included is a selection of decorative single & multi mailbox holders, post, & decorative cast titanium aluminum post base covers. 470 High Street, Hanover, PA 17331. Call (717) 632-6464 or Fax (717) 632-5039.

**Hanover Lantern**  
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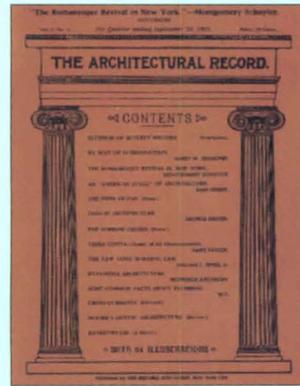
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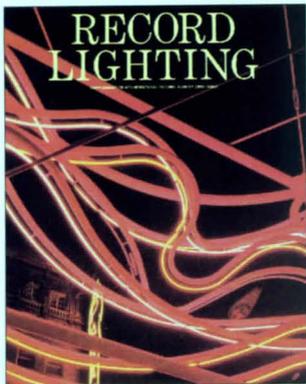
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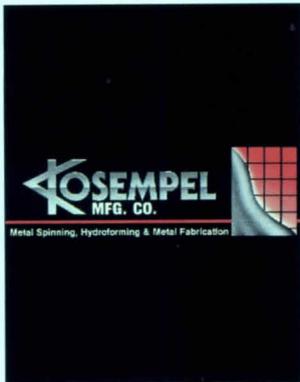


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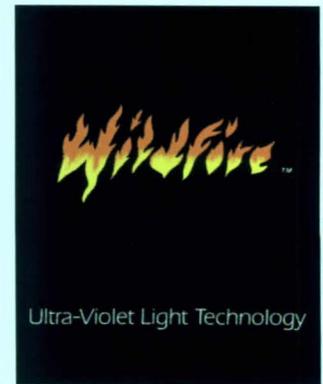


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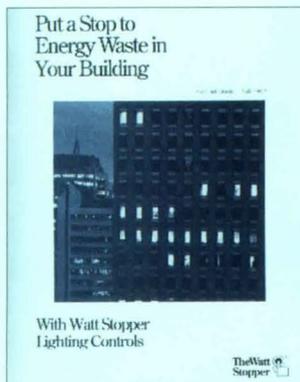


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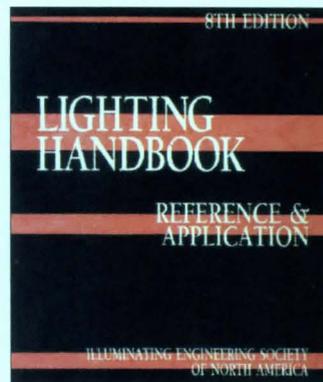


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## High Marks for Lightfair and LRC's *Specifier Reports*

Attendees of Lightfair, the lighting trade show that takes place this month in San Francisco, will see dozens, if not hundreds, of new lighting products. Personally, I can't wait to see what the manufacturers have come up with this year. Looking back at recent Lightfairs, I often think the last three or four years will be remembered as the era when the efficiencies and technical complexity of commonly available lighting products finally started catching up with the advances in other technologies, such as computers, audio, video, and the like.

But Lightfair also represents the specifier's dilemma in concentrated form. Knowing exactly which lighting products to specify has never been easy. The performance of many of them appears to be either identical, or can be differentiated only by data that may or may not come from an independent testing laboratory. Still, with the vast number of utility-sponsored lighting-equipment-rebate programs, and the EPA's Green Lights [ARCHITECTURAL RECORD LIGHTING, February, 1993, page 25], the demand for accurate, unbiased information about lighting products is unprecedented.

Fortunately, there is a source for this information. The Lighting Research Center's National Lighting Information Product Program recently published the fifth of its *Specifier Reports*, on parking-lot luminaires. Previous reports have covered power reducers, specular reflectors, occupancy sensors, and electronic ballasts. The reports do a terrific job of explaining terms and evaluation methods, and covering the basic criteria specifiers should heed when choosing a product. In most cases, the reports go on to evaluate the performance of actual products supplied by manufacturers.

More *Specifier Reports* on other product types are in the pipeline. The only drawback is that single copies of the beautifully produced 12- to 20-page reports are \$30, with price breaks for those ordering larger quantities. That might be well within the budget of a utility company, but for an individual it's definitely expensive. If you wish to face the specification dilemma head on (and have the money), the Lighting Research Center can be reached at 518/276-8716. If you'd rather just be dazzled, spend the money to go to Lightfair instead. *Charles Linn*



# Staging a Comeback

In his 1931 ARCHITECTURAL RECORD coverage of the New School for Social Research—whose architect was the theatrical designer Joseph Urban—Shepard Vogelgesang wrote, “The lighting of the auditorium is designed to place dramatic emphasis on the stage.”

So it may have appeared in the beginning, and it certainly does now, but during the intervening 60 years of ad hoc lighting revisions, most of those who appeared on that stage were blinded by glare but still didn’t have enough light for reading speech notes or musical scores. Illumination levels at the front of the space were five fc or less.

Those same years added the Parsons School of Design to the New School family, but, with a perverse sense of balance, also converted Urban’s graduated shades of subtle gray sparked by English vermillion into a monotonous white that all but extinguished the power of his spartan arcades and his ellipsoidal ceiling with rising tiers textured by acoustical perforations. The original dimmers had been disconnected for safety reasons, and battery-pack emergency lighting was placed haphazardly.

A 1992 restoration by Prentice and Chan, Ohlhausen [ARCHITECTURAL RECORD, January 1993, page 114] brought back Urban’s original color palette, expanded the stage to conform to his original design, refurbished all the surfaces and seats, installed modern audio-visual systems, added some acoustical improvements, and developed the kind of lighting scheme Urban would have used if he’d had 1990s technology available to him.

Frank Kelly, project designer at the lighting firm of Imero Fiorentino Associates, retained Urban’s cove lighting scheme in the top four elliptical tiers, but refined it to take advantage of halogen line-voltage lamps. The effect on the pierced texture and the original graded shades of gray paint is true to Urban while saving on wattage. A system of permanent downlights above the stage delivers at least 100 fc for people who need to read notes or musical scores. For events that are to be videotaped, backlighting is available to help visually separate form from background.

Stage lighting was removed from the flanking arcades, which had never provided the proper angles. Some mounted fixtures were added on ladders at the back of the balcony on either side of the projection booth. The most visible ones seem to slip discreetly from the shadows of one of the ceiling tiers; they can be lowered for maintenance and unplugged completely for events that call for showing off the architectural purity of the space. Meanwhile, the arcades are free to celebrate themselves in the gleam of concealed downlights. One control system operates architectural presets and a theatrical console.

For safety, low-voltage strips are wired into the armrests of aisle seats. New soffits above the doors contain recessed exit signs, emergency lights, and additional general area illumination.

Back in 1931, Urban’s auditorium represented one of the most up-to-date uses of architectural lighting in the building—along with the cove lighting that repeats the flooring pattern in the lobby. Probably originally lit with strips of incandescents, the shapely cove only recently sported surfaced-mounted fluorescent tubes before being restored to Urban’s intended color rendition with the use of compact fluorescents. *Judith Davidsen*

*Judith Davidsen is a freelance writer based in New York.*

Brian Rose photos



*The restored 1931 auditorium and lobby at Joseph Urban’s New School for Social Research still looks like a vision of the future, possibly because years of “updating” had erased his vermillion and graduated shades of warm-gray and replaced warm standard A lamps with efficient lamps that, up until very recently, were capable of casting only the chilliest of glows.*

## Credits

*John L. Tishman Auditorium  
New School for Social Research  
New York City*

**Owner:** *New School for Social Research*

**Original design, 1931:** *Joseph Urban*  
**Restoration Architect:** *Prentice and Chan, Ohlhausen—Rolf Ohlhausen, principal-in-charge*

**Lighting Designer:** *Imero Fiorentino—Frank Kelly, project designer*



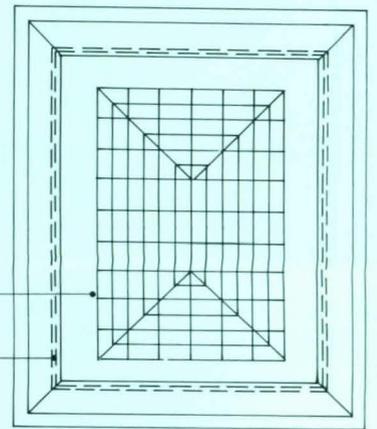
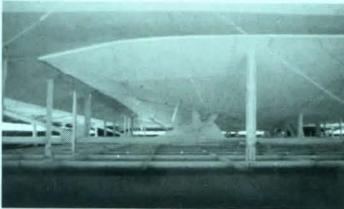
JOHN  
AU

# Bank Job

*One Montgomery Street  
San Francisco, California  
Willis Polk and Charles  
Gottschalk, Architects  
Luminae Souter Lighting  
Design*



Ross De Alessi photos



new reflector of lay-in ceiling tiles in inverted hip roof shape  
existing fluorescent-light fixtures, relamped and re-aimed

SKYLIGHT PLAN

new reflector of lay-in ceiling tiles  
existing fluorescent-light fixtures  
existing glass ceiling

SKYLIGHT SECTION

people were going blind in there," says lighting designer Ross De Alessi, describing the situation that brought him to the flagship location of a prominent California bank. "So everyone on the teller line brought in their own task light—they were all different, which just drew attention to how bad the lighting was."

De Alessi's firm, Luminae Souter, was hired to design task lights for the entire teller line. "In the process, I showed the facility manager that the new teller-line lighting just scratched the surface in terms of what we could do to improve the lighting. We did a large-scale mockup of the space for them, which led to a complete overhaul of the lighting system."

Out went a system of deteriorated recessed metal-halide downlights with 12-in. apertures that had been punched in random locations all over the ceiling. De Alessi replaced them with dimmed 6-in. 250W and 500W quartz and 100W halogen IR downlights that graze bas-relief plaster panels, walls, and shallow arches around the perimeter of the space.

Existing fixtures in plaster sconces and brass torchères were removed and replaced with white high-pressure sodium uplights fitted with asymmetric reflectors. These flood the coffered ceiling with very warm light that is particularly good at bringing out the gold-leafed details. Sconces located over check-writing desks received an additional PAR20 downlight.

The frosted-glass false skylight had a continuous row of fluorescent strips around its perimeter—but alas, no surface to bounce their light through the glass. Luminae Souter designer Leif Johnson devised a suspended ceiling tile structure for this purpose (detail, below right) and had the strips lamped with daylight-colored tubes and re-aimed.

To gain enough energy credits for the installation of the halogen and fluorescent task lighting under California's Title 24, downlights in the window bay and drapery accent lights are controlled by photocells. The rest of the lighting is controlled by a four-scene preset dimming system. *Charles Linn*

*Quartz downlights that wash bas-relief panels and arches are balanced by white HPS uplights concealed in torchères and sconces (opposite and above right). To bounce light through a faux skylight from a existing fluorescent strips, a huge reflector made of lay-in ceiling panels was built (photo and details right.) Daylight-colored lamps replaced the original cool whites.*

**Credits**

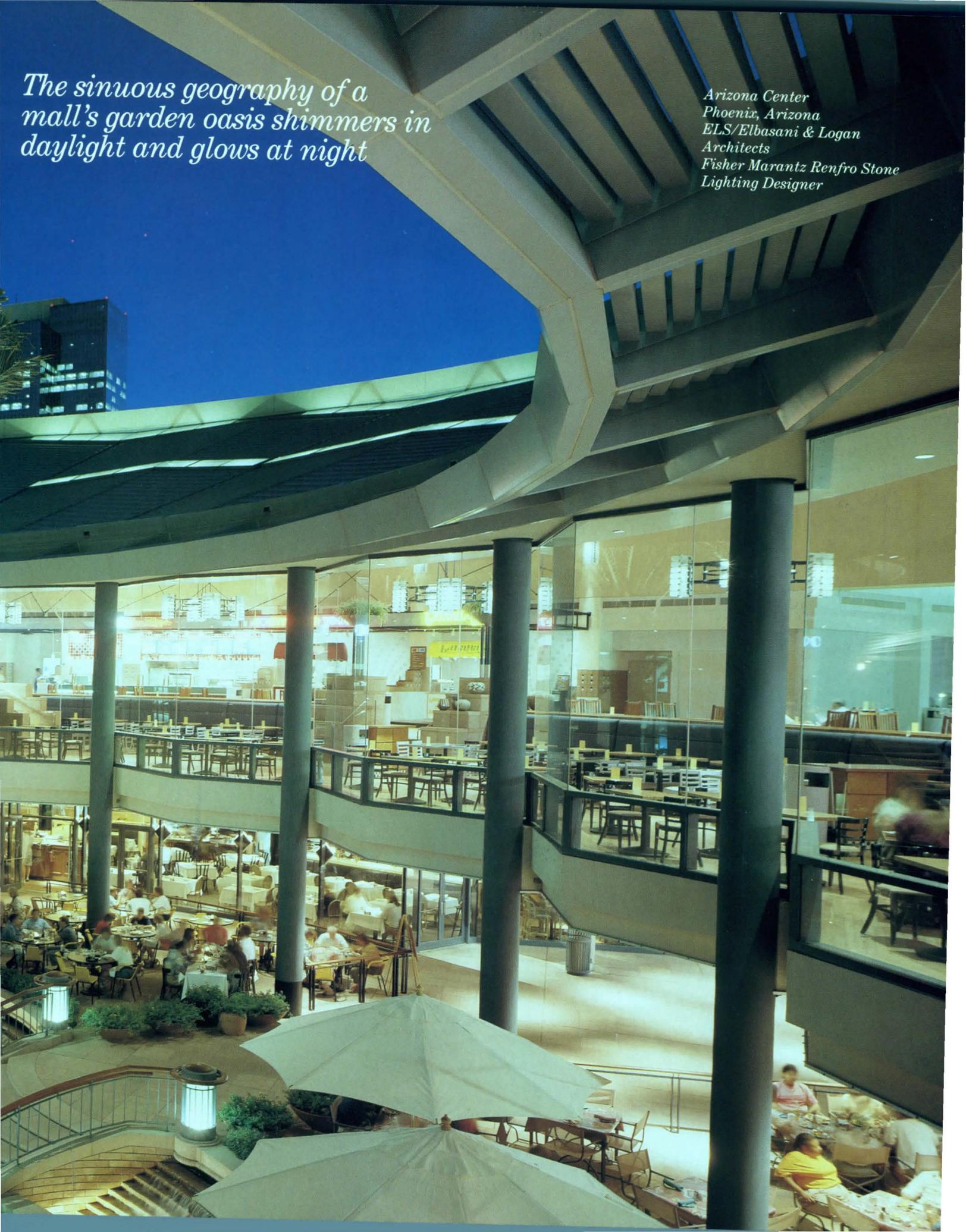
*One Montgomery Street  
San Francisco, California  
Owner: Withheld by request  
Architect: Willis Polk, Charles  
Gottschalk  
Lighting Designer: Luminae  
Souter Lighting Design; Ross  
De Alessi, principal-in-charge;  
Leif Johnson, designer  
Contractor: Rosenden Electric;  
Mark Lynch, project manager*

# Paradise Lit



*The sinuous geography of a mall's garden oasis shimmers in daylight and glows at night*

*Arizona Center  
Phoenix, Arizona  
ELS/Elbasani & Logan  
Architects  
Fisher Marantz Renfro Stone  
Lighting Designer*





It is difficult to imagine the soft soil and leafy coolness of Eden existing in a retail mall in the middle of downtown Phoenix, Arizona. But when the team of ELS/Elbasani & Logan Architects, with lighting designers Fisher Marantz Renfro Stone, landscape architect the SWA Group, and graphics consultant Communication Arts extended the office space and accompanying landscape of the Arizona Center to include retail shops and dining, they borrowed the most paradise-like qualities from the Biblical garden for daytime relief and nighttime comfort.

During the day, curves and niches in the building forms, inspired by the nautilus-shaped garden, catch cool breezes and create calming shadows while the dazzling sunlight shimmers on signage and fabric. At night the garden is lit with the warm glow of incandescent, so patrons of the dining and retail arcade overlook a living, inviting lantern, a safe oasis in the desert. "We let the sinuous geography of the garden serve as a motif for the entire garden," says Henry Beer of Communication Arts.

At night, burial uplights with 150W quartz PAR floods graze the trunks of the palm trees, their fronds illuminated by a ring of three MR16 floods. Underwater, low-voltage PAR36 fixtures trace the undulating waterfall that separates the garden from the dining area. Handrail-supporting custom-made bollards lit by quartz sources demarcate the bridge over the waterfall and sidewalks, giving the illusion at first glance that luminaria have been placed there. The Japanese fan-inspired trellised walkway that borders the garden is illuminated by up-and-down PAR floods in generic holders, concealed inside a ribbon of metal fastened to each trellis support. The fixtures light the wooden slats overhead, and light plant materials below.

The dining area in front of the retail space that faces the garden is filled with white parasols, lit by the powerful Arizona sun by day and uplit by fluorescent strips at night. The canopies covering the second-floor balconies echo the Japanese-fan theme established in the garden. They are uplighted by exterior lampholders and 150W R40 floods fastened to the canopy support posts.

Local codes would have restricted the size of the logo on the corner of the building, so part of it was designed as an architectural lighting feature instead—inspired, says Beer, by a stop-action photograph of water droplets hurled into a vortex-shaped trajectory by a sprinkler-head. To replicate the effect in light, vapor-proof industrial fixtures were mounted in circular openings in the stucco-finished wall. The fixtures were lamped with 13W compact fluorescents, and silver-leafed on the ends to reflect the light back toward the building and punctuate each fixture. *Debra Woodruff*

*Debra Woodruff is a freelance writer based in Eugene, Oregon.*

#### Credits

**Arizona Center**

Phoenix, Arizona

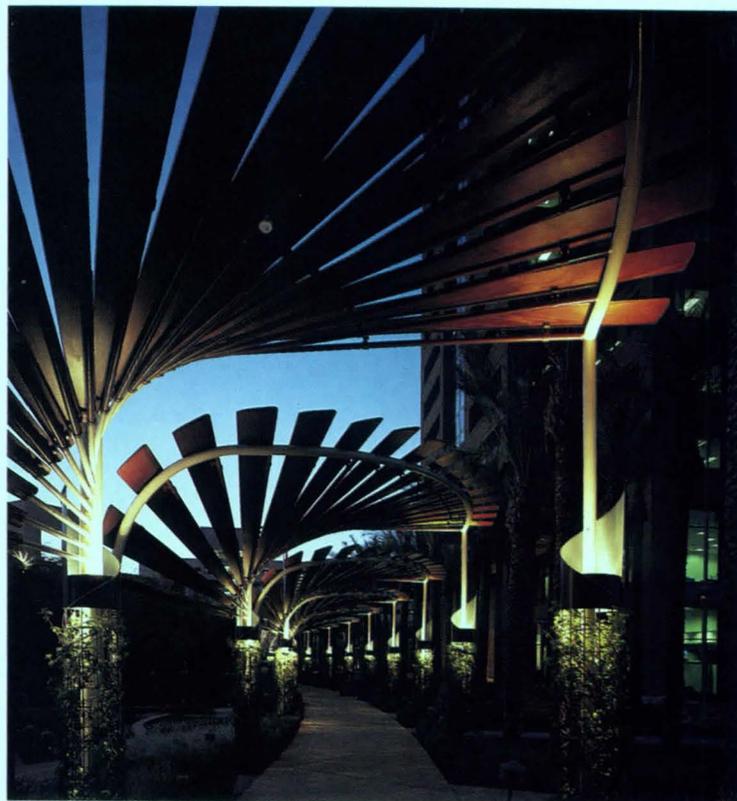
**Client:** Rouse-Arizona Center, Inc.

**Architect:** ELS/Elbasani & Logan Architects—Barry Elbasani, Carol Shen, principals-in-charge

**Lighting Designer:** Fisher Marantz Renfro Stone Inc.—Paul Marantz, principal-in-charge; Susan Brady, associate

**Graphics:** Communication Arts—Henry Beer, principal-in-charge

**Landscape Architect:** The SWA Group



Arizona Center (aerial view, left) is a retail office complex covering eight blocks in downtown Phoenix. The garden with palm trees and water features is the complex's centerpiece. Uplighted palm trees and canopies provide soft, inviting night lighting (1). The sprinkler-inspired building logo is punched out by compact fluorescent lamps in vapor-proof industrial fixtures (2).

© Tim Hursley

© Tim Hursley

# Positive Energy

*Resurgens Orthopaedics  
Atlanta, Georgia  
Farrington Design Group,  
Architect  
Newcomb & Boyd Lighting  
Design Group*



r. John Garrett did not want to practice in a box. For his medical group's new offices, he sought to creatively explode conventional thinking about medical architecture. Daylighting and views, for example, were a top requirement—and not just a token window or two.

Fortunately, the ninth-floor tenant schematics were planned while the speculative base building was still under design. Coordination allowed the interior design and architecture team, including Hiro Isogai, Sheila Nall, and Mack Hicks, to introduce significant structural departures from a typical doctor's office. Most impressive is the skylit two-story waiting room. Massive, but beautifully clad beams and columns convey a strong, solid presence in this uniquely welcoming space.

Lighting designer Gerald Cunningham favored incandescent lamps for most areas of the project, selecting a variety of low-voltage halogen fixtures and an A19 sconce. "We wanted to help visitors appreciate the exceptional materials, to bring out their color and vibrancy," he explains. An Italian-designed sconce graces the reception area (opposite), then recurs throughout the offices in rooms such as a nurses' station (center right). The sconce provides pleasing ambient light in addition to a bit of sparkle through its perforated shield. "Touches like these generally make people feel better, a little bit more positive and energetic," says Cunningham.

Another frequently recurring fixture is a simple, relatively inexpensive MR16 lamp holder. Mounted on columns, the fixture lights circulation pathways and provides a decorative effect with the colorful backwash from the MR16's dichroic coating. "This fixture and metal are exposed," remarks Isogai. Placed on the rich wood columns, the fixtures seem to reveal structure while arranging surfaces for visual effect.

Quartz PAR38 lamps play several utilitarian roles in the offices. PAR lamps in tracks hug skylight perimeters to provide supplemental lighting as needed. In downlights, they illuminate the reception counter (opposite) and conference room (bottom right). The lamps also provide extra brightness to do justice to slate and wood flooring at a corridor junction (top right).

Typical two-by-four fluorescent lay-ins aren't absent from the project, but are largely confined to staff areas and examination rooms. The upbeat mixture of daylight and incandescent prevails in the sequence of spaces visited by most patients, from elevator lobby to reception and waiting areas to corridors. Examination rooms have windows as well as 3500K triphosphor fluorescents. "Lighting in all these areas has the same feeling, the same profile," says Isogai. Patients seem to enjoy the surroundings, and Dr. Garrett certainly does. "I can't wait to get up in the morning," he says, "to go to work in the marvelous new office." *Gareth Fenley*

*Gareth Fenley is a freelance writer based in Atlanta.*

#### Credits

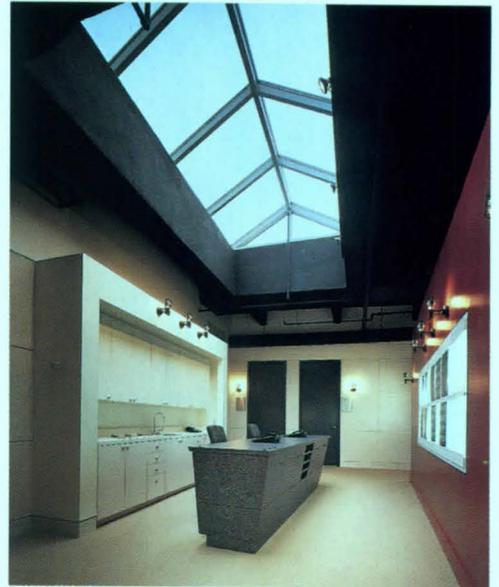
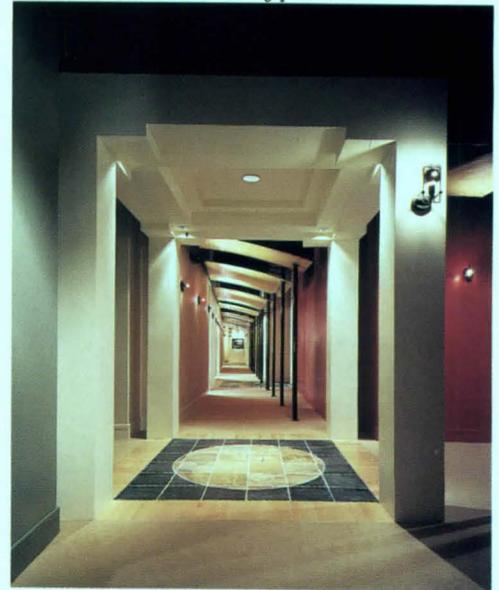
*Resurgens Orthopaedics  
The Center for Specialty Medicine  
at St. Joseph's Hospital  
Atlanta, Georgia*

**Architect, base building:** *Cooper Carry & Associates*

**Architect, tenant space:** *Farrington Design Group*

**Lighting Designer:** *Newcomb & Boyd Lighting Design Group*

**Electrical Engineer:** *W. L. Thompson Consulting Engineers*



# Lighting Lessons

*New York State  
Education Building  
Albany, New York  
Einhorn Yaffee Prescott,  
Architect  
Lam Partners, Inc.,  
Lighting Designer*



*An old building learned a few new tricks when a 1908 museum became a 1991 education office.*



Twenty years ago, the New York State Education Building was flunking. Eager to get out of its deteriorating interior, its occupants were fleeing to new buildings. The fifth floor soon emptied of exhibits as the state museum was relocated. The monumental landmark designed by architects Palmer and Hornbostel in 1908-1912 needed a remedial course. And thanks to pressure from preservation groups, New York State set out to provide it.

Einhorn Yaffee Prescott were selected to plan a restoration and adaptive use of the former museum area. The firm surveyed existing conditions, then hosted a three-day kick-off meeting at the site, with clients and consultants participating. "We positioned a cross-disciplinary team working together to generate concepts right at the original orientation meeting," recalls architect Steve Einhorn. "And what we did in those few days is what got built. There was very little drift from the original concept." The project's lighting consultant, Lam Partners, has always championed integrated design and was a key participant from the start. "The beauty of this process is that you can come up with a strong initial concept, and that if you get all of the relevant players involved in that concept, it will survive," explains lighting designer Bob Osten.

The strong concept here was a mezzanine with an undulant plan. Inserted into each of the floor's three main volumes, the mezzanine satisfied many goals: expand floor space by 25 percent (the client's requirement), retain openness and historic integrity, and allow maximum use of daylight. Structurally, the mezzanines posed substantial problems: the building could not support their additional weight, nor did it have columns where they were needed. These obstacles were surmounted by removing heavy nonstructural concrete decking from the floor, using lightweight new construction balanced by dynamic tuning, and extending unbraced outriggers to structurally sound positions.

Throughout the fifth floor, ambient lighting is a calibrated mix of daylight and indirect electrical sources. In the north wing, a high-quality daylighting system typical of old museums was revived and improved. Above each flat-glass ocular laylight, an enclosed light well got a fresh coat of white paint; and atop that chamber, a new pyramidal skylight was installed, with only one face glazed to cut heat gain. For evenings and cloudy days, the designers hung a custom 1000W metal-halide pendant beneath each oculus. Decorative incandescent lamps in all three wings are rewired, dimmed replacements of historic originals. Says electrical engineer Bill Bush of the system: "It looks really good when it's all fired up." The successful reuse of the fifth floor has passed the financial test, too. Its cost is expected to be amortized in 10 years. The state has funded two more major adaptive-use projects within the building. *Gareth Fenley*



*Its south edge borne by a 520-foot-long Corinthian colonnade, the fifth floor today houses 95,000 square feet of offices in what was once 75,000 square feet of exhibit hall. The architects won new space by inserting sinuous mezzanines. In the north wing (photos above and opposite), windows were enlarged, while historic ocular laylights and decorative incandescents were rehabilitated. New metal-halide pendants and fluorescent coves (built around existing drain pipes) provide supplementary indirect lighting.*



© Jeff Goldberg/Esto photos



Once a pair of vast, dim, echoing volumes, the east and west wings now are splendid workplaces. The most conspicuous daytime light source is an axial skylight. Its tarred-over gable was rebuilt with only the north face glazed. Fabric banners catch most direct sunlight, allowing a bit to splash playfully through exposed steel trusses. In the photo below, sunbeams enliven a

path in one formerly enclosed area (far left) where a blind arch has been opened. Fluorescent lighting on the wall seen through the top of the arch helps visually balance the much brighter daylit main space. The design team used scale models to help refine mezzanine forms with natural light in mind. Some reflected daylight even bounces under the mezzanines and into pri-

vate offices (center photo), thanks to glass transoms. The principal light source for these offices, however, is indirect fluorescent. In open-plan areas under mezzanines, there are fluorescent uplights along the walls and metal-halide fixtures hidden in partitions and furniture (see title page photo). High-wattage fluorescent uplights are also concealed in overhead service canopies that



1. Open office
2. Mechanical
3. Light shaft
4. Rotunda
5. Lounge
6. Conference
7. Reception
8. Existing annex

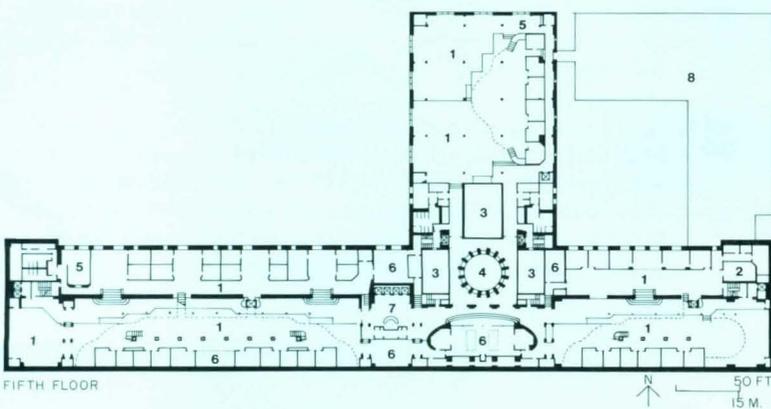


MEZZANINE FLOOR

hover along the mezzanines, holding hvac systems and providing a human scale. Virtually the only obtrusive utility is a drainpipe original to the building (center photo). The designers used it as another location for mounting fluorescent lighting.

**Credits**  
*Fifth Floor Adaptive Use/Restoration*  
*New York State Education Building*  
*Albany, New York*  
**Architect:** *Einhorn Yaffee Prescott, Architecture & Engineering—Steven Einhorn*  
**Electrical Engineer:** *Einhorn Yaffee Prescott, Architecture & Engineering—Joseph Mangan and Bill Bush*

**Lighting Designer:** *Lam Partners, Inc.—Bill Lam, Bob Osten, and Paul Zaferiou*  
**General Contractor:** *Sweet Associates*



# The Jewelry Of Architecture

By James Robert Benya

Decorative and ornamental lighting is one of the most important aspects of lighting design. Decorative luminaires are essential not only for illuminating space, but are themselves elements of the architecture, landscape architecture, and interior design. (It's hard to imagine an elegant dining room without a chandelier.)

Glance through recent lighting catalogs to see the influence of top designers and Postmodernism on major manufacturers' standard product lines. From well-known lighting companies to specialty manufacturers, designers can choose from an array of decorative styles. Wall sconces have become extremely common, and many now use compact fluorescent lamps.

There also are a number of custom-lighting-fixture companies throughout the country. Prior to the custom-lighting renaissance, most made hotel chandeliers and church lighting. Now custom chandeliers and sconces grace government buildings, major highrises, and shopping centers. Some lighting-design firms are noted for designing custom fixtures that capture an architect's or designer's vision. In a few cases, the fixtures are one-of-a-kind illuminated works of art, integrating lighting design, architecture, and sculpture.

## Types of decorative and ornamental lighting

- **Chandeliers.** The word "chandelier" comes from the Latin for candle, *candela*, and describes "a branching structure to hold candles," generally hung from the ceiling. Today, chandeliers are usually ornate ceiling-hung fixtures in traditional styles and materials, and in large scale for formal rooms such as foyers, dining rooms, ballrooms, and grand hallways.

- **Pendants and Pendants.** The word pendant means "a hanging ornament," from the Latin *pendere*, which means "to hang." By modern convention, light fixtures hung from the ceiling are called pendants if they are not formal enough to be chandeliers. Pendants generally are suspended far enough from the ceiling by a fairly lengthy chain, stem, or wire-suspension system. "Pendant" is an invented word for a pendant fixture.

- **Close-to-Ceiling.** For ornamental lighting from lower ceilings, pendants with very short suspension lengths are called "close-to-ceiling" fixtures.

- **Surface Fixtures.** Lighting fixtures designed to mount directly onto a ceiling are "surface" or "surface-mount" units. While surface

Mr. Benya is director of Lighting and Daylighting for Proven Alternatives, Inc.

*Decorative light fixtures are essential for illumination—and add sparkle, style, and refinement to rooms as well.*

fixtures are generally not ornamental, there are a few important styles and applications. These are used where a less-formal fixture is required as in a side hallway, bedroom, or closet.

- **Sconce.** From the French word *esconce* comes "sconce" to describe an ornamental bracket fixed to the wall "to carry a light." Like chandeliers, sconces evolved from candles and torches, and the word "sconce" is now used to describe virtually any style of decorative wall light, especially indoor fixtures.

- **Wall Bracket.** Virtually synonymous with "sconce," "wall bracket" is usually used to refer to outdoor decorative luminaires as well as for wall-mounted fixtures of more simple or modern style.

- **Table and Floor Lamps.** Derived from the Greek word for torch, *lampas*, the word "lamp" traditionally describes table- or floor-lamp fixtures that are portable luminaires using shades to shield the light source from view. Other styles of table and floor lamps have their own names, such as desk lamp or torchère.

## The role of decorative and ornamental lighting

The tradition of providing light for interior spaces from ornamental holders is consistent with most cultures worldwide. Regardless of where you are, there is a popular form of ornamental light holder, whatever it might be. The European influence on American architecture and design makes us simply more conscious of these traditional influences.

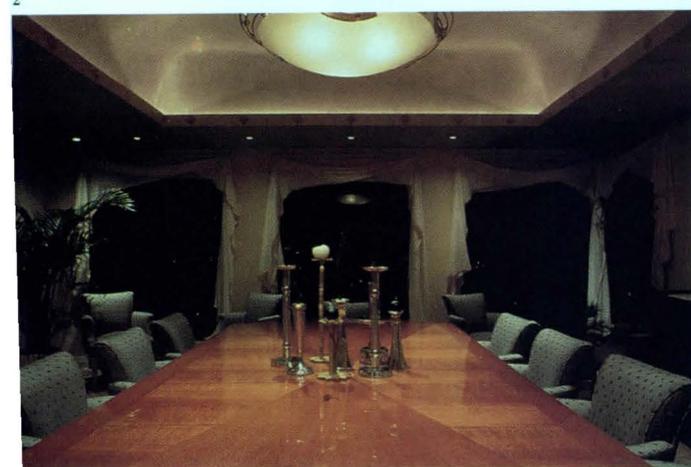
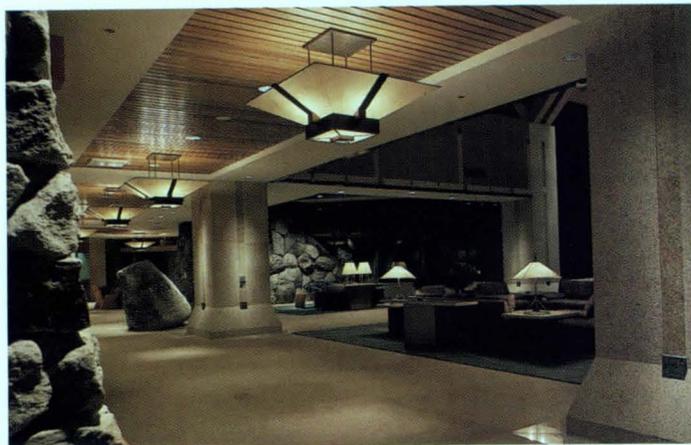
There are three primary reasons why it's important to use decorative lighting properly:

- **Style or Motif.** Probably the most straightforward reason for using ornamental and decorative lighting today is to provide lampholders that appropriately complement the architectural design. A modern Italian pendant, for instance, is appropriate in a dining room with black lacquer or glass-top furniture; a crystal chandelier of traditional design, however, suits a paneled dining room with an early American influence.

- **Visual Cues.** A "visual cue" communicates a specifically desired thought or response through a design element. Decorative lighting is especially good for this. For instance, we use traditional chandeliers and sconces to communicate a sense of formality, using them in foyers, hallways, and dining rooms—and seldom elsewhere. We often use lights outdoors to delineate a pathway.

- **Cultural Standards.** There are some things we do simply because they seem "right." For instance, it seems we always have a chandelier

*Decorative lighting fixtures are the jewelry of architecture. The glass and brass pendants (1) not only add up- and down-light to the space, but also complement its architectural theme. Likewise, the glass chandelier (2) is appropriate for the traditional dining room, and the slumped-glass dome (3) in context for the contemporary one.*



*Photos courtesy of Luminæ Souter Lighting Design*

over the dining-room table, and a table or swing-arm lamp on both sides of a bed. Naturally, these things vary from place to place so it's important to be consistent with the norm wherever you are.

### **The jewelry of architecture**

These qualities are analogous to wearing jewelry. Just as jewelry sparkles and glows, catching the eye as the brightest element in the environment, so decorative lighting does for architecture.

Jewelry is used in many the same ways as lighting: style, visual cues, and cultural standards are especially obvious in its wearing. If the lighting designer understands this relationship, he or she will appreciate the uses and restraint necessary for ornamental and decorative lighting. In particular, ornamental lighting, like jewelry, can be as inappropriate in a design contextually as pop jewelry is with formal evening attire. Common errors in decorative-lighting design include wrong style, too many fixtures, fixtures too small or too large, and the opposite: failure to use decorative lighting when it is called for.

### **Special design problems**

Decorative-lighting is distinguished by being completely exposed, limiting photometric control options. In fact, most decorative lighting does a poor job of distributing light. Designers must deal with these weaknesses in applications.

By far the most common problem is that decorative light fixtures emit diffuse light, which produces uncomfortable glare and flat, uninspiring illumination. Some decorative lighting utilizes point sources like clear incandescent lamps to achieve sparkle but, conversely, also create glare.

Decorative-lighting fixtures often can't accommodate optical systems designed to improve light quality. The need to glow evenly or to sparkle in a certain way is the essence of decorative lighting; but introducing glare-control hardware often defeats the appearance of the fixture. Only a few designers of modern fixtures employ state-of-the-art optics. Most modern fixtures, especially European, and virtually all traditional fixtures, are glare-bombs.

To counteract the poor qualities of decorative lighting fixtures, the designer must employ other light sources. Downlights, accent lights, cove lights, wallwashers, or other luminaires are necessary to create an attractive, well-lighted environment.

### **Lighting by layers**

In the basic layering approach, the designer composes a visual hierarchy in which brightnesses are ranked. For instance, the

*Flat walls and ceilings seem ordinary and uninspired. Breaking up planes, adding coves, coffers, and recesses, and accenting them with light creates drama and adds interest.*

fixture may be brightest, followed by the walls, then the ceiling, and finally the floor. Such a concept suggests significant use of wallwashing in the overall design.

Another way to imagine layering, however, is in footcandle levels. For instance, in designing hotel function space, a typical layering scheme might be:

Chandeliers and sconces .....	10 fc
Downlights .....	10 fc
General illumination (cove) .....	30 fc

When needed, all lights on will produce 50 fc of illumination, which is the maximum illumination needed in many major hotels. Moreover, the design will yield an attractive, well-balanced space which, through the use of direct and indirect illumination, is relatively immune to the choice of decorative lighting. No matter what the interior designer chooses, the space will work.

Illusion is the process of using a decorative luminaire, such as a chandelier, while uplighting the ceiling from a concealed source, usually a cove. The balance of brightness mitigates any potential glare from the chandelier, and offers considerably more illumination potential. By adding small-aperture downlights, an object below—a table centerpiece, for example—can be made the brightest object in the composition. This is often desirable in the highest quality spaces.

The lighting designer can use computer programs to help develop these visual hierarchies. By predicting the various surface brightnesses of the room, the designer can be assured that the composition is correct. A perspective illustration of the effects of the various lighting elements will dramatically reveal the design's results. Note that advanced knowledge of computer-aided-design skills will probably be needed here: most decorative lighting doesn't have photometric data, so you will need to simulate the decorative lighting somehow.

#### **Designing the ceiling**

Particularly with chandeliers and pendants, the ceiling design is critical. Flat ceilings offer little opportunity for illusory design tactics, such as cove uplights. Lighting designers often need to prod the architect into multiple planes and levels.

The coffered ceiling is an especially good way to conceal other sources while showcasing a chandelier or pendant. Cove lighting, with either modular incandescent in residential or dining areas, or fluorescent in hotel or office lobbies, generally guarantees the chandelier will not be too bright. Dimming both systems allows the user to balance them.

When the depth for coffering isn't available, consider breaking up the ceiling plane with moldings, steps, and soffits. Moldings, for example, will pick up a shadow line exaggerating the change in plane height. Cornices and crown moldings contribute a margin of additional elegance, and can be illuminated by the uplight component of a sconce.

#### **Designing the wall**

Like flat ceilings, flat walls seem ordinary and uninspired. Changes in plane and shape make walls more interesting; accenting the changes with light creates drama and interest.

While wall sconces and brackets seldom dramatize walls, their role as wall ornament is essential. To look best, sconces should be mounted two-thirds of the way up from the floor, adjusted according to the design of the wall itself. Designers should take care that sconces are not mounted too low, or visible from an unflattering angle. Many open-top sconces mounted in stairs or atria have their "guts" visible from above.

Sconces can also be used in conjunction with an architectural wall feature, such as a pilaster or niche, to play a significant role in architecture. Such designs show the integration of lighting design into the architecture, an indication of a true "meeting of the minds."

#### **Light sources**

There is almost no limit to the lighting that can be used in decorative and ornamental lighting. From candles and gas to most types of electric lamps, sconces and chandeliers can be designed and specified to meet the need. There are, however, a few special considerations:

- *Incandescent.* This is most common source for decorative lighting and is the easiest to use. It is inexpensive and has excellent color rendering. Remember that incandescent lighting is the least efficient light source, other than open flame, and tends to produce relatively hot lighting equipment.
- *Fluorescent.* Surprisingly, fluorescent lamps have become exceptionally useful in decorative and ornamental lighting, especially through the use of compact twin and quad lamps and high-powered biaxial twin-tube lamps. Although expensive to dim, fluorescent sources offer high energy efficiency and cool operation.
- *HID.* A few standard indoor products are available in metal halide; a number of attractive outdoor luminaires are sold in metal halide or HPS. The biggest drawbacks to the use of HID lamps in decorative lighting are generally ballast size and noise. Remote ballasting is

*The ballroom below is an example of a layered approach to lighting the space. While the decorative chandeliers and sconces glow, providing visual accents and symbolically lighting the space, most of the ambient light comes from less noticeable recessed downlights, wall washers, and cove lighting (drawing).*

preferred. Compact HID lamps and solid-state HID ballasts can help solve problems when integral ballasts are used.

- *Neon.* If a designer wants it badly enough, neon's many problems can be overcome.

**Codes**

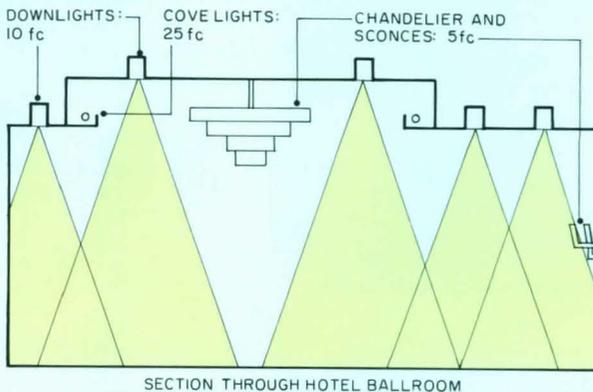
The Americans with Disabilities Act (ADA) requires building owners to upgrade facilities, and in lighting the major concern is lighting-fixture height in exit corridors. The maximum projection from the wall allowed is 4-in. when mounted below 7 ft. Unfortunately, most sconces exceed this. This same requirement has for some time been part of several life-safety codes, but most designers and inspectors weren't particularly concerned. With ADA, many new compact fluorescent sconces with less than 4-in. projection are already on the market.

The flexibility of light source (incandescent, fluorescent, etc.) is an advantage of decorative lighting in the rapidly changing world of energy codes, too. The 1992 California Title 24 limitations are fairly strict, and many hotels which were exempt from Title 24 from 1987-1992 will now be governed. A lot of decorative lighting will be permanently converted to compact fluorescent to help meet the code in remodel work, and there will be a lot of compact-fluorescent sconces and chandeliers in new designs.

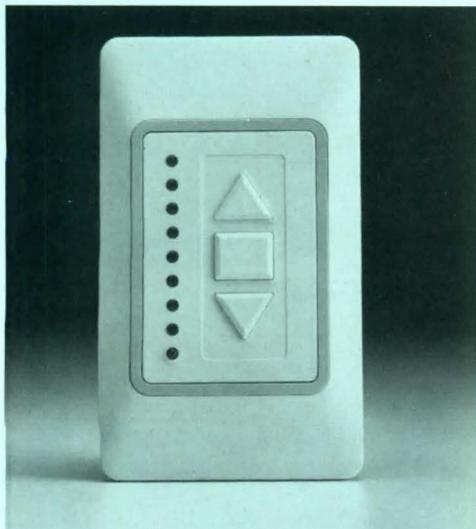
**Costs**

Because decorative and ornamental lighting is seen as frivolous by many building owners, its cost is an issue. The implied elegance of a chandelier makes it vulnerable to downgrading during project budget management. Even in hotel projects, where the appearance of decorative lighting is essential, owners and interior designers shop for competitive pricing and accept substitutions, such as brass-plated sheet metal in place of solid brass.

But because it is "jewelry," decorative and ornamental lighting is spared the budget ax in many projects. It is important that the owner recognize a building must wear jewelry appropriate to its attire—a gold medallion can ruin the look of even the best tuxedo. ■

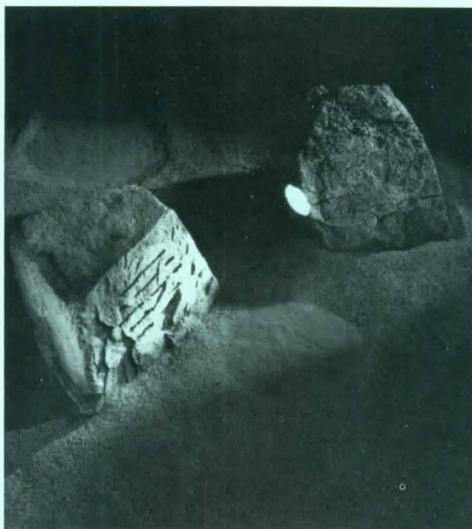


## New Products



### 315. Low-voltage dimmer

The Impressions line of styled switchplates and outlet boxes now includes slide- and three-key touch dimmers for control of low-voltage lighting on magnetic transformers. The three-key dimmer (pictured) is capable of multilocation dimming from up to six positions. Devices come in five colors, with 16 plate and trim-ring combinations possible. Pass & Seymour/Legrand, Syracuse, N. Y.



### 316. Garden-path lighting

Designed to be inconspicuous while providing low-level illumination outdoors, the Trail Lite Rocker has a 20W low-voltage halogen source that casts a 40-degree beam up to 10 feet. Its realistic "stone" housing is described as lawnmower- and puppy-proof. Matching sound-system speakers available. OWI Incorporated, Compton, Calif.



### 317. Low-ceiling indirect

A slim, 2-in.-high ring almost 30-in. across, the Options pendant offers a new mounting method: four stainless-steel wires suspend the fixture so that it looks as if it were floating. An optional acrylic lens, available in different shapes and colors, shields the twin-tube fluorescent lamps. SPI Lighting, Mequon, Wis.



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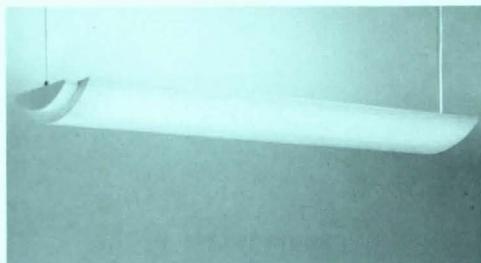
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### 318. New fiber, new optics

A pioneer in architectural applications of fiber-optic lighting has developed a high-density, twisted bundling technique for individual fiber-optic strands. Called BritePak, it's said to yield double the brightness levels of other tubing. Also shown above is a much-more-powerful fiber-optic illuminator, the 501, which can be wired for line voltages from 100 to 277 volts. Listed for damp-location use, the illuminator takes a proprietary 400W HID lamp from Osram, and a patented integral reflector, to generate light 30 times brighter than the maker's original light source. BritePak fiber-optic cable, illuminated by the 501 fixture, is said to be as bright as neon but use less than half the energy. Fiberstars, Inc., Fremont, Calif.



### 319. Skinny

Another in a line of linear-indirect luminaires for the VDT-intensive office, The Classica is a small-scale fixture only 3 1/2-in. deep by 13-in. wide, with illuminated perforated sides that make it look even slimmer. Its reflector system is said to produce low ceiling brightness with widespread light distribution. Available in 4- and 8-ft lengths, the fixture takes 2, 3, or 4 T8s, or 2 or 4 40W compact-fluorescent lamps. Litecontrol Corp., Hanson, Mass.

*Continued on page 59*

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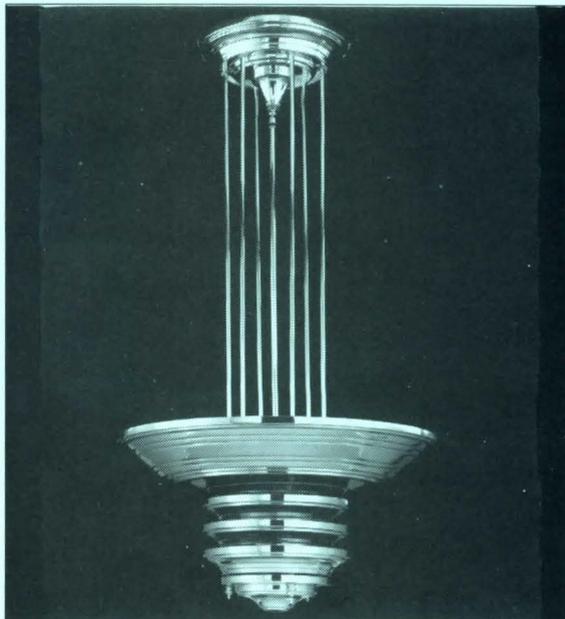
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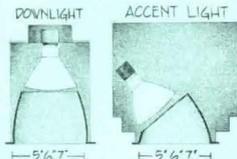
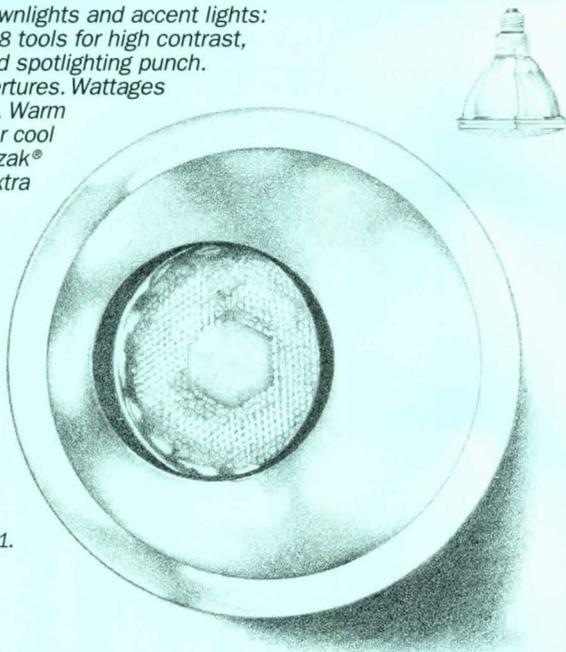


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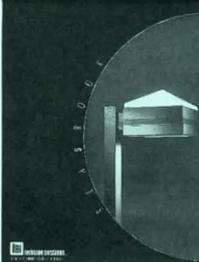


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## Product Literature/Lighting



### 424. Architectural site lighting

A new fixture, the Seabrook pole-mount luminaire, offers design options that coordinate area lighting with a project's overall concept: a solid or translucent pyramidal top; a cast-acrylic band that can glow like neon; and paint-finish and decorative-stripe choices in over 15 colors. LSI Lighting Systems, Cincinnati.



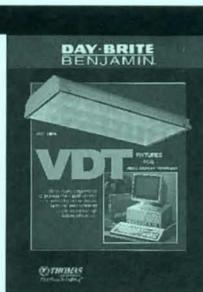
### 425. Industrial high-bay fixtures

Described as traditional, functional lighting for industry, the new Balla Hi Series 4000 is suggested for ceiling heights of from 15 to 90 ft. Spun aluminum and prismatic-glass reflectors are said to provide optimum light distribution from a range of HID sources. Spero Electric Corp., Cleveland.



### 426. Parabolic task light

Louver control of light from an 18W compact source is said to eliminate direct glare for both user and co-workers. A new mounting option, the Hangtight bracket fits into, or spans between, the slotted channels of wall-panel systems. This frees desk space and puts the swing-arm light exactly where needed. Dazor Manufacturing Corp., St. Louis.



### 427. VDT illumination

Said to provide the visual comfort required for video-display-terminal environments while maintaining high fixture efficiency, VDT Ultra (large-cell) fixtures meet new I. E. S. maximum-brightness standards. A specification folder includes product photos and photometric data, and gives tips on VDT-office lighting. Day-Brite/Benjamin, Tupelo, Miss.

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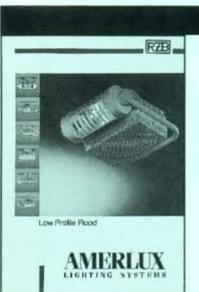
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### 428. HQI wide-beam floodlight

Low-profile display fixtures, made by RZB in Germany, have been designed to make best use of Osram's HQI-TS metal-halide lamp. Fully adjustable lamp cylinder and ballast housing are separate-but-connected, within one compact, perforated-metal unit. Amerlux, Inc., Fairfield, N. J.



### 429. Fluorescent controls

Equinox is a modular, integrated system that controls compatible electronic dimming ballasts. Working from user presets for effective lighting levels, it automatically (and smoothly) adjusts dimming in response to photocell direction. Lithonia Control Systems, Decatur, Ga.

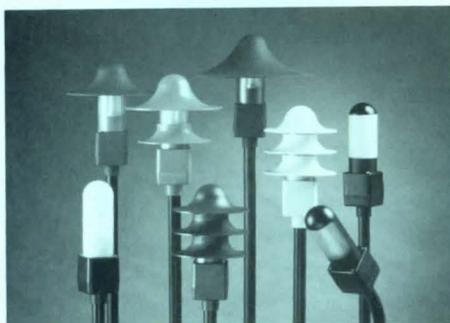
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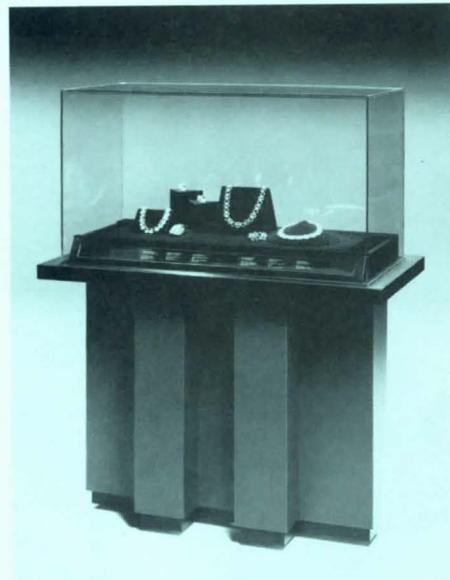
## New Products

continued from page 57



### 320. Fluorescent landscape lighting

Scapeform fixtures use twin- and quad-tube compact-fluorescent lamps, with colorful (red, black, two greens, yellow, white) shades in several configurations. Most parts are made of molded polycarbonate described as virtually unbreakable. Line connections are made in the wiring compartment, so lights don't need a junction box or ground wire. W. F. Harris Lighting, Inc., Monroe, N. C.



### 321. Museum-quality illumination

An Austrian firm famous for crystal has developed a display-lighting system, originally for its own traveling collection of antique jewelry, but equally suited to UV-free illumination and safekeeping of fragile, light-sensitive objects. The SwaroLite showcase, thermally separated from the light source, has a reflective-glass "ceiling" that bounces light from fiber-optic elements hidden in its base. Cool halogen light, introduced invisibly from multiple points, can be aimed to spotlight individual elements (and backlight captions) without glare or shadows. D. Swarovski & Co., New York City.  
Continued on page 60

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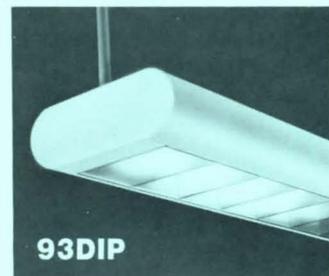
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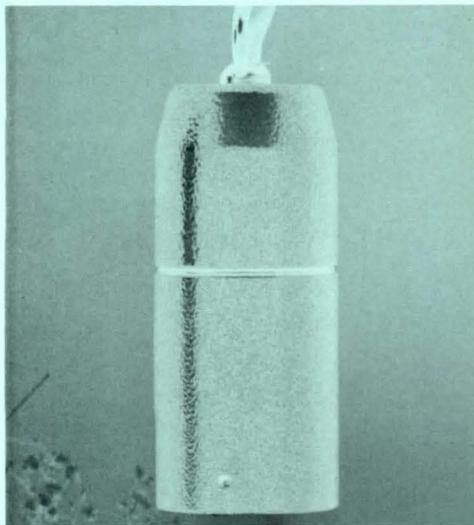
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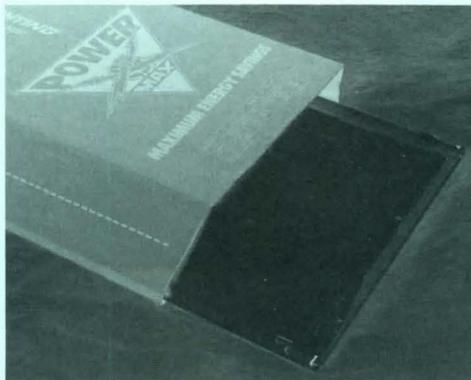
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**322. Branch-hung downlight**

Designed by Hiroshi Kira, a hanging light shaped like a temple bell gives downlighting and area illumination, and is said to be simple to install in trees or from overhangs. Takes MR11s and other low-voltage lamps; comes in black, bronze, and verde powder-coat finishes, as well as custom colors. Lumière Design & Manufacturing, Inc., Westlake Village, Calif.



For more information, circle item numbers on Reader Service Cards.

**323. Troffer retrofit**

The PowerMax, a three-lamp, one-electromagnetic-ballast fixture, replaces almost any four-lamp, two-ballast troffer in general-purpose commercial, industrial, and institutional settings, fitting within the existing luminaire's footprint. Fixtures are said to offer substantial annual operating- and maintenance-cost savings while meeting current I. E. S. recommendations for 50 to 70 maintained-fc on the work surface. Lithonia Lighting, Conyers, Ga.



**324. Interior/exterior collection**

Geoform is a new collection of weatherproof wall-mount lighting that offers a wide range of trim, lamping, diffuser, and size options within a coordinated housing style. The Geo 4 (pictured) has a gently radiused, square-shaped glass diffuser held by aluminum bands. LBL Lighting, Chicago Heights, Ill.

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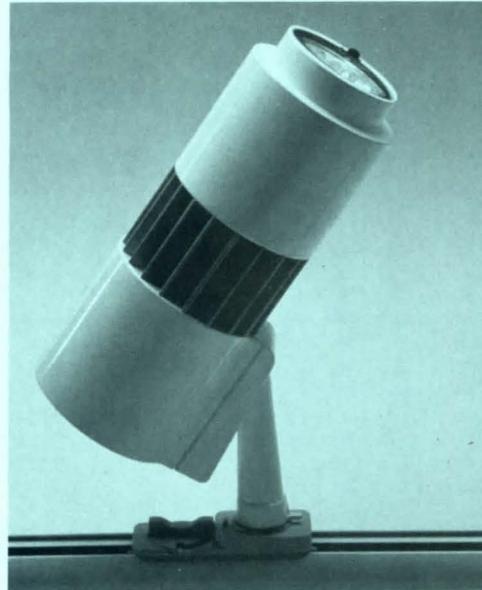


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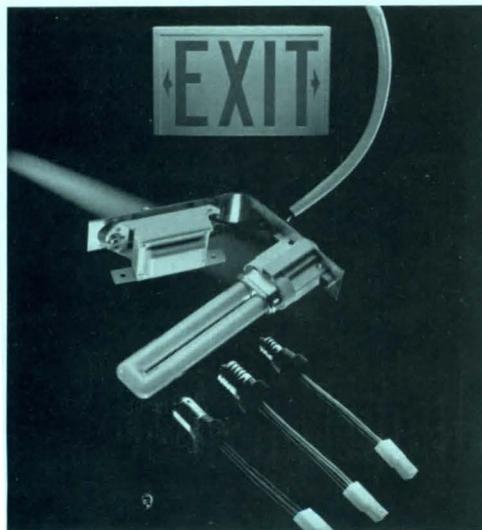
## New Products

continued from page 60



### 325. MR16 spotlights

The Eidos 2100 is said to be particularly effective in dissipating heat generated by low-voltage lamps, insuring maximum lamp life and cool, quiet operation of the enclosed toroidal transformer. For wall-, ceiling-, and track-mounting, the spotlight comes with a full range of accessories such as framing projectors. Reggiani USA, Inc., New Windsor, N. Y.



### 326. Exit-light retrofit kit

A new kit permits the replacement of standard AC incandescent lamps in existing exits with compact-fluorescent lamps, without the cost of completely replacing the old exit fixtures. It includes one 120 VAC ballast/socket bracket, a 7W twin-tube fluorescent, and three types of connectors. Retrofit kit meets UL 924 visibility requirements. Sure-Lites, Elk Grove Village, Ill.

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Traditional track lighting has cost time and money.

- Requires ladders, gloves and maintenance people.
- Requires after-hours adjustment and possible overtime for employees.
- Ladder-related costs include broken merchandise, overturned displays, damaged sprinkler heads.
- Employee-related costs include ladder, fixture and lifting injuries.
- Major difficulties revising displays and redirecting lighting.

That, however, is history...

## Product Literature/Lighting



### 430. Occupancy-sensing controls

A brochure on low-profile InSight devices explains how an integral photocell measures available natural light, restricting electric lighting if there is sufficient ambient illumination. Both ceiling- and wall-mount units permit the user to adjust field-of-view and sensitivity features. Lightolier Controls, Secaucus, N. J.



### 431. Computerized control panel

ControlPlus contractor panels are said to be flexible, programmable, and inexpensive, for use where master control of connected loads must offer both local/manual and central/automated switching functions. Offers priority inputs for occupancy sensors. Touchplate Lighting Controls, Fort Wayne, Ind.



### 432. Track lighting

A 66-page, full-color track-lighting catalog introduces the Axis retail system, which lets store personnel easily adjust the aim of accent and display-window lighting from the floor, without ladders. Incandescent, fluorescent, and low-voltage fixtures are featured in installation photos. Capri Lighting, Los Angeles.



### 433. Energy-efficient ballasts

A 58-page catalog presents a complete line of ballasts and related equipment for both fluorescent and HID lamps. A selection guide highlights ballasts that meet all federal energy requirements; certifications, approvals, and electrical data are given for all products. Valmont Electric, Danville, Ill.



### 434. Efficacious

Folder on the TL80 System explains how the thin TL 80 linear-fluorescent bulb, combined with electronic ballasts, provides total-system efficacies up to 94 lumens per watt. Case studies demonstrate how the bulb/ballast system improved lighting quantity and quality while reducing the energy load. Philips Lighting Co., Somerset, N. J.



### 435. Discrete flood

A color catalog introduces the Micro-Flood, said to offer startling performance from an ultra-compact (5 1/2-in. long) unobtrusive yet decorative package. Available in both 120- and 12-volt versions; options include verde, bronze, or black finishes, fixed hood, and barn doors. Kim Lighting, City of Industry, Calif.

*Continued on page 63*

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## Product Literature/Lighting



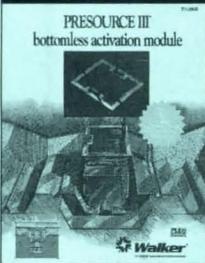
### 436. Energy-saving controls

The Bi-Level high/low HID lighting control now uses fiber-optic technology, which requires no conduit and carries no voltage or current. The switching system is said to be simple to retrofit into existing distribution and warehouse facilities without re-wiring. Wide-Lite, San Marcos, Tex.



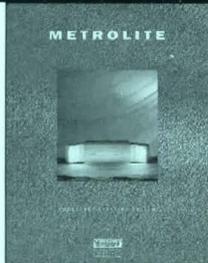
### 437. Historic luminaire

Tech-data folders highlight new outdoor-lighting designs, including the cast-aluminum Blackrock luminaire, developed for the historic waterside district of Bridgeport, Conn. Built to resist vandals and high wind loads, the pole-top light has a distinctive marine flair. TrimbleHouse, Norcross, Ga.



### 438. Economical distribution

The Presource III bottomless activation module is said to combine the triple-service (voice/data/power) capacity and clean appearance of an in-floor service fitting, with the ease-of-use and lower cost of a poke-through device. UL-listed; includes carpet trim ring. Walker, Infloor Distribution, Parkersburg, W. Va.



### 439. Emergency lighting

Battery-operated fixtures have sleek FR-polycarbonate lampheads set on a steel mounting plate. Offered in both battery-pack and remote lamphead configurations, the Metrolite tungsten-halogen fixture line offers a minimum of 90 minutes emergency illumination at 24W load. Yorklite Electronics, Inc., Bensalem, Pa.



### 440. Infrared lighting control

A color brochure on the RanaX infrared wireless remote light dimmer explains the hand-held transmitter/wallbox receiver system, and suggests residential and office applications where remote operation of lighting offers convenience and safety. Lutron Electronics Co., Inc., Coopersburg, Pa.



### 441. High-bay luminaire

Said to be more than 83 percent efficient (3-percent uplight) Endura-lume V HID fixtures meet lighting requirements in industrial, commercial, and educational applications. A white-finished reflector and prismatic glass or plastic refractor permits wide spacing with uniform illumination. Holophane, Newark, Ohio.  
*Continued on page 65*

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## Manufacturer's Sources

*For your convenience in locating fixtures and other products shown in feature articles, RECORD has asked the architects and lighting designers to identify their sources.*

### Pages 34-37

John L. Tishman Auditorium  
New School for Social Research  
New York City  
Prentice and Chan, Ohlhausen  
Restoration Architects  
Imero Fiorentino Associates  
Lighting Design  
Stage and balcony fixtures: Edison Price.  
Theatrical lighting: Altman Stage Lighting.  
Control system: Colortran.

### Pages 38-39

One Montgomery Street  
San Francisco  
Luminae Souter, Lighting Design  
HID floodlights: Sterner Infranor. HID  
uplights: Custom, fabricated by Eric Industries. HPS sources: General Electric.  
Incandescent downlights: Staff. Wall-wash  
fixtures: Kurt Versen, Inc. Controls: Lutron.

### Pages 40-43

Arizona Center  
Phoenix, Arizona  
ELS/Elbasani & Logan Architects  
Fisher Marantz Renfro Stone,  
Lighting Design  
Palm-tree lighting: Lightolier, Inc.; Lumière.  
Canopy lights: Kim Lighting. Custom lighting on fabric canopy: Architectural Fabricators. Waterfall lighting: Hydrel.  
Custom handrail/bollards: Reppel Steel.

### Pages 44-45

Resurgens Orthopaedics  
Atlanta, Georgia  
Farrington Design Group, Architect  
Newcomb & Boyd Lighting Design Group  
Wall sconces: Artemide (Sintesi). Track  
downlights: Lightolier. Low-voltage track  
uplights: Halo.

### Pages 46-51

Fifth Floor Adaptive Use/Restoration  
New York State Education Building  
Albany, New York  
Einhorn Yaffee Prescott, Architect  
Lam Partners Inc., Lighting Designer  
Modified industrial fluorescent uplights:  
C. J. Lighting. Fluorescent cove lighting:  
Litecontrol. Metal-halide uplights: Lam.  
Sconces: Ruud. Downlights: Kurt Versen.  
Furniture-integrated lighting: SPI. ■

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## Product Literature/Lighting

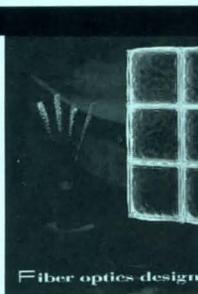


### 442. Halogen-lamp guide

A specification kit offers details on this maker's halogen lamps, which include dichroic-mirror MR16s and MR11s and mini-can JD-E halogens. Data are presented in chart form, listing ordering codes, voltage, rated watts, beam spreads, and rated life. Toshiba America Consumer Products, Inc., Buffalo Grove, Ill.

### 443. Exterior lighting

A capabilities brochure highlights various outdoor-lighting product lines, including the Softform, elements, and Classics roadway luminaires, Infranor floodlights, and custom pole-top and area lights from Sterner, as well as LightNET control systems. Sterner Lighting Systems, Inc., Winsted, Minn.

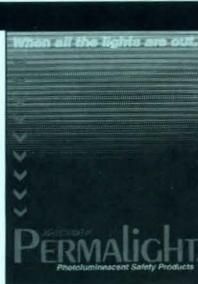
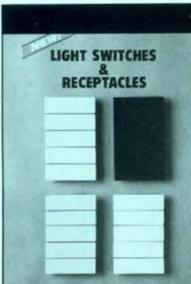


### 444. Halogen downlight

A brochure describes the 1-in.-deep Puklight as perfect for areas with limited space, such as shelving, wall units, and display cases. UL listed, the low-voltage light has a twist-on glass lens; offered in matte white and black, satin brass, and satin chrome finishes, it may be recessed or surface mounted. Lucifer Lighting Co., San Antonio, Tex.

### 445. Fiber-optic display

New FOD 232 fiber-optic cable, with tangle-resistant fibers bound in a block jacket, facilitates some architectural lighting installations, such as inserting light into solid-surface backsplashes and counters, and illuminating glass block. A brochure suggests other retail and residential uses. Fiber Optics Design, Inc., Highland Park, Ill.



### 446. Switches and receptacles

Flat, colorful piano-key-like switches fit any standard outlet box, and include the wall plate as part of the listed device. Made in Florida, switches are said to be competitively priced. U. S. Switch, Inc., Miami.

### 447. Escape-route markings

Photoluminescent directional markings and signage remain visible in smoke and/or dark conditions, helping emergency building evacuations even when power is cut. Coatings and resin castings need minimal maintenance, only periodic exposure to a sufficient light source. American PermaLight, Inc., Compton, Calif. ■



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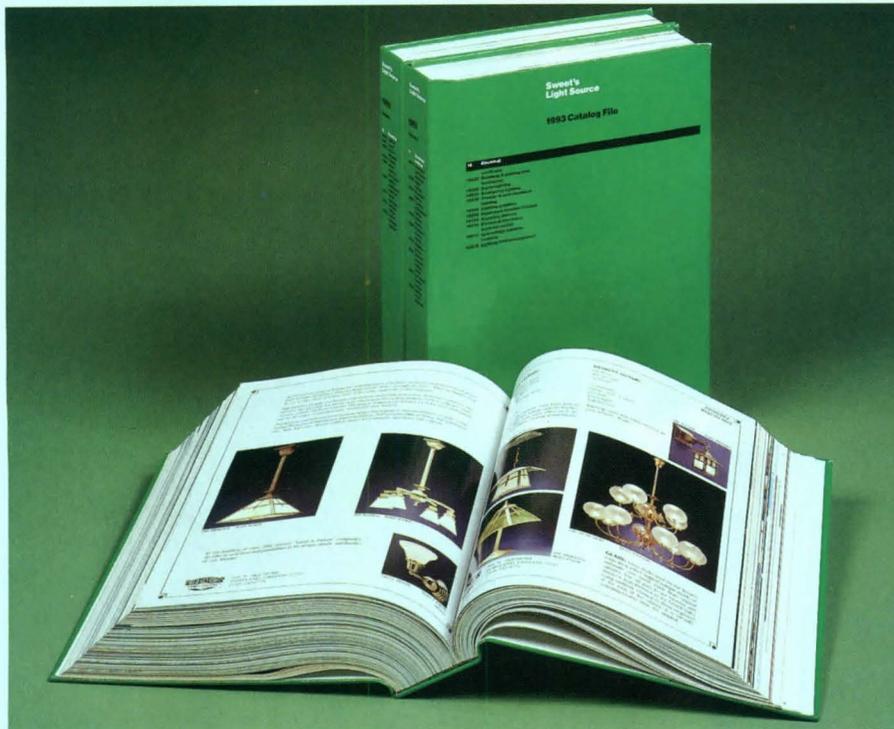
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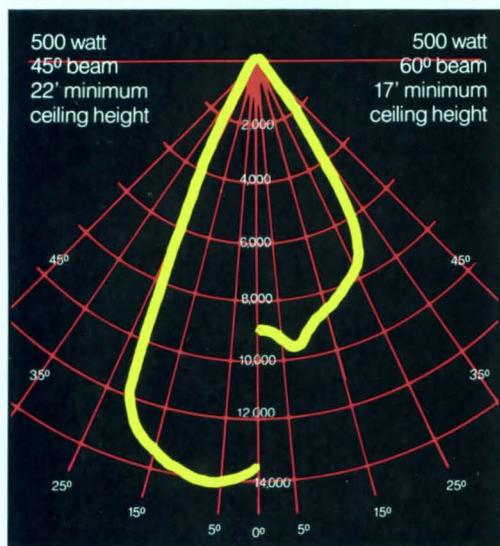
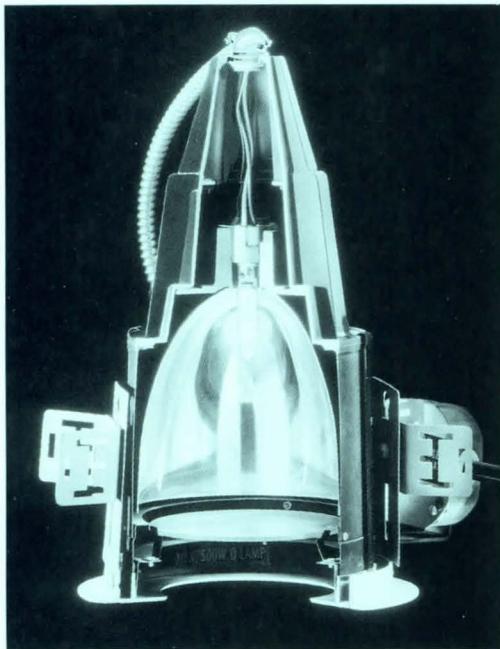
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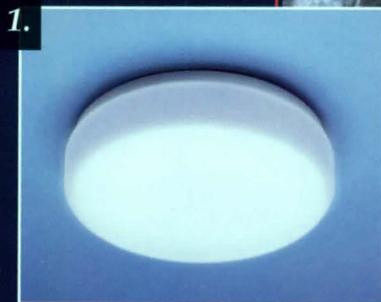
*Spanning environments both commercial and residential, this collection premieres the next generation of energy saving lighting technology.*

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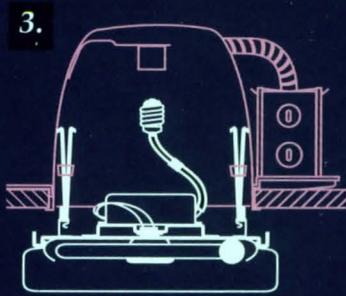
*Above: Recessed fixtures utilizing either regressed black baffle, or specular reflector.*

*Right: Dramatic suspended 2D lighting*



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