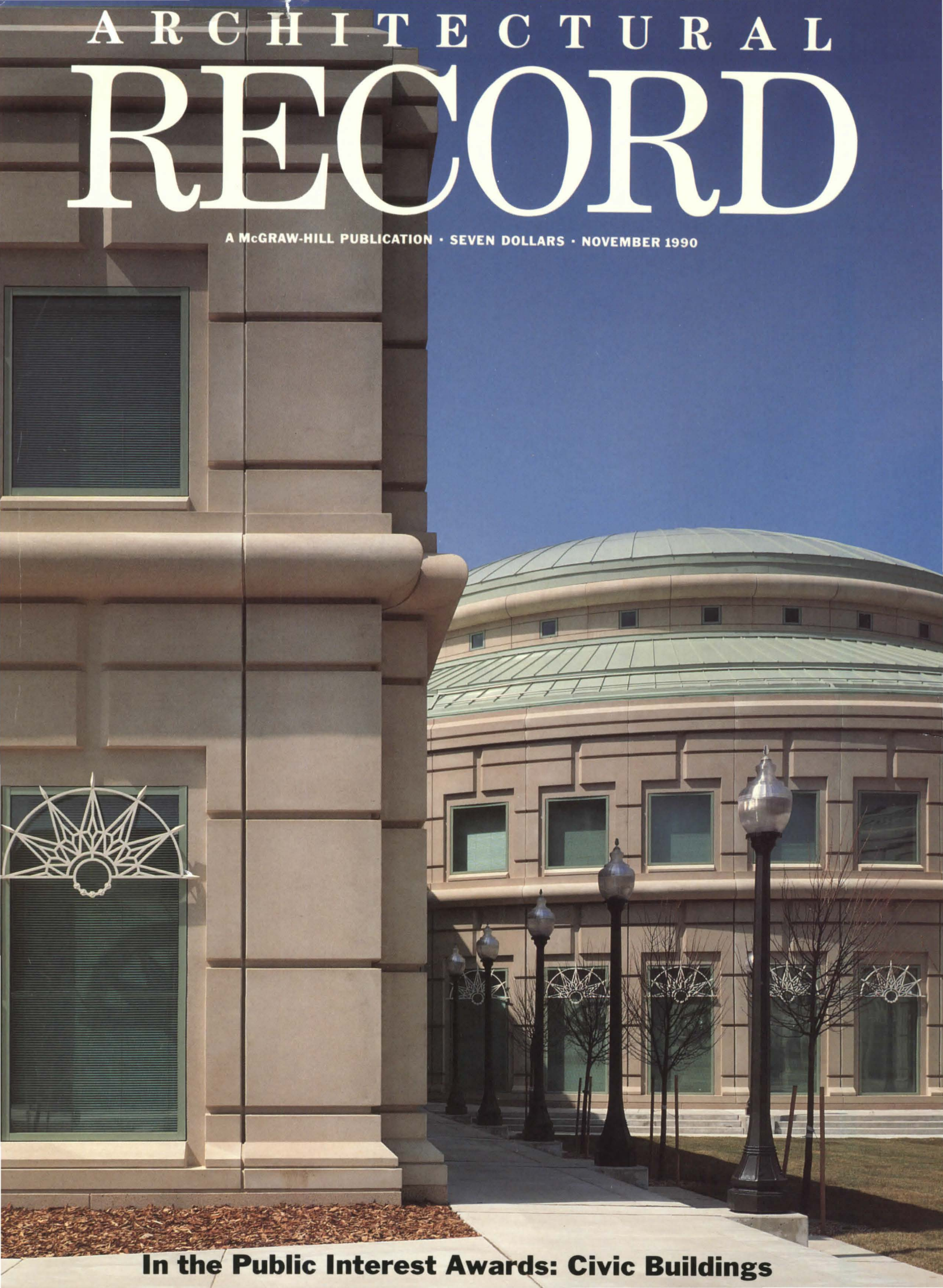
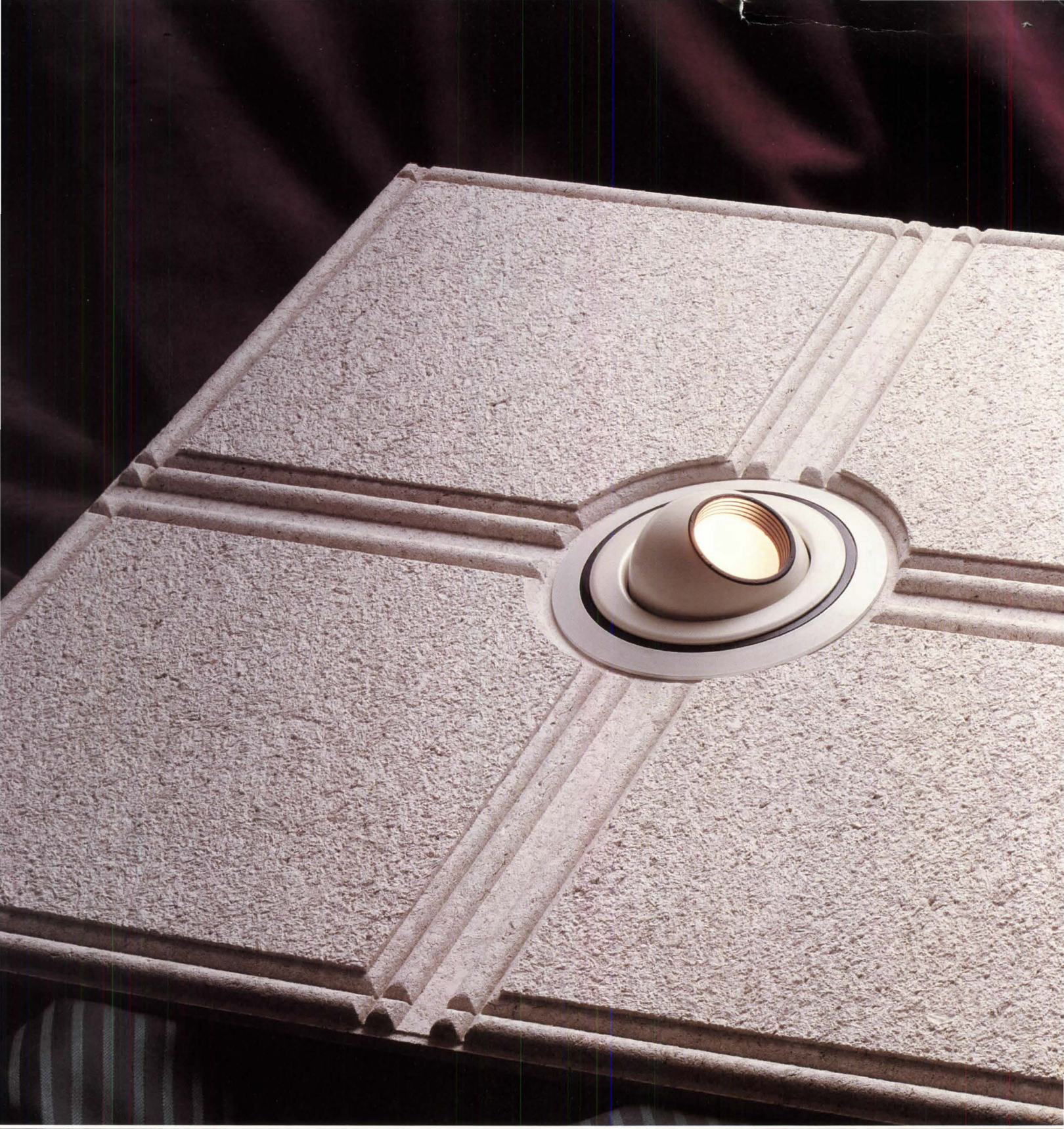
ARCHITECTURAL RECORD

A McGRAW-HILL PUBLICATION · SEVEN DOLLARS · NOVEMBER 1990



In the Public Interest Awards: Civic Buildings



A CUT ABOVE.

Only Cirrus® Hardware Friendly ceilings match edge detailing around lights, HVAC fixtures and grilles.
These made-to-order openings give you more control over the installation's final look.
They're available in sizes from 3½" to 16".
For more information, call 1 800 233-3823 and ask for Cirrus Hardware Friendly.

ARMSTRONG CONTRACT INTERIORS

SHOWROOMS
NEW YORK
CHICAGO
LOS ANGELES

Armstrong

Circle 2 on inquiry card

ARCHITECTURAL
RECORD

MPA BPA

EDITOR
Stephen A. Kliment, FAIA

MANAGING EDITOR
Carolyn De Witt Koenig

EXECUTIVE EDITOR
Paul M. Sachner

SENIOR EDITORS
Margaret F. Gaskie
Charles K. Hoyt, AIA
Karen D. Stein
James S. Russell, AIA

ASSOCIATE EDITORS
Joan F. Blatterman
Clifford A. Pearson
Peter D. Slatin

EDITORS AT LARGE
Donald J. Canty, Hon. AIA
Grace M. Anderson

EDITORIAL OFFICE MANAGER
Anne S. Ting

DESIGN DIRECTOR
Alberto Bucchianeri

SENIOR ASSOCIATE DESIGN DIRECTOR
Anna Egger-Schlesinger

EDITORIAL PRODUCTION MANAGER
Annette K. Netburn

DESIGNER/PRODUCTION ASSISTANT
Lilian R. Engel

TECHNICAL ILLUSTRATOR
Muriel Cuttrell

CONTRIBUTING EDITORS
David Ballast, AIA; Robert Campbell, AIA; Kristine Fallon, AIA; Peter Piven, FAIA; Norma Sklarek, FAIA

EDITORIAL CONSULTANTS
George A. Christie, Jr., Economics
Steven S. Ross, Computers
Phillip Kidd, Finance
Peter Hoffmann, Washington

CORRESPONDENTS
Aaron Betsky, Los Angeles; Beth Dunlop, Miami; Nancy Levinson, New England; Tracy Metz, Amsterdam; Gerald Moorhead, AIA, Houston; Anders Nereim, Chicago, Naomi R. Pollock, Tokyo

CIRCULATION DIRECTOR
Richard H. Di Vecchio

DIRECTOR OF BUSINESS AND PRODUCTION
Joseph R. Wunk

ADVERTISING PRODUCTION MANAGER
Laura Marchisio

ASSISTANT PUBLISHER/
DIRECTOR OF MARKETING
Elizabeth Hayman

PUBLISHER
Roscoe C. Smith III

Inquiries and submissions of work for publication may be sent to the editors listed below who are responsible for the subject areas named:

Paul M. Sachner, houses
Karen D. Stein, interior design
Peter D. Slatin, design news
Clifford A. Pearson, observations
Charles K. Hoyt, practice
James S. Russell, technology
Joan F. Blatterman, new products

"It's Time . . . " continued

I was greatly relieved to read your editorial ["It's Time . . . ", [RECORD, June 1990, pages 56-57]. It has motivated me to finally put into writing the thoughts and frustrations that have accompanied my practice for the past 15 years.

At the recent dedication of a $23-million Nixon library and museum in Yorba Linda, President Bush referred to the former President as "a true architect of peace." Anchors of nightly news broadcasts and writers of editorials cite Mr. Gorbachev as "the architect of glasnost." They anoint Lech Walesa as "the architect of Polish democracy," and they refer to Abu Nidal as "one of the chief architects of global terrorism."

Politicians and the media apparently love architects. That is, they seem to be enamored with the word "architect" and use it to describe everyone except those actually engaged in building design. The fad is indeed ironic, given the relatively low value our current society places on licensed architectural services. Most clients apparently hire architects because they must, begrudgingly paying commodities prices to professionals who receive training comparable to physicians and attorneys, whose scope of personal liability for errors and omissions can exceed that of physicians or attorneys, yet who are taxed like gardeners and hair stylists and are often regarded by the public as effete, unrealistic eggheads.

The contrast is symptomatic of our profession's inability or unwillingness to control any important aspect of our field. Unlicensed nonprofessionals continue to practice architecture, except where local architects force government regulators to act. Unrestrained competition continues to erode any resemblance of economic profit from architectural firms in all but the best of building booms. The print media continue to publish photographs and articles on architecture without mentioning the architect's name. Private clients and public agencies continue to select architects for their projects by fee alone. Architectural organizations continue their ineffective and futile efforts to influence political and public opinion with inadequate budgets. Architectural awards continue to be bestowed on the basis of novelty, having lost sight of and/or being incapable of judging architectural work by its ability to fulfill its programmatic functions or its capacity to withstand the forces of nature.

What is the most disturbing to me is the apparent apathy of architects. Where are the angry letters to the media? What is the movement to reform the awards procedures? Where is the financial fuel from large architectural firms required to power legislative lobbying efforts? Where is the leadership that is so desperately needed from our professional organizations? How can we remain so infuriatingly complacent when society is told that criminals can be called 'architects?' Why aren't more architects outraged?

If there were easy solutions to these problems, dialogue would not be necessary. It is precisely because these issues are complex and difficult that we need to talk about them. Your editorial "It's time . . . " in the June issue of this journal is an invitation to dialogue that architects cannot afford to ignore. Let's openly debate these important issues now.

ERIC J. OLINER
ARCHITECT
CHESHIRE, CONNECTICUT

RECORD encourages its readers to join the debate. Letters of four paragraphs or less that focus on one or two issues should be sent to the editor. Single copies of the June editorial "It's Time . . . " are available on receipt of a self-addressed stamped envelope.—Ed.

Interior motives

Please accept my kindest appreciation for the beauty and precision with which our project was presented in RECORD INTERIORS, [September 1990, pages 110-116]. I am very fortunate that through the mastery and refinement of your visual craft, I am afforded a forum within which to present mine.

STEVEN FORMAN
ARCHITECT
NEW YORK, NEW YORK

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, and WESTERN ARCHITECT AND ENGINEER) (ISSN0003-858X/90) November 1990, Vol. 178, No. 12. Title ® reg. in U. S. Patent Office, copyright©1990 by McGraw-Hill, Inc. All rights reserved. Indexed in Reader's Guide to Periodical Literature, Art Index, Applied Science and Technology Index, Engineering Index, The Architectural Index and the Architectural Periodicals Index.

Every possible effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

Executive, Editorial, Circulation and Advertising Offices: 1221 Avenue of the Americas, New York, NY 10020.

Officers of McGraw-Hill, Inc: Chairman, President and Chief Executive Officer: Joseph L. Dionne. Executive Vice President, General Counsel and Secretary: Robert N. Landes. Executive Vice President: Walter D. Serwatka. Senior Vice President, Treasury Operations: Frank D. Penglase. Senior Vice President, Editorial: Ralph R. Schulz.

Associated Services: Sweet's Catalog Files (General Building, Engineering, Industrial Construction and Renovation, Light Residential Construction, Interiors), Dodge Reports and Bulletins, Dodge/SCAN Microfilm Systems, Dodge Construction Statistics, Dodge regional construction newspapers (Chicago, Denver, Los Angeles, San Francisco).

Subscription rates for personnel of Architectural, Engineering, Interior Design, Design and other directly related firms and students thereof, are as follows: U. S. Possessions and Canada $42.50; Europe: $150.00 (including Air); Japan: $160.00 (including Air); all other Foreign: $125.00.
Single copy price for Domestic and Canadian: $7.00; For Foreign: $10.00. For Subscriber Services: 609/426-7070.
Publisher reserves right to accept or reject any subscription.

Change of Address: Forward changes of address or service letters to Fulfillment Manager, ARCHITECTURAL RECORD, P. O. 566, Hightstown, NJ 08520. Provide both old and new address; include zip code; if possible attach issue address label.

Guarantee: Publisher agrees to refund that part of subscription price applying to unfilled part of subscription if service is unsatisfactory.

Copyright and Reprinting: Title ® reg. in U. S. Patent Office. Copyright©1990 by McGraw-Hill, Inc. All rights reserved. Where necessary, permission is granted by the copyright owner for libraries and others registered with the Copyright Clearance Center (CCC) to photocopy any article herein for personal or internal reference use only for the base fee of $1.50 per copy of the article plus ten cents per page. Payment should be sent directly to the CCC, 27 Congress Street, Salem, MA 01970. Include code with request: ISSN0003-858X/90 ($1.50 + .10). Written permission must be secured for any other copying. Write Reprint Manager for such permission at address below, or to obtain quotations on bulk orders.

Subscription List Usage: Advertisers may use our list to mail information to readers. To be excluded from such mailings, subscribers should send a request to ARCHITECTURAL RECORD, Mailing List Mgr., P. O. Box 555, Hightstown, NJ 08520.

Publication Office: 1221 Avenue of the Americas, New York, NY 10020.
ARCHITECTURAL RECORD (ISSN0003-858X/90) published monthly by McGraw-Hill, Inc. Second-class postage paid at New York, NY and additional mailing offices. Postage paid at Windsor, Ontario, Canada. Registration Number 9617.

Postmaster: Please send address changes to: ARCHITECTURAL RECORD, Att: Fulfillment Manager, P. O. Box 566, Hightstown, NJ 08520.
THIS ISSUE is published in national and separate editions. Additional pages or separate editions numbered or allowed for as follows:
Eastern Section 32Ea through 32Ef.
Western Section 32Wa through 32Wb.
Northern Section 32Na through 32Nb.

WHAT *IS* GOOD DESIGN?

This first of an occasional series compares fashion and style, and talks about scale.

Any architecture firm off on its annual retreat sooner or later ends up talking seriously about its design esthetic. Some firms' designs are created by a strong design personality; others allow program, site, climate, and context to play a stronger role.

Scale, proportion, materials, color, reflectivity, context, shade and shadow, appropriateness (especially when landmarks are involved), typology, and symbolism of parts—these are the elements of style.

Let us start with style, fashion, and scale.

First, do not confuse architectural *style* with architectural *fashion.* Architectural style is derived from the real needs of a client or society. Fashion is a superficial condition adopted by those anxious to appear elegant or sophisticated. Fashion has a place in hats, dances, and cuisines. These are easy to make, easy to adopt, and easy to drop.

But to think of architecture as fashion is illogical and impractical. With luck it takes three years to take a building from a gleam in the client's eye to occupancy. The building is then (with the possible exception of New York City) with us forever. It must therefore, if it is to be judged as architecture, contain certain attributes that take it out of the realm of fashion and into the realm of style.

One of these attributes is scale. Scale is the relationship of the parts of a building to the whole, and to the human observer. It has nothing to do with size. In the right hands, scale can make a huge building look human, or a modest-sized church look monumental. Scale may be shaped by the size and proportion of openings (even the subdivision of glass panes), the texture and color of facing materials, lighting inside and out, configuration of the roof, spacing and prominence of curtain-wall mullions. An attempt to make an addition to Princeton's Cram-designed graduate school look intimate produced a doll's house effect; making the balusters of St. Peter's great balcony in scale with its monumental facade causes the Pope, whenever he addresses the crowds, to look enormous, by the simple technique of having him mount steps so he can be seen over the top.

One concern of mine and of my fellow editors has been what I can best call an excess of effort poured into design—too many special details, reliefs, notches, too many materials and textures, too many variations in the facade, too many elements vying for attention. Simplicity is the ultimate mark of good design.

In this day and age, when any style goes (Modernism included) and any style is buildable, the architect is forced, every time he/she sits down at the drawing board or CAD terminal, to ask: what *is* good? One guide, as Wright once urged, is to "learn to distinguish the *curious* from the *beautiful.*"

STEPHEN A. KLIMENT

What code officials will be looking up to January 1, 1991.

The new APA-EWS trademark assures that glulams carrying it meet the requirements of ANSI A190-1. And it's backed by more support than you've ever had before:

More scientists and engineers. A 37,000 square foot research and testing facility. Twenty-six experienced field reps. Thirty-one quality auditors in the field. Ongoing, independent product testing.

And an in-house marketing communications staff that maintains, promotes and distributes about a million publications a year.

Specify now.

Indicates structural use: B-Simple span bending member. C-Compression member. T-Tension member. CB-Continuous or cantilevered span bending member.

Mill number.

Identification of standard ANSI A190.1-1983, Structural Glued Laminated Timber.

APA EWS®

USE: B INDUSTRIAL

SPECIES

000-00 00F

0000

ANSI A190.1-1983 NER-QA397

Designates appearance grade. INDUSTRIAL. ARCHITECTURAL. PREMIUM.

Species of lumber used.

Applicable laminating specification and combination.

Code recognition of APA as a quality assurance agency for glued structural members.

American Plywood Association has been providing quality auditing, product testing and marketing for structural wood panels for half a century.

Now, we're doing the same for engineered wood products.

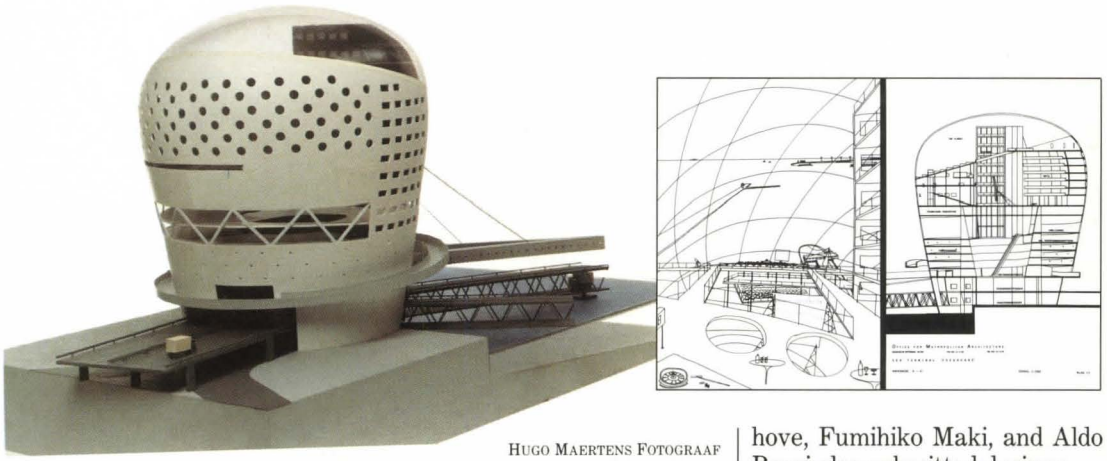
Why specify now? Because after January 1, 1991, you can expect that most glulams will carry this stamp.

For more information on specification and use, write APA-EWS, P.O. Box 11700, Tacoma, WA 98411, FAX (206) 565-7265 or call (206) 565-6600.

Circle 5 on inquiry card

Products bearing the APA-EWS mark are manufactured by members of American Wood Systems, a related corporation of American Plywood Association.

DESIGN NEWS



HUGO MAERTENS FOTOGRAAF

Challenge for the Chunnel

Anticipating the future roar of traffic pouring into Europe through the "Chunnel"—and a possible decline for itself—the Belgian port of Zeebrugge sponsored a competition for the design of a new terminal capable of handling 3 million passengers a year. Dutch architect Rem Koolhaas's design, "A Working Babel," was recently declared the winner, and the project should be completed by 1993. Bob van Reeth, Charles Vandenhove, Fumihiko Maki, and Aldo Rossi also submitted designs.

Koolhaas has given his Babel a silhouette that evokes associations mechanical and poetic: where some observers see a water-worn rock, others speak irreverently of a light bulb.

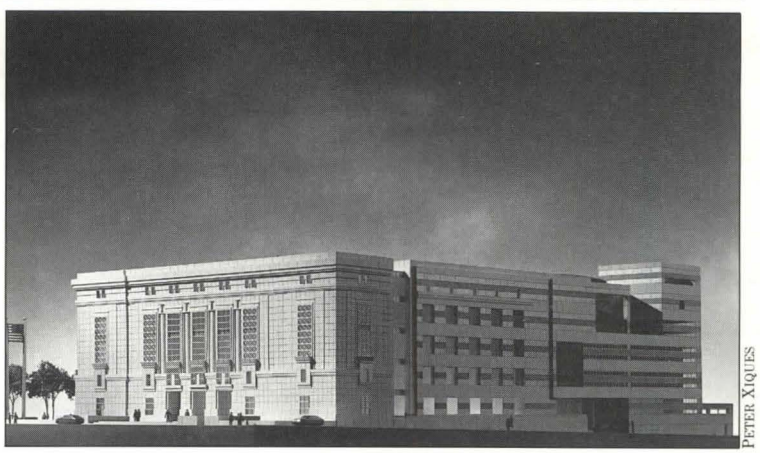
Koolhaas himself describes the shape as a cross between a sphere and a cone, a funnel that absorbs the stream of traffic through its base. The shell is made of poured-in-place concrete and waterproofed with a transparent coating. The coating, reinforced with a thin layer of Kevlar and maintained from within by a slight overpressure (0.1 atm), may also be used to build the cupola.

Above the public hall the architect divides the project's functions vertically, placing an office tower in the middle flanked by a hotel-casino on one side and terminal management offices on the other. A large terrace tops the whole, providing a commanding view of the sea and city below. At night, Koolhaas's Babel should offer visitors to Zeebrugge a glowing beacon. **TRACY METZ**

San Francisco's New Main

Planning is complete for San Francisco's New Main Library, designed by James Ingo Freed of Pei Cobb Freed & Partners, in association with San Francisco architect Cathy J. Simon of Simon Martin-Vegue Winkelstein & Moris. When it opens in 1995, the $95-million, 377,000-square-foot library will complete the city's nearly 80-year-old plans for its Beaux Arts Civic Center.

The New Main is defined, like the old library it will face across the street, by an L-shaped shell clad in granite, glass, and metal. Thirteen bays will mirror its predecessor's facade, while the two bases will form a broken line facing City Hall. The interior, with 190,000 feet of stack space, is organized around a five-story, 60-foot-wide skylit atrium. The most striking feature is a great open stairway, from which most public areas are visible. □



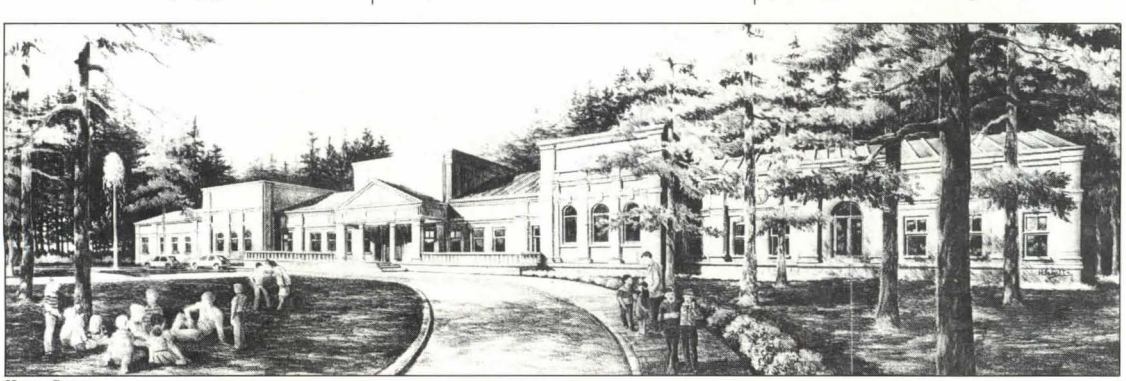
PETER XIQUES

Greenpeace Clinic for Kiev

Although glasnost has spawned any number of joint ventures, one remarkable project in the works is the result of an alliance of Greenpeace and Ukrainian officials with an international building team headed by Anshen + Allen of San Francisco. Their goal is to turn a crumbling schoolhouse in Kiev into an outpatient clinic for the radiation-blasted children of Chernobyl, 60 miles away.

The project was made possible by newly independent Ukrainian officials, who supplied Greenpeace both with the vacant building and labor in exchange for a pledge by Greenpeace to manage the clinic, which will be equipped to handle 20,000 outpatient visits a year.

Desperate for funds—$6 million is needed—and faced with subpar workmanship, damaged materials, and poor construction, the team found fine detailing in plaster, wood, and stone left over from the postwar era. They hope to use these materials in the school's large rooms to whip the clinic into shape for its young constituency. □



HANK SCHULTZ

Metal: The Long Term Solution for School Roofing Problems

School Boards across the country are realizing the long term benefits that standing seam metal roofing systems bring to their school buildings, whether new or retrofit. After a long history of dealing with leaky roofs, they appreciate the water tightness that SSR systems provide. And they appreciate metal's high durability and low maintenance requirements.

Before you make your next School Board presentation, give us a call. As industry leaders, we can share some very helpful information on the many advantages that SSR systems bring to school construction. We also have seminar specialists who would be pleased to work with you on specific presentations.

MBCI

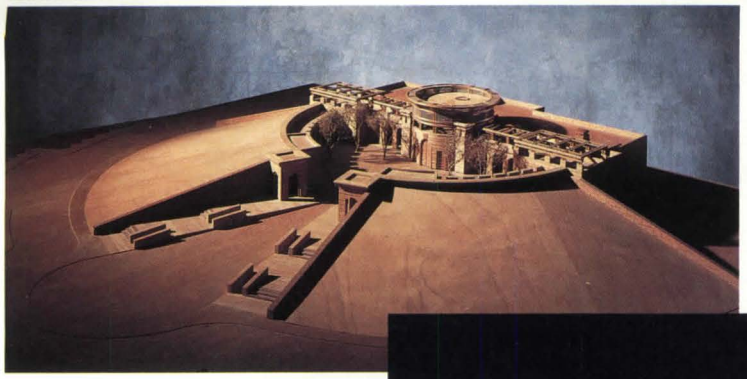
Metal Roof and Wall Systems

Houston 713/445-8555
Lubbock 806/747-4291
Oklahoma City 405/672-7676
San Antonio 512/661-2409
Dallas 214/988-3300
Atlanta 404/948-7568
Tampa 813/752-3474
Richmond 804/526-3375
Indianapolis 317/398-4400

Project: Sharyland I.S.D. Administration Building Renovation Architect: Boultinghouse, Bustos & Associates Roofing Contractor: Bullard Sheet Metal & Roofing Co.
Roofing Material: MBCI's Standing Seam Ultra-Dek 124®, Bare Galvalume

Circle 6 on inquiry card

MARK LOHMAN



Two by One in California

The Los Angeles firm of Johnson Fain Pereira, having made its mark with the striking Fox Plaza Tower (the "Die Hard Building"), continues to confront the Postmodern compromise between Modernist functionalism and traditional form.

The master plan for Los Angeles City Center, on which construction will begin this winter, proposes a jazzed-up version of Rockefeller Center for a hill just west of downtown. The series of six faceted towers, ranging from 35 to 65 stories in height, is the first part of a massive redevelopment of a neighborhood cleared of inhabitants following large-scale parcel acquisition by developers. Design director Scott Johnson, attempting to create order on the difficult site, has placed two first-phase towers (six buildings in all are planned) around a walled courtyard, designed by landscape architect Martha Schwartz. The courtyard establishes a solid base for the stepped towers, which are placed at an angle to the street to create the beginning of a castellated compound.

For its Opus One Winery, in the more bucolic setting of the Napa Valley, the firm has made use of French Neoclassical motifs to graft a manmade hill onto a rural California landscape of deeply modeled courtyards and redwood trellises—appropriate for a joint venture between Robert Mondavi and the Rothschild family. **AARON BETSKY**

New Post Office for Denver

Construction is under way on a new $2.5-million post office for downtown Denver, to replace a post office housed in a turn-of-the-century courthouse that will be renovated to accommodate federal circuit courts. Set on the northeastern edge of Denver's business district, the 29,000-square-foot building by Hoover Berg Desmond boasts a glass facade fronting a street that local planners envision as a major pedestrian link between downtown and the nearby residential district. **DAVID BALLAST**

Olympia's Natural Resources Building

With its oblique setback atop a 675-foot curved facade taking aim at the Washington State capitol rotunda, C. W. Fentress's design handily won a competition for the state's Natural Resources Building. The precast and stucco facade opens onto a landscaped public plaza, which extends around the building. The $55-million, 325,000-square-foot office complex is anchored by its own down-sized rotunda, placed off-center but pegged to the grid of the East Capitol Campus. □

C.W. FENTRESS J.H. BRADBURN ASSOCIATES

Briefs

• **Mergers & acquisitions:** HOK has increased its Interiors Group professional staff by almost a third with the acquisition of corporate-interiors specialists PHH Environments. PHH founder and president Neville Lewis will serve as a consultant. HOK recently borrowed $22 million from Kajima, which over 10 years can convert part of the loan to an equity stake of 35%. The money will go toward new offices in Japan and Europe.

• **Knoll International,** recently acquired by Westinghouse Electric, is now a division of the Knoll Group, a management umbrella formed by Westinghouse to oversee its growing furniture manufacturers.

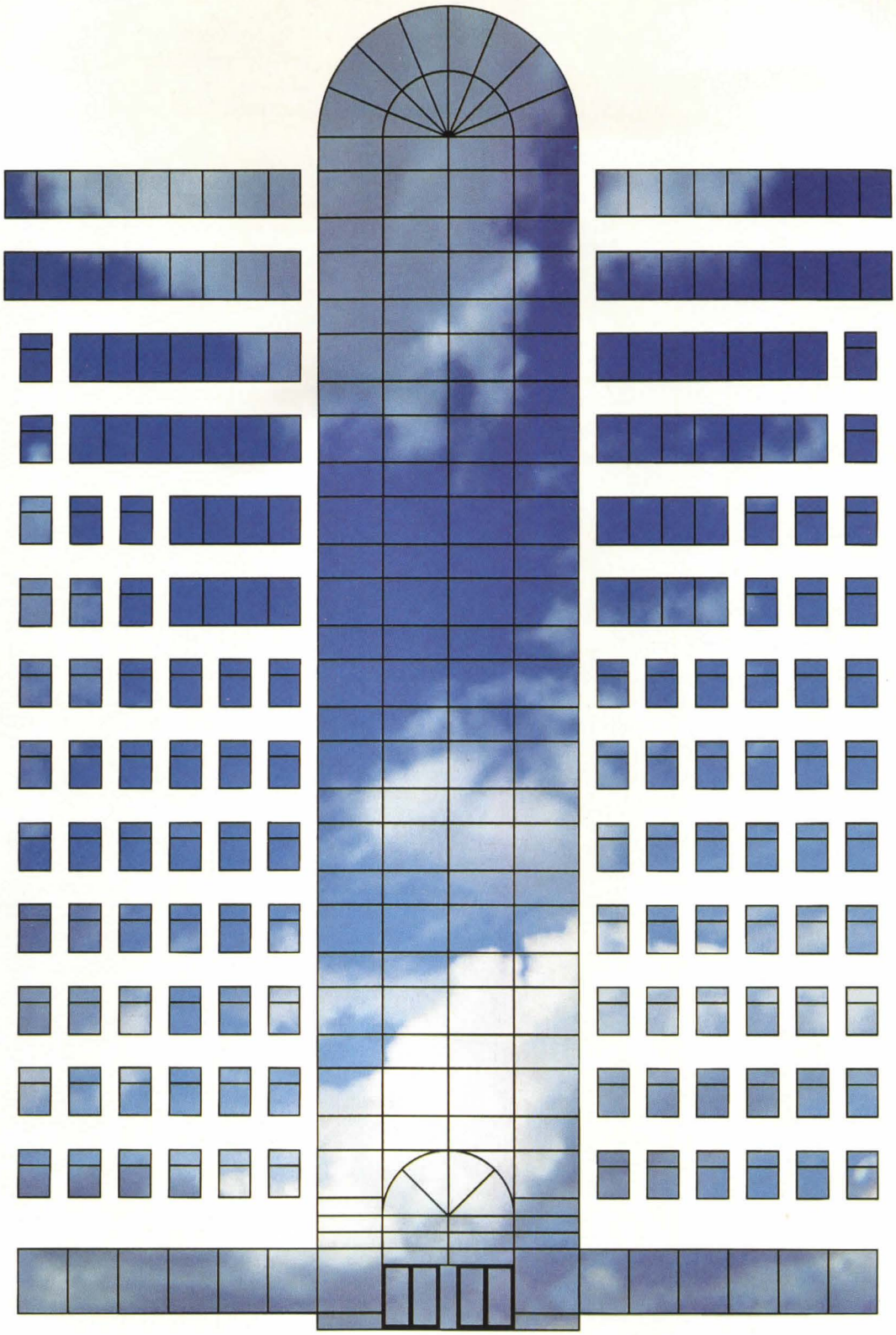
• **Winners of the** Precast/Prestressed Concrete Institute 1990 Professional Design Awards were announced. They include our cover subject, the Aurora, Colorado, Municipal Justice Center. See pages 96-101.

• **Winners were announced** for this year's Architectural Design Awards of the Western Red Cedar Lumber Association, Camp

Jurors Margaret McCurry and Don Canty

Tweedale, Lower Oxford Township, Pennsylvania [RECORD, July 1990, pages 64-67]; Susan Maxman, AIA. St. Andrews School Boathouse, Middletown, Delaware [RECORD, July 1990, pages 58-59]; Richard C. Meyer, AIA. Thom Residence, Woodside, California; Robert Swatt, AIA. Goldman House, East Hampton, N.Y.; Frederic Schwartz, AIA. Moses Studio, Venice, California; Steven Ehrlich, AIA. Quivira Vineyards Winery, Healdsburg, California; Michael Rubenstein and Chuck Peterson, AIA. Indian Rock Residence, Berkeley, California; Lucia Howard and David Weingarten. McLaughlin Residence Additions, Essex, Connecticut; J. Whitney Huber, AIA.

Briefs continued on page 141.



Glazing from the ground up™

Architects know EFCO as the company that makes more windows, more ways than anyone. But EFCO also manufactures a complete line of high performance curtain wall systems, storefront systems, entrances, ribbon window systems, and sliding doors. Make EFCO your single source for glazing from the ground up. Call toll free. 1-800-221-4169. In Missouri, 1-417-235-3193. EFCO Corporation. P.O. Box 609, Monett, Missouri 65708-0609.

EFCO

©1990 EFCO Corporation

Circle 7 on inquiry card

404 Wyman Wins National Award

ADD Inc.'s 404 Wyman Street in Waltham, Massachusetts, has won the National Association of Office and Industrial Parks Grand Honor Award as the best overall complex nationally for 1989. The 450,000-square-foot office complex is marked by the strong detailing of its concrete exterior, including granite accents on the five-level precast facade. Portes cochères and granite paving work with the landscaping, which follows the complex as it steps up a sloping, 27-acre site. Securing the design at either end are multilevel parking garages, one reached by a pedestrian bridge over a protected wetland. □

Folly on Peachtree Lake

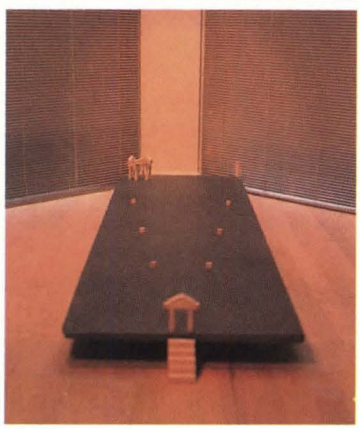
Loosely inspired by 18th-century English garden follies, Charles K. Summerour of Gruber and Associates, an Atlanta architectural firm, has designed a steel housing for an existing pumping station on Lake Peachtree, just south of Atlanta.

The new housing, at the end of a 50-foot catwalk, had to conform with strict codes for the planned community of Peachtree City—itself modeled on a Scottish village—and had to protect the station from vandalism. Summerour felt the building could provide the suburban community with an identifying landmark. He designed a miniature fortress with four sentry turrets—two of which serve as the pumping station's ventilation towers—that rise 26 feet above the platform. In the turret gables facing the lake, the architect has placed five-foot-square owl-nesting platforms, winning praise from conservancy groups as well as from locals. □

Competition Calendar

• A call for entries in the biennial Brick in Architecture Competition has been issued by the AIA and the Brick Institute of America. Eligible are works completed since January 1, 1985, which must consist of residential and nonresidential buildings, extended-use projects and restoration projects of which 75 percent of new construction was completed in brick. Deadline for entries is January 4, 1991. Contact the AIA at 202/626-7390 or the BIA at 703/620-0010.

• Two competitions are in the works for the Potsdamer Platz in reunified Berlin. The Platz covers the remains of Hitler's bunker, and the Berlin Wall ran through it. As Germany struggles with its new status, controversy has grown around plans for the development of Potsdamer Platz. Perhaps because of the turmoil, no dates have been set for either competition; preliminary information on the first competition—an overall redesign of Potsdamer Platz—should be available this month. Write the Chamber for Architects, Flensburger Strat 5, 1000 Berlin 21. The second competition, to be held next year following the first, is for an office complex for Daimler-Benz AG. Write directly to Peter-Hans Keilbach, Daimler-Benz AG, Konzern Repraesentanz, Hohenzollerndamm 150, 1000 Berlin 33. □



Contest Cites Three SuperStructures

The results of RECORD's SuperStructures competition are in. Last year, the magazine's promotion department invited architectural product manufacturers and their advertising agencies to use a set of wooden Archiblocks to design a bank, recreational facility, or Greek restaurant. An in-house jury premiated three projects that "showed an imaginative interpretation of the building program." Winners are (from left to right): György Juhász of Graphisoft and what he calls "a mental recreational facility"—i. e., a park—Joe Morrison of Brickel Associates, who proposed a treehouselike spa meant to resemble "a knotty tree, alone on an arid landscape," and Jeffrey Brian Clare of Clare Advertising (the agency for Mirafi), whose scheme for a Greek restaurant on the moon used up not only all the blocks supplied, but also the boxes and wrapping, showing a timely, and commendable, interest in recycling. □

DIANNE ARNDT PHOTO

JON SILLA PHOTO

Campbell Joins Board of Contributors; Slatin Becomes News Editor

Architect and critic Robert Campbell has joined RECORD's Board of Contributors. Harvard-trained Campbell will write a quarterly critical article beginning in January 1991, and will join other prominent writers and critics in contributing to RECORD's 100th anniversary series.

Campbell is architectural critic for the *Boston Globe*, and received the AIA medal for criticism. He is a member of the AIA committee on design and serves as architectural consultant to San Francisco's Department of City Planning. He has been a contributor to *Architecture* magazine.

Peter Slatin has joined RECORD as news editor. In this position, he will coordinate the magazine's correspondents and develop new sources to expand the scope of the magazine's news section. He comes to RECORD from *Forbes*, and has contributed to *Metropolis* and the *New York Observer*.

He replaces senior editor Grace Anderson, a long-time RECORD editor, who becomes editor at large to work on special editorial projects. □

"Four decades after Florence Knoll designed the Rockefeller family offices at 30 Rockefeller Plaza, Knoll...is still considered the epitome of style...They have commissioned some thirty designers, many internationally known, to create a whole array of affordable products that fill-in the corporate niches."

INTERIORS, 1990

"More than 2,000 organizations, from NASA to Motorola, have toured the Westinghouse Productivity and Quality Center since it opened a decade ago. What the visitors see is an overflowing toolbox of techniques, many invented there. These range from tests of error-free performance to measures that quantify the value customers place on Westinghouse products versus those of competitors—and others that relate such values to cost and price."

FORTUNE, 1989

PRACTICE NEWS

Looking for Good News in Marketing

McGraw-Hill Construction Information Group's Martin Rosen.

The challenge: find useful information on market opportunities and inspiration to pursue them in the face of disheartening economic news. The occasion: the 17th annual meeting of the Society for Marketing Professional Services in San Francisco, September 5-7.

Five sleeper markets

These were unveiled by Patricia D. Curran of economic and development consultants Hammer-Siler-George-Associates:

• *Re-use of closed military bases:* These generate "a wide variety of studies for a wide variety of clients," said Curran. For example, Rantoul, Ill., recently commissioned an economic-development study for the reuse of nearby Chanute Air Force Base, for which Kraft Industries commissioned another study. An environmental-impact analysis was funded by the EPA. By the time the facility reopens, dozens of studies will be done by architects, site planners, landscape architects, and environmental engineers.

• *Tourist and convention facilities:* "These continue to be strong," reported Curran, "because they involve civic pride and the ongoing need to attract outside dollars." They are not dependent on the private-market." Most interesting are convention centers and aquariums.

In the last eight years, 70 centers were built in the U. S.; 29 are in planning. But expansions and renovations are far more common than new construction. About 40 of the largest 75 convention centers, Curran said, are planning expansions or significant renovations during the early 1990s.

U. S. aquariums and zoos have over 100 million visitors annually and attendance is increasing. While most cities have zoos, there are only a dozen or so aquariums. Under consideration are more than 30.

Continued on page 25

GATT for Architects: Good News or Bad?

The General Agreement on Tariffs and Trade, which has protected the unfettered transfer of goods between member countries, may soon be extended to services—including those of architects and engineers. This might appear good news, but a coalition of organizations in construction, including the AIA, is not so sure. The reason: "GATT will open competition here without guaranteeing better treatment abroad," says Jane Sidebottom for the ACEC. Even more painful would be the introduction of practices in the U. S. that, while legal, are unusual, i.e., bidding on fees (see *No Bidding,* below). "GATT would lump design professionals together with a lot of unrelated groups with different standards and ethics," she adds.

Exemptions to the free-trade guarantees have been proposed for "creative works" such as manuscripts and paintings. These are opposed by a consortium of congressmen led by Daniel Moynihan and Robert Packwood, but would not cover architects' work in any case. That is classified as "intellectual property" for this purpose. "GATT is going to happen," concludes Sidebottom. Negotiations between member countries should conclude next month and results will go for Presidential signature. **C. K. H.**

Mideast Turmoil Unlikely to Boost Defense Work—at Least for Now

Sometime after the middle of November, Defense Secretary Richard Cheney will decide whether to extend a freeze on military construction projects. He ordered the moratorium in January. It affects architectural and engineering services.

So far, it seems the new turmoil in the Middle East and the renewed fears of war don't seem to make much of a difference, according to one Pentagon spokesman, who denies that the military buildup in the Persian Gulf will create a new impetus for military construction. Cheney went a step further than his January order in June when he recommended that Congress cancel some 70 projects outright and withdraw the more than $327 million that had already been appropriated.

The list included three U. S. projects. Among them: a warehouse in Red River, Texas, and an addition to a flight simulator at Luke Air Force Base in Arizona. Cheney also vetoed such amenities as fireplaces for senior officers' quarters at Wright-Patterson Air Force Base in Ohio. The other projects are all overseas, mainly in Europe. That's not all: DOD is also thinking about dropping close to 200 more projects, such as Navy home-porting facilities that have already been funded by Congress. **PETER HOFFMAN**

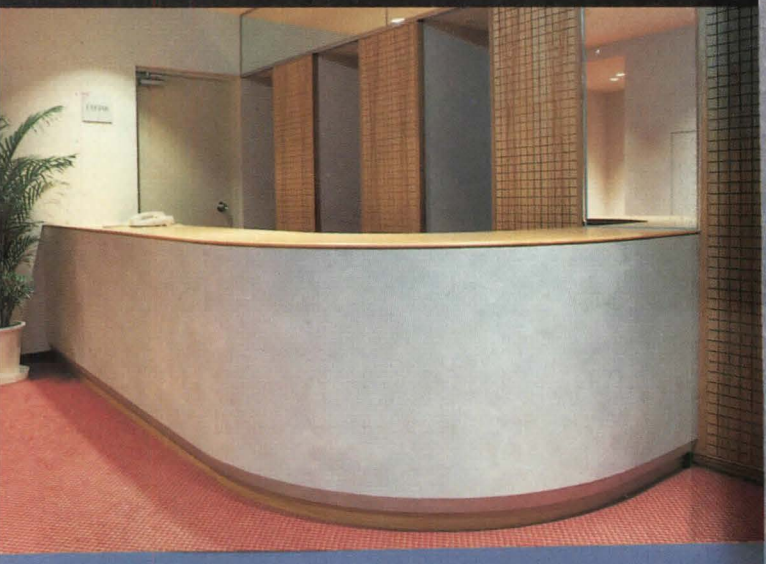
Washington, D. C.

Moving ahead

The 11-acre parking lot in Washington D. C., where construction was to have begun last March on the second largest federal building after the Pentagon, may now finally see fulfillment of that plan. The holdup? Feasibility studies on four performing-arts facilities. Plans by Pei Cobb Freed & Partners and Ellerbe Becket have been essentially complete for some time now on this last section of the Federal Triangle, which is to house mostly offices. The developer: the Delta Partnership. □

No More Bidding in West Virginia

While the federal Justice Department picks away at architects for prohibiting bidding on fees [RECORD, September 1990, page 17] the federal Brooks Law, which mandates architect selection based on qualifications and not low fees, gains ground. West Virginia recently brought the total number of states with similar laws to 37. For projects costing less than $250,000, the new act allows state agencies to pick from among three firms preselected by qualifications. For larger projects, qualifications must be admitted from all interested firms and evaluated. At least three of the interested firms must be interviewed. □



Introducing belbien durable vinyl film,

a permanent surfacing as flexible as your imagination.

Belbien offers designers an extraordinary and large selection of patterns and colors. Add to this Belbien's unique flexibility that makes it easy to apply to rounded and curved surfaces. It is a combination of features that is unequalled.

Designers can select from striking designs and from patterns that simulate natural stones, sand tones and woods. Belbien provides an opportunity to enhance the appearance of any surface, exterior as well as interior. Literally, Belbien can create an atmosphere.

New to America, Belbien vinyl film has proven itself in over a decade of use in other countries. This is the beginning of a Belbien era in wall and surfacing design.

belbien MANUFACTURER
C. I. KASEI CO., LTD.

For further information and samples, contact:

IMPORTER
NISHIYAMA CORPORATION OF AMERICA

305 Northern Boulevard
Great Neck, NY 11021
Telephone: (516) 466-7570
Facsimile: (516) 466-7572

Circle 11 on inquiry card

SMPS executive committee president Darrell Beal of Cini-Little International, and past presidents Randolph Tucker of Rolf Jensen & Associates and Lee Benish of By Design.

Continued from page 23

• *Golf-course recreational communities.* The National Golf Foundation estimates the U. S. is currently "undergolfed." While use over the last 20 years increased by 121 percent, the number of courses increased only 27 percent. The foundation sees a need for 400 new courses a year over the next decade, most of them in residential communities—primary and vacation houses, and retirement communities.

• *University-related research parks:* There are 130 research parks near universities and colleges throughout the U. S. and another 15 are planned or being evaluated. This has really been a phenomenon of the 1980s with 60 percent of the parks begun since 1986. "While there may not be as many start-ups in the 1990s as in the 1980s," said Curran, "the National Association of University-Related Research Parks estimates that, nationwide, there are still some 42,000 acres left to be developed at existing parks (over half of the planned area). The users? Everything from small start-up companies selling incubators to major corporate and federal research facilities. Included are supporting uses—retail, conference centers, health clubs, and other recreational facilities.

• Retail renovations: With retail development currently at a low point because of overbuilding, market saturation, and consumer caution, the major retail activity of the early 1990s will be renovations and expansions of existing facilities, according to Curran. "For every new mall completed, approximately 8 to 10 are rehabbed or expanded. Since the majority of the U. S.'s 1,600 regional malls were completed 15 to 20 years ago, they now need to be updated to be competitive. It is also easier to get approvals for renovations and expansions than for new building. And as department stores branch out, they prefer to locate in a well-established mall rather than a new one."

Airports take off

This is another market with major opportunities for design firms, according to speaker Robert Bunnell, reporting on a study by the Airport Operators Council International and the American Association of Airport Executives. That study forecasts total U. S. airport capital-development needs at more than $50 billion between 1991 and 1995, reflecting the FAA's prediction that airport passengers will increase from 1989's 488 million to 800 million in 2000.

Bunnell sees major airport expansions, which invariably include new mega-garages and terminal renovations (in part to lure "high-end" retail tenants) to be strong outside the U. S. as well. He pinpoints Toronto, Vancouver, Oslo, Seoul, and Japan.

What the client wants

An advisor to clients on selecting architects, David M. Scott, said what he thought was wrong with architects' submissions: "What people in design don't like to do is follow instructions. One candidate for the Seattle Opera House bound an elaborate proposal on the wrong edge. We never opened it.

"All 42 applicants for the Seattle domed stadium claimed to have designed the Dallas domed stadium. A lot of information tends not to be truthful.

"When we ask architects how they will tackle the humanistic issues in the design of a classroom, it's amazing how being 'on time and budget' becomes a design philosophy."

Scott tackled interviews: "The first impression is the most important. If architects are unprepared, it shows, as they fumble deciding who speaks and where to sit.

"There is a perception among many clients that architects are paid a lot. Architects must satisfy those clients' need to know what they are paying for repeatedly [no matter how unfair this may be]."

Added client advisor Edward C. Wundram, "Like it or not, this is a buyer's market for design services. For routine fees, I can demand genius and get it"

LOUIS MARINES

Management consultant Marines is former executive director of the AIA and now heads Academies for Professional Excellence, a new graduate business school for architects and engineers in San Francisco. For information, 415/927-3401.

Also at SMPS: Public-relations consultant Joan Capelin (Capelin Communications) received the 1990 SMPS Marketing Achievement Award, the third person to do so. □

Capelin

Architects' Battle on Incursions

Despite resistance by many in the profession [RECORD, June 1988, pages 37-41], the national AIA has given its blessing to the licensing of interior designers and bills are moving through various state legislatures to that effect. The latest to pass is New York's, effective June 1, 1991. Requirements include an examination on fire and safety codes—part of the territory in which architects fear incursion. It does not allow grandfathering however (another fear) and does allow architects and others to do interior design as long as they either take the exam or do not use the term "certified." Other states with similar laws now include Alabama, Connecticut, Florida, Louisiana, New Mexico, and Virginia, as well as Puerto Rico and Washington, D. C..

New Jersey recently received visibilty for its battle against the unauthorized use of the term "architect." The latest case pending is in Virginia, where a house remodeler, told to change his ads, has asked a circuit court to decide if "architecture" is a term owned by architects.

C. K. H.

Making Contracts Fit the Project

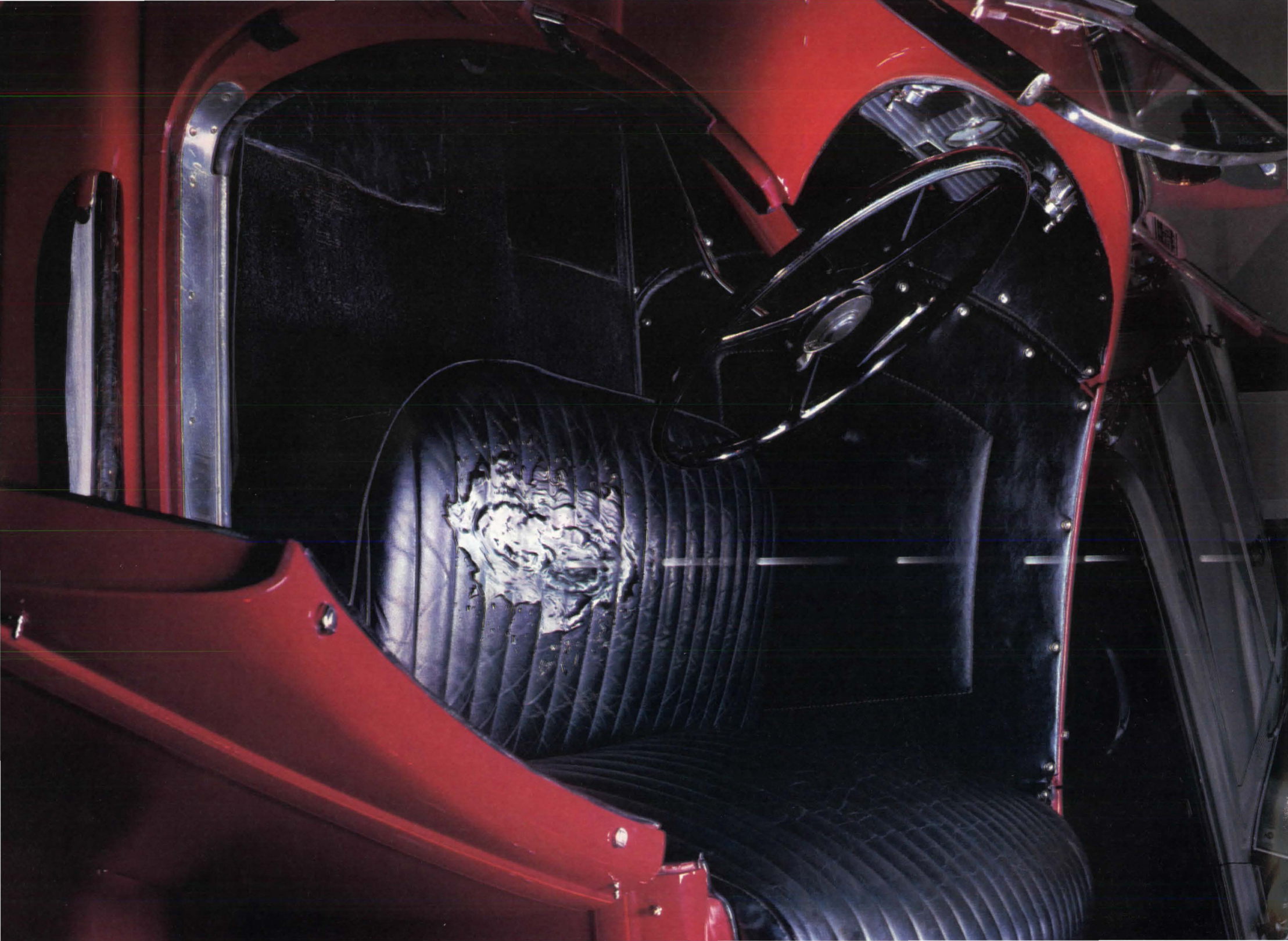
There may be two major mistakes by parties to design contracts—not using standard documents such as the AIA's *and* not altering them to fit individual circumstances. A new book offers a wide range of alternative clauses suggested by 10 attorneys in the construction field. The objectives: tried-and-true wording, and assurance that contract changes are consistent throughout the documents (e.g., one reference to a topic should not be at odds with another reference to the same topic elsewhere).

Some novel ideas are offered: One would make the owners responsible for getting their own estimates. In another they would approve contractors' shop-drawing applications. Another would preventing an owner from making a claim against an architect unless he has first filed an allegation of neglect by another architect.

The book names a third major mistake: making the wrong alterations. An analysis by Schinnerer Management Services finds a few in the book itself that may indeed raise questions. Example: giving the owner control of which disputes go to arbitration. With 10 different cooks, the diner may want to study the menu with care.

Alternative Clauses to Standard Construction Contracts by James Stephenson, Wiley Law Publications, 1990, $115.

C. K. H.



Water wheels.

Don't let a soggy set of wheels dampen buyer enthusiasm. To protect a building and its contents—whether they be fine motorcars like this 1935 Auburn Boattail Speedster, or the latest high-performance autos—you should start right on the roof.

And for a roof system that performs the way it's supposed to right from the start, come to the company with over 130 years' experience. Manville.

We supply the most complete systems package: membranes, insulations and accessories.

We train and support the Manville Approved Roofing Contractors who will install these roof systems.

And we give you the option of the industry's most comprehensive guarantee program to back up the roofing investment.

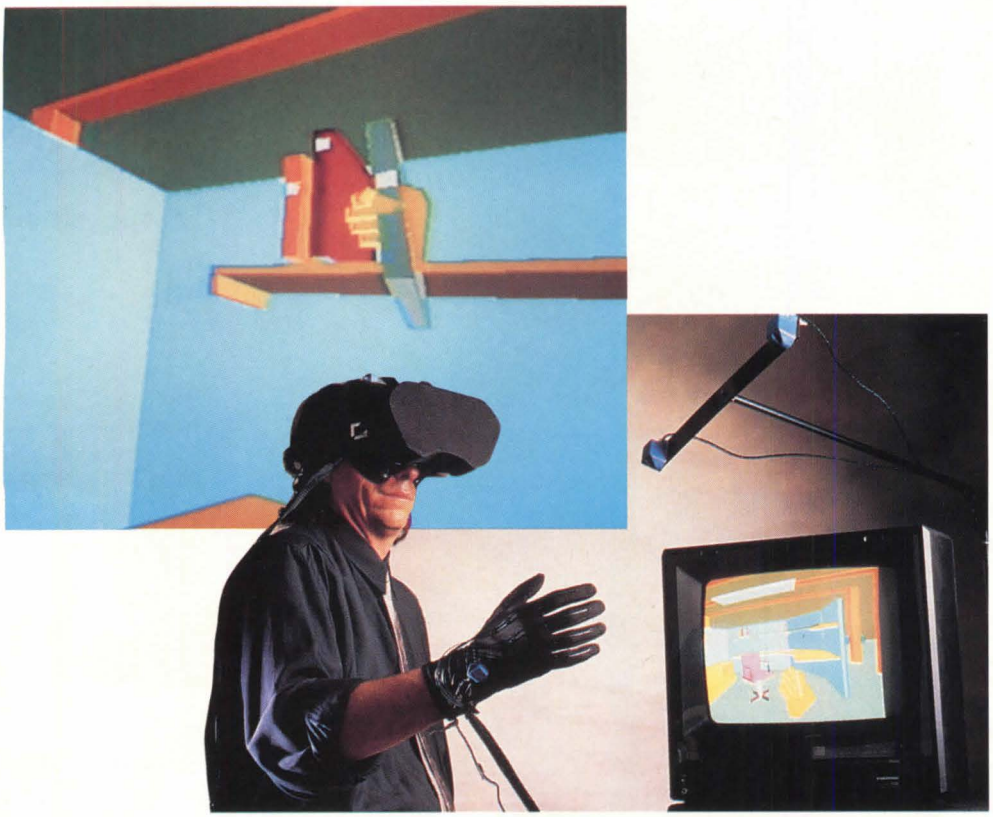
When it comes to shutting out the elements, nobody does it better. For more information, see your Manville representative, or contact the Manville Product Information Center, P.O. Box 5108, Denver, CO 80217-5108. Or call 800-654-3103. Available for export.

Keeping the water out. That's what this business is all about.

Manville

Circle 12 on inquiry card

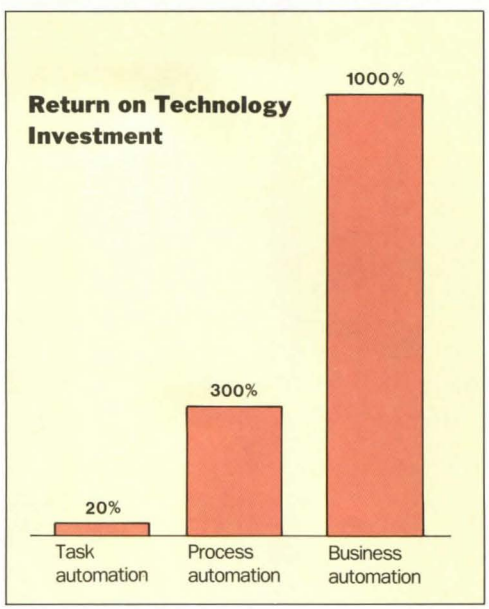
BEYOND COMPUTERS AS PENCILS



Why now? Why are we about to see computers transform architecture? Technologies produce tremendous change within a short period of time, but not immediately after their introduction. In fact, there appears to be a big lag between the introduction of a technology and its adoption. The Institute for the Future in Menlo Park, Calif., tells us that it takes approximately 20 years—almost a generation—for Americans to assimilate a new technology. Commentators on the computer industry have noted this phenomenon: an innovative idea emerges, a few products are developed based on that idea and those products fail in the marketplace. Years later, similar products are reintroduced with excellent market response.

Because the first experiments in computer-aided design occurred in the late 1960s and early 1970s, the time is now for this delayed impact to be felt in architecture. In fact, the first signs are evident. One early research project at MIT developed a computer-graphics system embedded in some very strange-looking head gear. The user of this graphics system looked into two tiny computer screens positioned as eyeglasses and sensed himself to be within the computer-generated environment he was viewing. At the 1989 A/E/C Systems show, a major trade show of computer hardware and software for the construction industry, Autodesk, which produces the widely used CAD program AutoCAD, conducted an invitation-only demonstration of cyberspace that it describes as a "virtual-reality system." Special head-mounted computer displays (photo left) permitted the user to enter into a computer-graphics image and, by donning a special glove, manipulate objects within that computer-generated environment. At the 1990 A/E/C Systems show, other vendors introduced systems that produced similar effects.

Whether or not "virtual reality" gains rapid market acceptance, it is time for architects to take a fresh look at how they are using computers. From the dollars-and-cents perspective, the low cost of personal computers has permitted architectural firms to implement computer technology over the past five years. Realizing the benefits of this investment in automation is now a business concern for most practices.



Autodesk's cyberspace allows users to seemingly enter the computer and manipulate objects with their hands (books, top). The results of an Intergraph survey (chart above) show why automated working-drawing production will not be enough.

Summing up the benefits

A compelling 1986-87 research report by Nolan, Norton & Co. indicates that looking at the big picture and using personal computers as a strategic resource rather than a personal productivity tool can dramatically increase these benefits.

The report was on the study, co-sponsored by Lotus, of personal-computing use in a dozen organizations. Issued in 1988, it is entitled *Managing Personal Computers in the Large Organization*. It showed the three basic ways that personal computers were used in business and that the return on technology investment varied radically—by two orders of magnitude—among them. The range was from 10- to 1,000-percent return on investment (graph, left). The three approaches to automation were:

Task automation. This has always been the most obvious use of the personal computer: personal computer = personal productivity. When the focus is on task automation, computer purchases are generally justified by the productivity gain for a sin-

How the computer revolution, now rooted in telecommunications, banking, and merchandising, can, within the next few years, begin to transform the *practice* of architecture as well. By Kristine Fallon

gle task. The discussion is usually something like: "How much faster can we draft with a CAD system? A 50-percent increase in productivity will justify the purchase."

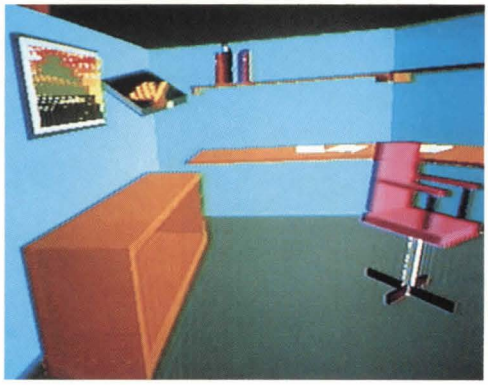
Of the three approaches to use of personal computers, task automation yielded the lowest return on investment—only 10 to 20 percent. *However, most of the businesses studied were using PCs in this way.*

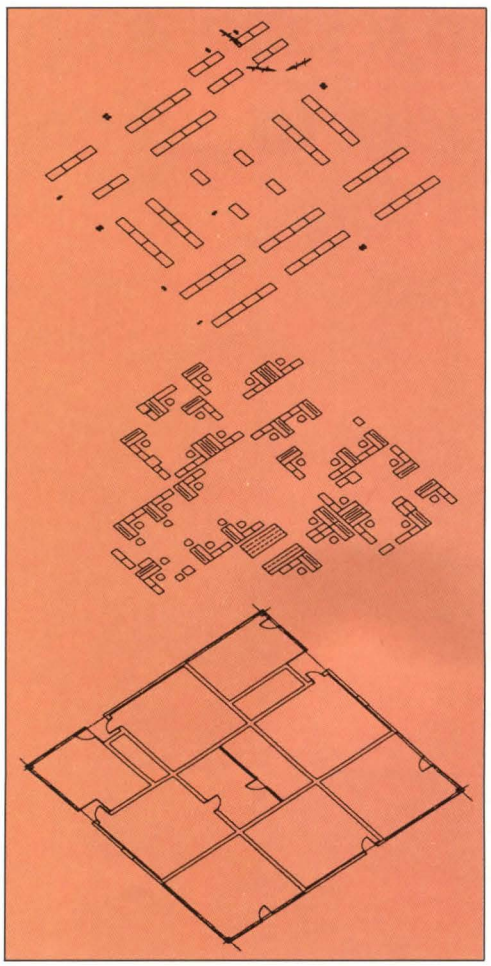
Process automation. This requires integrated computer applications. It is frequently referred to in computer literature as "workgroup computing." In addition to providing tools for automating specific tasks, workgroup computing automates the flow of information from task to task.

Desktop publishing is a simple and straightforward example. Desktop-publishing programs permit the user to pull together the copy (word-processing task) and the illustrations (graphic, scanning, image-processing tasks) and link them directly to the tasks of selecting type faces and laying out the pages. In addition to automating discrete operations, desktop publishing eliminates a number of intermediate steps and expenses, such as printing out the copy and delivering it to the layout artist, blowing the illustrations up and down photographically, and going out of house for typesetting. Process automation was shown to yield as much as 300 percent return on technology investment.

Business automation. This means an environment in which every staff member accesses any information he or she needs through the computer immediately and easily. In a truly automated business environment there *is* no alternative way to get to information. Every worker has a computer workstation and has been trained to use it. In this type of environment, however, the computer fades into the background. It is no longer an issue; it is part of the office infrastructure, like the plumbing or the phone system.

This is not to say that much effort and money are not devoted to management of these computer resources and development of ever-better systems, but the focus is no longer on the hardware and software per se. The focus has shifted to providing a total work environment that enhances every worker's ability to make the best possible decisions and to respond strongly to the organization's clients. Despite the fact that business automation implies a hefty investment in computer systems and the associated training and support, a 1,000 percent return on investment may be achieved.





Top: More cyberspace. Above: Computer drawings such as these lighting plans and furniture layouts use, but cannot affect, the architectural base drawings. Similar to overlay drafting, they bypass reissuing base plans that change.

Climbing the learning curve

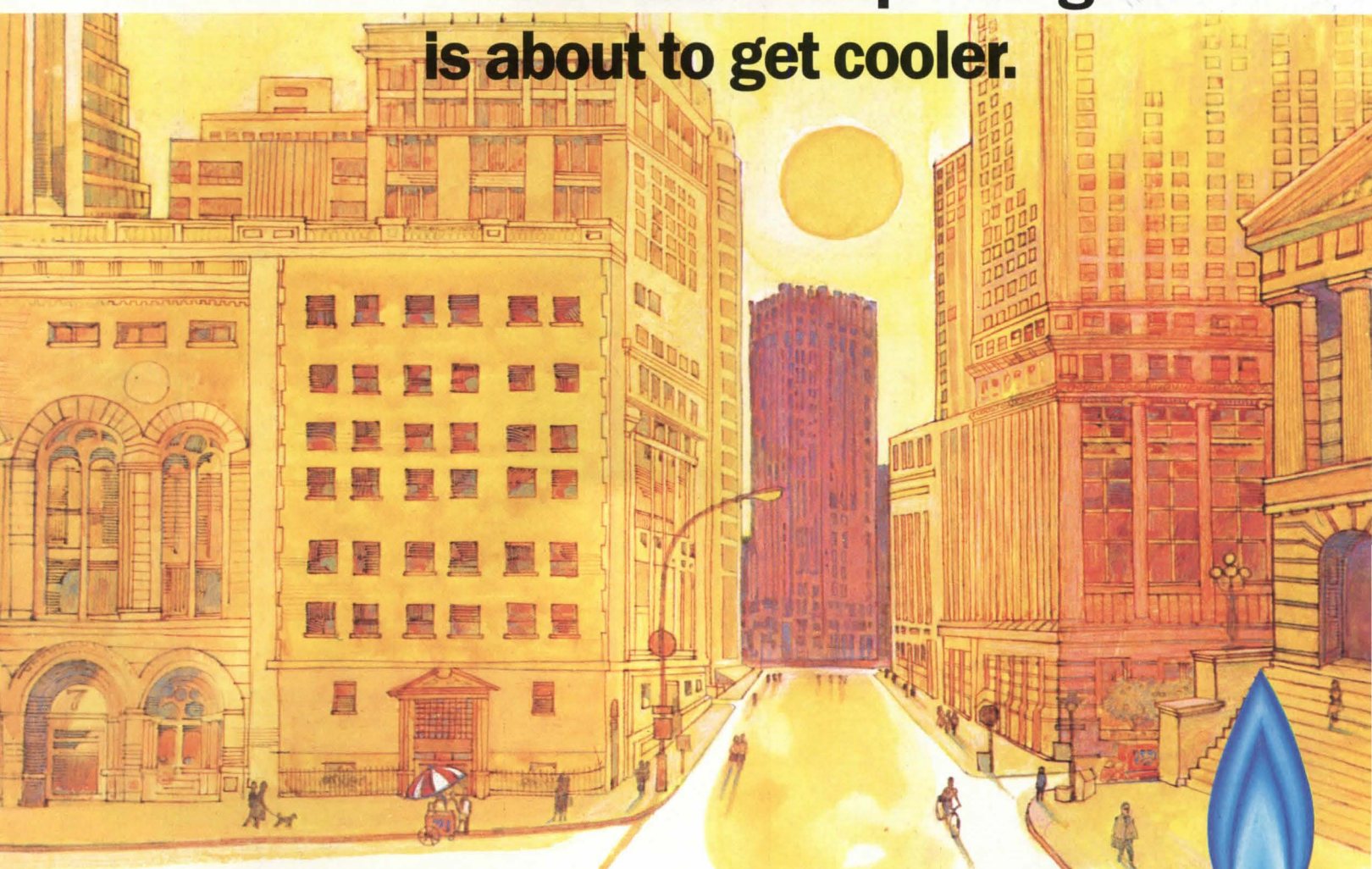
One thing that the Nolan, Norton & Co. report points out is that these three approaches to computer utilization are not mutually exclusive. They can be individual milestones along the organization's computer learning curve. The curve is discontinuous, however, and a company will not be able to climb to the higher levels of computer utilization without specific directives from management.

Put in very common-sense terms, the individual is normally quite satisfied if performing assigned tasks more productively. Even if he sees the advantages of integrated computing, he frequently does not have the authority to make others change the way they work. In the simple desktop-publishing example cited above, task assignments changed, the production process was altered, and one or two outside suppliers were eliminated. Even this minimal amount of restructuring is unlikely without the involvement and support of the principals.

How can an architectural practice begin to reach for those high returns on technology investment? The first step is to shift the firm's focus, as it plans computer investments, from the evaluation of specific products to an analysis of how computer technology can be used to assist the firm in achieving its longer-term goals. A firm's strategic technology plan should look like a performance specification, not a checklist of hardware and software features. And the principals must commit to the plan because there will be a period of investment and absorption before returns are realized.

Priority of applications will be determined by the firm's business vision. Design-oriented firms may pursue high-quality visualization, multi-media presentations, or cyberspace applications. Service-type firms may concentrate on project schedul ing, resource allocation and cost estimat

Your warm relationship with gas is about to get cooler.



Gas-fired chillers, double-absorption, dessicant systems, gas cogeneration...today's new gas technologies give *you so many* more options for cooling commercial projects. And, with the additional benefit of unbeatable economy. Now, year 'round, gas is your client's best energy value.

© 1990 American Gas Association

Circle 13 on inquiry card

ing applications. Whatever the firm's specific business goals, the Nolan, Norton & Co. study indicates that directing technology investment toward improving the quality and flow of information upon which critical decisions are based will yield high returns.

Making automation work

There are a few important principles in structuring computer applications for better quality, flow, and relevance of data.

1. *Eliminate redundancy.* There must be a single source for any element of data. For example, the interior-design group should not be independently updating the floor plans produced by the architects. This creates the opportunity for coordination errors. Most CAD software now supports the concept of "reference" drawings. Rather than embedding the architectural-drawing capabilities in the CAD drawing of the furniture layout, the architects' most recent CAD-plan is displayed and plotted as a background for the furniture layout. This technique is frequently compared to overlay drafting, but it is far more productive because no one must reissue and distribute base plans when they are changed. Eliminating redundancy both helps coordination and simplifies checking. This applies to accounting systems as much as to CAD.

2. *Automate the transfer of data among computer applications.* This takes the elimination of redundancy one step further. In many organizations, one computer program generates printed reports of data, which is then manually input by clericals into another computer program. You will probably find instances of this practice in your own firm. This is not only a waste of time, it compromises the accuracy of the data due to possible human error in reading or typing.

Any computer software you are using should support the automated transfer of data. In fact, the emerging trend is toward dynamic data exchange. For example, if a spreadsheet is incorporated into a report produced with a word processing program and the spreadsheet is updated, the report is automatically updated as well. Be sure to aim for a high level of integration within those applications identified as strategic to the firm—e.g., the automated extraction of quantities and updating cost estimates whenever CAD drawings are changed.

3. *Reduce and validate data to improve the speed of communication and the quality of information.* One very usual mistake is failing to distinguish between data and information. A clearly visible effect of the computer revolution is the explosion in the quantity of raw data available. It is said that more news is presented daily in *The New York Times* than the average 17th-century Englishman was exposed to in a lifetime.

Peter Drucker, writing in the *Harvard Business Review,* provided a succinct and useful distinction: "Information is data endowed with relevance and purpose." Another critical technology initiative, therefore, is culling data and presenting it in a way that spurs timely action. Compare, for example, the usefulness of a manually maintained shop-drawing log that shows dates when drawings were received and returned to the contractor, to that of a computer-based log that generates a daily report of all shop drawings received in the past four days or more and not yet returned.

Also, eliminate bad data through automated checks wherever possible. Many engineering programs incorporate design-rule checking: The engineer is prevented from specifying an improper fitting or connection. Similarly, any data entered into a computer can be constrained within specified limits, matched against a list of valid entries, or defaulted to a programmed value.

4. *Accessibility is a must for a computer-based work environment.* There are four elements:

First is the availability of computer workstations. You cannot maintain all information in a computer environment unless everyone has access to a workstation whenever needed. This means a 1:1 ratio between people and machines.

Second is training and support. Everyone in the office must receive sufficient training to be completely comfortable working within the automated environment. The Nolan, Norton & Co. study concluded that only about 30 percent of PC costs are direct costs of hardware and software; 70 percent are support-related.

Third and closely linked is the issue of ease of use. There has been great interest in recent years in "natural, intuitive," or "friendly" user interfaces to computer applications. In general, these types of interfaces increase the cost of software development and they require additional computat-ional power, thereby increasing hardware and software costs. The trade-off is that training and support costs are reduced, although these soft costs have always been difficult to quantify. Perhaps even more important than the ease of use of every application in reducing training and support requirements is the consistency of the user interface across all applications. A uniform user interface allows the worker to follow the same procedures, invoke the same commands and interact with the keyboard and mouse in the same way in spreadsheets and drawings.

Fourth is the question of reliability. Have you ever had to conduct business with the phones out of order for a full day? Working in a computer-based environment, hardware, software, and network failures will prove equally disastrous. Reliability should be a major selection criterion for all three components of the computer infrastructure. In addition, the computer system should be designed in a modular fashion so that no single malfunction precipitates total failure.

Survey Results on Handling Drawings

Time:	Manual	Computer
To Access	1-48 hours	5-10 minutes
To Revise	2-30 hours	5-10 hours
To Distribute	4-48 hours	less than 1 hour

5. *Require the use of computers.* Even the most relevant information is valueless if it is not used. In addition, if everyone is not working in the computer environment, then the single-source-of-information principle will be violated. There will be a paper and a computer version of almost all data. The quality of the information on which people are acting will be compromised and you will fail to reap the benefits of a reduced coordination and checking load.

Intergraph, a major CAD supplier, recently surveyed its users to determine the relative efficiencies of handling drawings in a manual versus computer-based environment. As seen in the box, the results are startling. They illustrate that the greatest savings come from cutting out the intermediate steps in retrieval, production, and distribution. Gone are searches through flatfiles and waits for prints done outside and their distribution by persons at lunch or in meetings.

Here indeed is a strong argument for the fully computerized environment. All experience indicates that a strong stand by the principals will be required to change to a computer-based environment, but the benefits are clear. □

The next article in this series will show how to apply those technologies to an actual office.

There's only one way to protect against ultraviolet radiation that's better than Heat Mirror™ insulating glass with XUV™ fading protection.

Draperies fade.
Furnishings fade.
Floorcoverings fade.
The result: Hundreds of millions of dollars in damage every year.

The causes of fading are many, including heat, humidity, and visible light–but the *major* cause of fading is ultraviolet radiation from the sun (wavelengths from 300 to 380 nanometers).

Until now, there has never been a clear, residential window glass that effectively blocks damaging UV radiation.

HEAT MIRROR™
with XUV™ fading protection

Clear insulating glass that reflects heat and blocks UV radiation while letting light pass through.

Introducing XUV fading protection availabl exclusively in Heat Mirror 88, 77, and 66 insulating glass.

Heat Mirror with XUV fading protection block over 99.5% of UV radiation. *Over 99.5%.*

No other clear residential glass comes close.

XUV fading protection significantly prolongs t beauty and life of fabrics.

For the complete story about Heat Mirror tota performance insulating glass, contact your neare Southwall licensee or call Southwall Technologie at 1-800-365-8794.

Circle 14 on inquiry card

Heat Mirror film, Heat Mirror insulating glass, and XUV fading protection are trademarks of Southwall Technologies Inc. Heat Mirror insulating glass is manufactured and warranted by a worldwide network of independent insulating glass and window fabricators under license from Southwall Technologies and exclusively using Heat Mirror film manufactured by Southwall Technologies.

Southwall Technolog

BUILDING IS DOWN—BUT MIDYEAR UPSWING SEEN

Despite the current gloom, a new expansion should begin by the middle of next year. By George A. Christie

While the debate about whether or not the U. S. economy is heading into recession continues, the construction sector is already there. Four consecutive quarters of sharply declining construction contracting are more than enough evidence to establish the point.

Preliminary estimates of 1990 construction-contract value show a 9-percent decline from the previous year's all-time high, a shrinkage of $23 billion of newly started work to $245 billion and the first reversal in eight years.

- *Nonresidential building, with an overall setback of 11 percent, once again showed both sides of its split personality. Commercial and industrial building took another hard fall (20 percent), while institutional building (+4 percent) went its own upward way.*
- *Residential building, largest of the three broad categories of construction, declined by 10 percent in 1990 as single-family building joined the long-troubled apartment/condo market in the loss column. Mid-1980's overbuilding and the more recent savings-and-loan scandal are obvious handicaps, and there are no quick fixes at hand.*
- *Nonbuilding construction (known better as public-works projects) alone held steady in 1990, finishing the year within 2 percent of the previous contracting total. Public-works construction typically responds to the availability of program appropriations, not to market conditions. In the present era of budgetary restraint, infrastructure programs enjoy the mixed blessing of receiving reasonably steady funding, although less than their full authorization.*

Most of the decline in construction contracting occurred during the first two quarters of 1990—before the confrontation in the Persian Gulf and before the federal-budget impasse. At that time, the construction sector was already having more than enough difficulty coping with commercial overdevelopment, budget austerity, and the breakdown of the thrift industry.

Prior to mid-1990 events, the assumption that the economy would squeak through the rest of this year and all of 1991 without lapsing into recession carried more credibility than it does now. To an economy already at a virtual standstill, the added burdens of energy shock and fiscal drag will be difficult to absorb without further setback.

Before considering the risks brought by these current events, a progress report on the status of three problems left over from the 1980s is in order.

A new look at old problems

- *Those stubborn commercial vacancy rates.* Since reaching a peak in the mid-1980s, contracting for commercial building (offices, stores/shopping centers, hotels, and apartments) has fallen by 50 percent, from 1,500-million square feet in 1985 to only 750 million this year. Yet the surplus of commercial space persists. Take offices as a case in point.

In 1986, a year after the peak of the office-building boom, the national average vacancy rate had climbed to 21 percent. By mid-1990, after five consecutive years of less and less new construction, the vacancy rate was still just under 20 percent!

To appreciate the extent of overdevelopment that occurred during the "tax-shelter" boom, it is necessary to consider the demand for office space in relation to its supply. Estimates of the principal sources of demand for offices (growth of the white-collar work force, space per worker, replacement, relocation, etc.) indicate that an average of about 250-million square feet per year would have been appropriate for the mid-1980s. More than that would push the vacancy rate up; less would reduce it. With 250-million square feet as a benchmark, it isn't hard to see why vacancy rates haven't receded much.

In 1985 and 1986, supply (new construction) peaked at 350-million square feet and turned down, but the total for those two years (650 million) exceeded demand by 30 percent. Vacancy rates kept rising although building declined.

For the next three years, annual supply continued to decline, but not enough to make much difference. A total 760-million square feet almost exactly matched theoretical demand. The vacancy rate edged down to 20 percent, but no lower.

It wasn't until 1990, when contracting sank to 165-million square feet, that significant downward pressure on vacancy rates began to come from the supply side. Even so, the response will be limited in the short run for two reasons: (1) The lag between starts and completions means that last year's starts are still coming up for occupancy, and (2) on the demand side, the recent economic slowdown/recession means a reduced rate of employment growth.

Apart from any temporary (i.e., cyclical) change in demand, the average rate of absorption of office space during the mid-1980s is no longer appropriate to the 1990s. Low birth rates of the 1970s will continue to resurface, meaning a falling growth rate of the labor force (and for that matter, of apartment occupants and shoppers) as the 15 to 30 age cohort continues to shrink. Sustained high vacancy rates for commercial real estate and a low volume of construction are virtually built into the first half of the 1990s by history.

- *Housing and the S&L scandal.* Did the collapse of the savings-and-loan industry bring about the decline of housing starts, or was it the other way around?

Certainly the housing market had been coming off its peak (1985's 1,846,000 total units) long before the S&L scandal became a cause celebre in 1989 with the enactment of FIRREA. The roots of the S&L disaster go all the way back to the seemingly innocuous Depository Institution Deregulation Act of 1980. But the shaky financial condition of the thrifts, with their portfolios of speculative commercial real estate and junk bonds, somehow remained a dirty little secret. Finally it became necessary to mount a massive rescue operation as more than a thousand banks went under. Since then, a scarcity of funds has displaced the cost of credit as the housing industry's Achilles' heel.

Shrinkage of this primary source of small- and medium-sized builder/developers' ADC loans (acquisition, development, and construction—the up-front money that gets projects started) was only the initial shock. Disposition of defunct S&L assets by the Resolution Trust Corporation is depressing real-estate values around the country (especially in the Northeast), discouraging both lenders and developers from undertaking new projects, And for the surviving thrifts, re-regulation

means tighter solvency requirements and generally tougher lending standards.

• *The deficit vs. the infrastructure.* Throughout the first half of the 1980s, public-works construction was easily one of the construction industry's hottest growth markets. Between 1981 and 1987, the annual value of contracts for transportation and environmental projects soared from $24.7 billion to $42.5 billion, a compound rate of expansion of 9 1/2 percent over six years. Highway and bridge construction, financed by the 1982 Surface Transportation Act's 5¢-per-gallon fuel tax, was responsible for most of the 1980's surge of public-works construction.

It all came to a screeching halt in 1987, however. Gramm-Rudman virtually froze appropriations for public works and many other federal programs in the hope of bringing the ballooning deficit under control. Since 1987, contracting for infrastructure projects has been held between $43 and $44 billion per year (a decline considering inflation). Until now, the only change of any significance since G-R went into effect has been that state governments have had to come up with extra funds to offset the shrinking federal share.

In 1990, the familiar problem of chronic deficits escalated into a "crisis." The added burden of the S&L bailout sent the deficit all the way back to its peak of $225 billion.

Some new "crises"

• *Producing a federal budget* is a two-stage process involving, in turn, economics and politics. Reaching a budget resolution—the broad outline of the coming year's revenue and expenditure agreed on by Congress—is essentially an economic consideration. It's about the bottom line: how *much* taxation, how *much* spending, and how *big* a deficit. The second stage is hammering out the details: whose taxes will be raised and whose programs will be cut in order to meet the deficit target. At the time this went to press, the 1991 budget was in limbo between the economic issues of stage one and the political consequences of stage two.

The taming of the deficit made for an interesting summer and fall on Capitol Hill. It was all about the conflict between idealism and reality. Idealism is Gramm-Rudman specifying progressively lower deficit goals. Reality is the savings-and-loan bailout which has rendered G-R obsolete.

Getting past stage one required a difficult re-evaluation of the G-R deficit targets. Largely due to the added burden of the S&L bailout, the 1990 deficit, which was not supposed to exceed $100 billion, soared to $225 billion. Worse than that, the projected 1991 deficit of nearly $300 billion would be more than four times the $64-billion G-R target for next year.

At September's budget-summit conferences, all the options were unsatisfactory

1991 NATIONAL ESTIMATES
DODGE CONSTRUCTION POTENTIALS

		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Nonresidential Buildings				
Floor Area (millions of square feet)	Office Buildings	165	150	– 9
	Stores & Other Commercial	475	410	– 14
	Manufacturing Buildings	125	120	– 4
	Total Commercial & Manufacturing	765	680	– 11
	Educational	141	139	– 1
	Hospital & Health	69	66	– 4
	Other Nonresidential Buildings	145	140	– 3
	Total Institutional & Other	355	345	– 3
	Total Nonresidential Buildings	1,120	1,025	– 8
Contract Value (millions of dollars)	Office Buildings	$ 17,000	$ 16,300	– 4
	Stores & Other Commercial	22,625	20,600	– 9
	Manufacturing Buildings	7,275	7,200	– 1
	Total Commercial & Manufacturing	$ 46,900	$ 44,100	– 6
	Educational	$ 15,400	$ 15,675	+ 2
	Hospital & Health	8,650	8,625	–
	Other Nonresidential Buildings	15,300	15,275	–
	Total Institutional & Other	$ 39,350	$ 39,575	+ 1
	Total Nonresidential Buildings	$ 86,250	$ 83,675	– 3
Residential Buildings				
Dwelling Units* (thousands of units)	One Family Houses	875	850	– 3
	Multifamily Housing	310	300	– 3
	Total Housekeeping Residential	1,185	1,150	– 3
Floor Area (millions of square feet)	One Family Houses	1,553	1,514	– 3
	Multifamily Housing	340	325	– 4
	Nonhousekeeping Residential	52	49	– 6
	Total Residential Buildings	1,945	1,888	– 3
Contract Value (millions of dollars)	One Family Houses	$ 88,525	$ 88,600	–
	Multifamily Housing	17,725	17,700	–
	Nonhousekeeping Residential	4,525	4,450	– 2
	Total Residential Buildings	$110,775	$110,750	–
Nonbuilding Construction				
Contract Value (millions of dollars)	Transportation Construction	$ 24,550	$ 23,425	– 5
	Environmental Construction	19,450	18,875	– 3
	Total Public Works	$ 44,000	$ 42,300	– 4
	Utilities	$ 4,000	$ 4,000	–
	Total Nonbuilding Construction	$ 48,000	$ 46,300	– 4
All Construction				
Contract Value (millions of dollars)	**Total Construction**	$245,025	$240,725	– 2
	Dodge Index (1982 = 100)	156	153	

*F.W. Dodge basis.

Making more elevators makes Dover No. 1.

Large complexes like Regency Park have helped make Dover the best-selling elevator in America.

All three of the completed buildings in this projected three-million sq. ft. office park are served by Dover. With more to come.

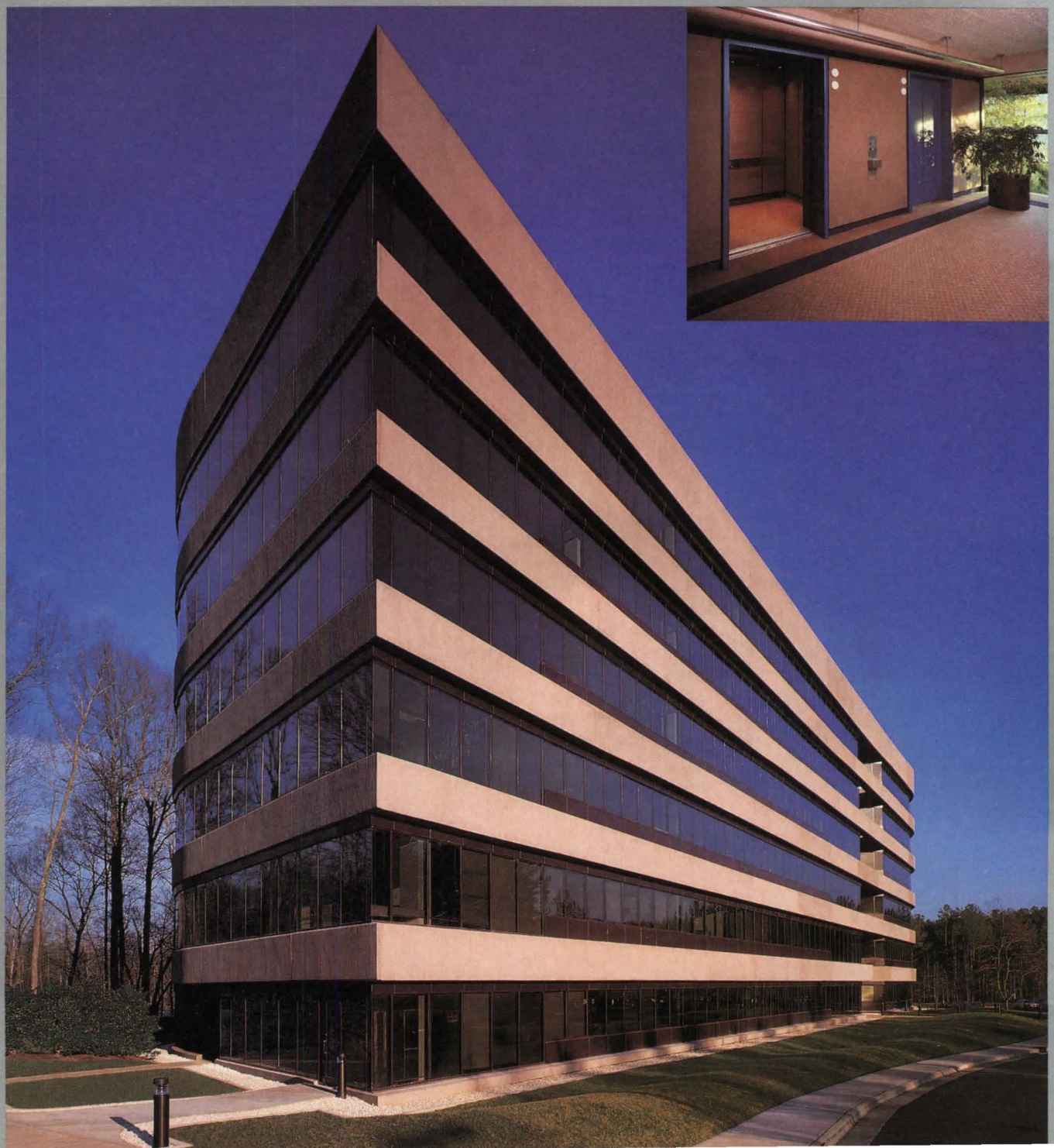
Why Dover again and again? Owners cited past performance, on-time delivery, competitive prices, superb installation.

But Regency vice president Eric Salomon put it best—"They run well. No problems, no complaints, fantastic service."

For more information on Dover elevators or help on any elevator project call your local Dover office. Or write Dover Elevator Systems, Inc. P.O. Box 2177, Memphis, TN 38101.

Regency Park, Cary, NC
Owner: Regency Park Corporation
Architect: Thompson, Ventulett, Stainback & Associates
Contractor: Metric Constructors, Inc.
Elevators sold and installed by Dover Elevator Co., Greensboro, NC

DOVER®
ELEVATORS



(one definition of a crisis). Compliance with the law meant taxing and cutting for a total of some $235 billion from the projected budget. Failing to do that meant reducing expenditures by the entire amount via the sequestration (pro-rate) process, which could lead to arbitrary cuts of up to 30 percent. The only alternative was to rewrite the law, which was what the 1991 budget resolution settled for. Its elements: a modest tax increase and some token spending cuts, which together are to reduce the projected deficit by $40 billion. Even so, the remaining deficit for 1991 will climb to at least $250 billion—some $25 billion more than in 1990 and the highest ever. (Senator Dole said it best: "We'd rather make tough speeches than tough choices.") If there is credibility in the resolution, it is in the new five-year plan for deficit reduction that recognizes constraints that G-R couldn't.

It is on economic grounds that the FY-1991 budget resolution can best be justified. Considering the fragile state of the economy, the fiscal drag of downshifting from last year's $225-billion deficit to a mandated $64-billion would have greatly accelerated the economy's already ominous drift toward recession. For this reason, the choice not to go along with the built-in rigidity of G-R was more important for what it didn't do than for what it did.

The hardest parts—setting the taxation issues and preparing the 13 appropriations bills—lie ahead. However, the budget resolution of October 8, with its $250-billion deficit, implies cosmetic rather than major surgery for infrastructure and other federal programs. Not quite "business-as-usual," but not far from it, either.

Among some of the broader implications of the revised deficit-reduction plan: Sustained high deficits mean continuing high inflation and high inflation translates into high long-term interest rates.

• *The Persian Gulf crisis.* Unlike the deficit crises, the Persian Gulf crisis can't be revised away with the stroke of a pen. Gauging its effect on the outlook requires a whole host of bold assumptions that could be obsolete by the time this is in print. The most important assumption is that the confrontation with Iraq will not escalate beyond a blockade and that it will eventually conclude in a negotiated settlement. With the Saudis and other Arab nations picking up the bill for much of the U. S. military cost, the major economic impact of the conflict is being transmitted through higher oil prices.

Oil prices are expected to remain in the mid-to-upper $30s per barrel through the winter. Prices are likely to retreat over the course of 1991 as additional output by Saudi Arabia and other producers largely offsets the Iraq/Kuwait shortfall. Stability at $25 per barrel is anticipated by 1992.

Higher energy costs are leading to a surge of inflation in the range of 6 to 7 percent (as measured by the Consumer Price Index) during the second half of 1990 and the first half of 1991. Inflation will average about 6 percent for both years, vs. 4 to 5 percent since 1987, and recede below the 5-percent threshold again in 1992. Before that happens, the interaction of the resolution of the deficit issue, Federal Reserve credit policy, and plain old consumer confidence will determine whether or not the economy slips into recession. With confidence sagging, unemployment rising, real GNP growth already slowed to a crawl, and the Fed standing pat, energy shock could be the catalyst for a recession that was going to happen anyway.

Monetary relaxation could offset the dampening effects of higher taxes and/or reduced federal spending, but the inevitability of worsening inflation puts a limit on the monetary option. If neutrality is as far as the Fed is willing to extend itself, that may not be far enough to offset the predominantly negative forces which are inhibiting economic expansion.

Whether or not conditions by next winter fulfill the technical two-quarters-of-declining-real-GNP definition of recession is academic. Rising unemployment, insecurity, and higher interest rates will make it feel like one—a feeling that will inhibit business capital spending, consumer buying, and house construction.

For the time being, the most likely prospect is borderline recession, followed by sluggish recovery.

A secondary decline for construction

As crises go, neither the collapse of the Gramm-Rudman deficit-reduction program nor the recurrence of energy shock quite seems to deserve so dire a label. The Persian Gulf confrontation is unquestionably a diplomatic crisis. But so far at least, its economic consequences are shaping up as not much more than an aggravation of an already-bleak outlook. And to no one's great surprise, the deficit crisis has been down-graded to a budgetary squeeze after the usual eleventh-hour compromises.

Even so, these two events represent additional impediments that will make the resolution of the construction industry's pre-existing problems just that much harder. A tighter squeeze on public programs weakens what has been a source of stability and support. And even a mild recession as the alternative to listless growth carries the risk of further decline of commercial/industrial building and housing.

The case for stability: As long as the general economic outlook for 1991 remained one of weak growth, but some growth and not recession, there was a reasonably strong case for stability of construction contracting at its reduced mid-1990 level. Commercial building, after five years of decline, had already experienced a sharper cutback than in either of the previous two cyclical reversals. Housing, at a depressed 1.2-million rate of starts by mid-year, had absorbed the worst of the thrift-institution upheaval, and might be expected to hold steady, and possibly even rebound a bit. Public-works construction was holding up well through the first half of 1990 and October's budget resolution at least eliminated the threat of sequestration. Institutional building was on an upward trend that was demographically sustainable. Altogether, the outlook for construction contracting at mid-1990 had been one of several quarters of uneasy equilibrium, followed by recovery in due time.

The R word. The recession scenario changes that. The bottom line of the category-by-category analysis of construction markets is this: What might have been a small, but welcome, gain in construction contracting in 1991 (mostly in housing) now looks more like a secondary, small decline.

Next year's total is headed for another setback of about 2 percent to $241 billion, following 1990's much sharper break of 9 percent from the 1989 peak of $268 billion. Chances are, however, that 1991—with its prospect of a second-half turnaround—will feel better to contractors and building-product manufacturers than the full year's negative total suggests.

Commercial building down some

Just when it was beginning to look as though commercial building had finally reached a level low enough to stabilize, a new variable, recession, arrived on the scene. The growing probability of energy-shock recession in the near future alters the outlook for commercial building from one of low-level stability to yet further decline. While total commercial building (offices, stores and warehouses, hotels, and multifamily housing) could slip as much as another 5 percent after 1990's 20-percent crash, the risk is not evenly distributed. Instead of an across-the-board decline in 1991, retail building is likely to bear the brunt of next year's setback.

Alone among the several categories of commercial construction, retail building has not come down from its mid-80s high. While other types of commercial building have fallen by more than 30 percent since 1985, the maverick retail-building market was still holding its 1985 contract value ($23 billion) as late as 1990. The reason: irrepressible single-family-house construction. . . until now.

Even under the extraordinary circumstances of mid-1980s' commercial-building boom, retail development behaved in its time-honored fashion. It responded more to needs generated by residential development than to tax stimuli, as office and apartment/condo building did. Because single-family-housing starts remained

SLICE OF LIFE SAFETY

USG® AREA SEPARATION WALLS

Give Superior Fire/Sound Ratings

Go Up Fast To Cut Costs.

USG® Area Separation Walls provide tried, true, tested assemblies that have been proved in thousands of multi-housing installations nationwide. In fact, these superior systems consistently exceed code authority expectations. Over 16 years of continuous R&D in system design from USG makes the dependable difference. Other solid reasons from the leader in fire, sound and systems technology:

- **1, 2 or 3-hr. fire ratings. Exclusive UL Design U336 establishes 2 hour fire protection and structural stability up to four stories.**
- **Up to 60 STC ratings.**
- **Can be erected same day as framing and roof trusses.**
- **Minimum number of components including unique USG attachment clip-provides reliable lateral stability and breakaway features under fire.**
- **Permits all-weather dry construction—minimizes costly delays.**
- **Installed easily by contractor trades.**
- **Reduced labor and material costs.**
- **Substantial floor space and cost savings—when compared to masonry . . . and a fraction of the weight of masonry methods.**
- **Choice of two types: solid or cavity assemblies.**
- **Code conformance under BOCA Reaserch Report No. 87-63, SBCC Report No. 9033.**

For specifics, contact your United States Gypsum Company representative. See section 09250 of Sweet's General Building & Renovation File. Or write to us at 101 S. Wacker Drive, Chicago, IL 60606-4385.

United States Gypsum Company

Circle 19 on inquiry card

USG

©1990, United States Gypsum Company
USG is a registered trademark of USG Corporation

1991 REGIONAL ESTIMATES
DODGE CONSTRUCTION POTENTIALS

Northeast	CT, ME, MA, NH, NJ, NY, PA, RI, VT	1990 Preliminary	1991 Forecast	Percent Change 1991/90		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$ 8,250	$ 7,850	−5	One Family Houses	$10,125	$10,350	+2
	Institutional and Other	8,150	7,675	−6	Multifamily and Nhskpg.	3,425	3,325	−3
	Total	$16,400	$15,525	−5	**Total**	$13,550	$13,675	+1
	Nonbuilding Construction	$ 9,750	$ 9,725	–	**Total Construction**	$39,700	$38,925	−2

North Central	IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI	1990 Preliminary	1991 Forecast	Percent Change 1991/90		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$12,225	$11,175	−9	One Family Houses	$18,475	$18,650	+1
	Institutional and Other	9,100	8,650	−5	Multifamily and Nhskpg.	5,050	4,550	−10
	Total	$21,325	$19,825	−7	**Total**	$23,525	$23,200	−1
	Nonbuilding Construction	$11,175	$10,325	−8	**Total Construction**	$56,025	$53,350	−5

South Atlantic	DE, DC, FL, GA, MD, NC, SC, VA, WV	1990 Preliminary	1991 Forecast	Percent Change 1991/90		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$ 8,750	$ 8,200	−6	One Family Houses	$21,150	$20,900	−1
	Institutional and Other	7,800	8,250	+6	Multifamily and Nhskpg.	5,000	5,275	+6
	Total	$16,550	$16,450	−1	**Total**	$26,150	$26,175	–
	Nonbuilding Construction	$ 8,325	$ 7,825	−6	**Total Construction**	$51,025	$50,450	−1

South Central	AL, AR, KY, LA, MS, OK, TN, TX	1990 Preliminary	1991 Forecast	Percent Change 1991/90		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$ 5,275	$ 5,550	+5	One Family Houses	$11,225	$12,275	+9
	Institutional and Other	5,200	5,825	+12	Multifamily and Nhskpg.	1,400	1,525	+9
	Total	$10,475	$11,375	+9	**Total**	$12,625	$13,800	+9
	Nonbuilding Construction	$ 7,725	$ 7,600	−2	**Total Construction**	$30,825	$32,775	+6

West	AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY	1990 Preliminary	1991 Forecast	Percent Change 1991/90		1990 Preliminary	1991 Forecast	Percent Change 1991/90
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$12,400	$11,325	−9	One Family Houses	$27,550	$26,425	−4
	Institutional and Other	9,100	9,175	+1	Multifamily and Nhskpg.	7,375	7,475	+1
	Total	$21,500	$20,500	−5	**Total**	$34,925	$33,900	−3
	Nonbuilding Construction	$11,025	$10,825	−2	**Total Construction**	$67,450	$65,225	−3

Carlisle... Top Performance for Top Performers.

Top performers in the world market rely on the top performer in single-ply roofing . . . Carlisle. Besides supplying fully integrated roofing systems of top quality, you the specifier, receive unparalleled design assistance.

Carlisle conducts informative regional Design Conferences, delivers quick responses to your design and technical inquiries, and carries out the industry's most demanding inspections. Factor in the Carlisle warranty and all this adds up to peace of mind for you and your top performers.

Over 11 acres of .045 Sure-Seal® membrane cover the Minneapolis Convention Center.

Architect: Minneapolis Conv. Center Collaborative
Roofing Contractor: Curran V. Nielsen Company, Inc., Minneapolis, MN
Carlisle Representative: Architectural Consultants, Inc., Edina, MN

Carlisle has a roofing system to meet your every design need in black or white, reinforced or non-reinforced, EPDM or CSPE plus support services.

Find out why top performers have chosen Carlisle for over 80,000 warranted roofing projects. Call toll-free, 800-233-0551; in PA, 800-932-4626; in Canada, 416-564-5557.

CARLISLE

Carlisle SynTec Systems
Division of Carlisle Corporation
P.O. Box 7000 • Carlisle, PA 17013-0925

Circle 20 on inquiry card

e companies listed have had single-ply roof- systems by Carlisle installed on one or re of the buildings they utilize. This list is for ormation only and in no way reflects en- rsement by these companies.

rlisle is a trademark of Carlisle Corporation
Carlisle Corporation 1990

strong and steady all the way through early 1989, the derived demand for stores and warehouses held up long after other types of commercial building collapsed once tax reform took away their invisible means of support.

That, too, has changed. After house building fell from its lofty plateau early in 1989, it was only a matter of time before retail contracting would follow as, in fact, it did later in the year. With no nearing improvement in prospect for single-family building, a further decline of store/shopping-center development of up to 10 percent is expected. Retail building is retreating to a more compatible relationship with the temporarily reduced volume of house construction.

Other types of commercial building, though sensitive to the recession conditions that threaten to develop later in 1990 and on into 1991, are already so depressed that the risk of still further decline is minimal. After drastic setbacks in 1990 of 20 percent and more, contracting for offices, hotels, and apartments faces only small declines next year.

It is worth emphasizing that a mild and brief recession in 1990/91 won't bring total commercial building down much below its 1990 level. The bad news is the reason: It is already at recession level.

Single-family housing steady

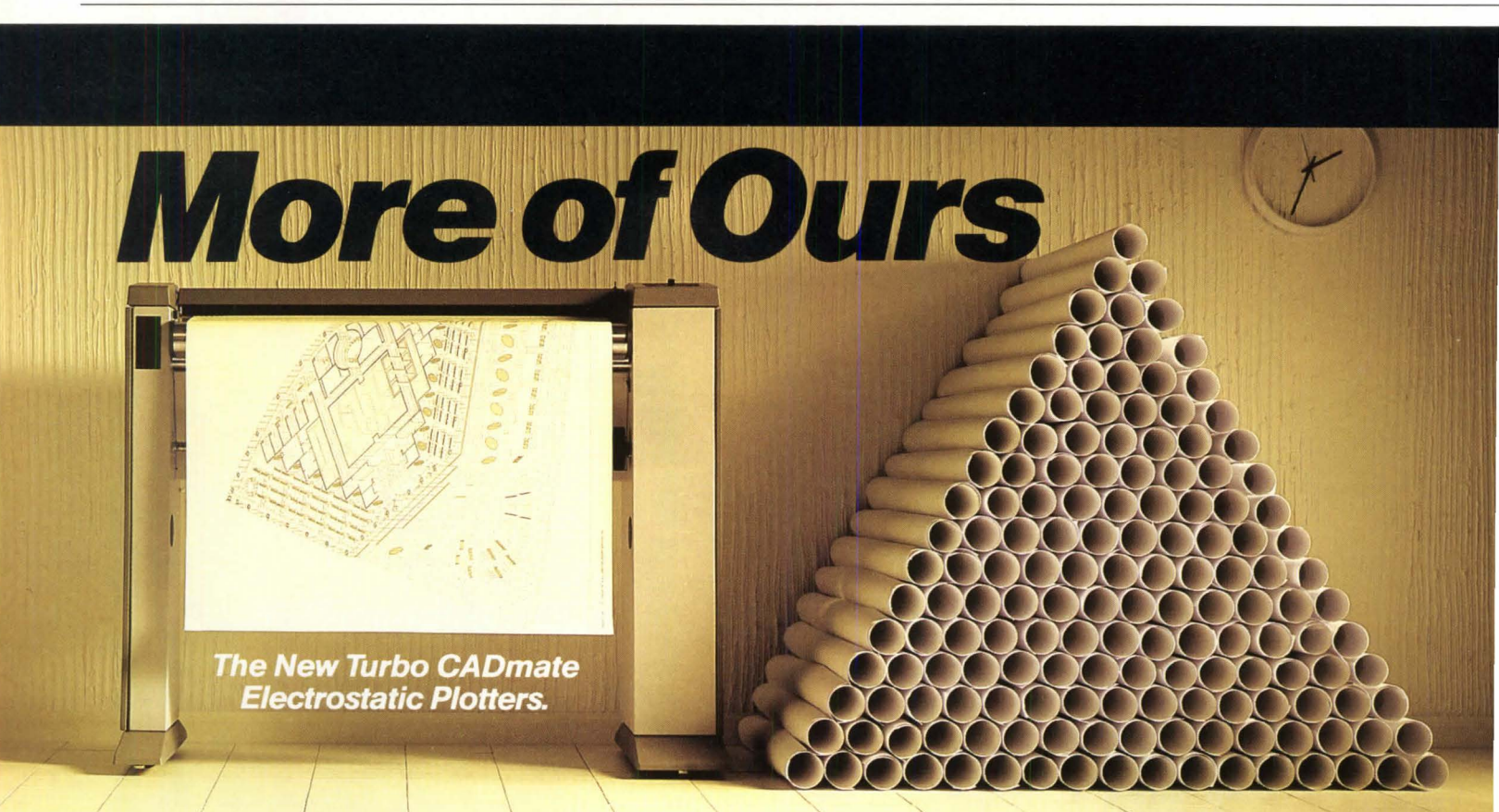
Building 6-million single-family houses in six years (1983 to 1988) was no small accomplishment. If supportive demographics (that '50s generation reaching middle age) were what made it possible, why not more of the same in 1989, 1990, and 1991?

Problems in the housing market are often linked to credit conditions, so it is tempting to draw an analogy between the breakdown of the thrift industry in 1989/90 with the monetary overkill of the early 1980s or with the disintermediation of the mid-1970s. This would be an oversimplification. There is little question that the collapse of the S&L system will inhibit the recovery of house building from its recent setback. However, there's more to the slippage of single-family housing starts from their million-a-year pace than the savings-bank scandal. For house builders, the problems are more regional than national. In 1990, a total volume of 875,000 single-family housing starts still looks fairly solid compared with 650,000 units started in 1981/82 when soaring mortgage rates brought building down everywhere at once. This time, the disparity among regional markets suggests that there's more going on than just credit scarcity.

1989/90 decline of single-family-house building really began early in 1988. It started in the Northeast, where overinflated real-estate values and a regional recession (financial services; computers) combined to trigger an overdue readjustment that is still going on. Starts of single-family houses in the Northeast fell 16 percent in 1989, and another 27 percent in 1990 for a cumulative two-year decline of 40 percent. A parallel, though less severe, correction to overdevelopment in the previously booming South Atlantic region led to a 20 percent decline in house building between 1988 and 1990. These two regions were the locale of 90 percent of the national decline from 1,003,000 single-family housing starts in 1988 to 875,000 in 1990.

Over those same years, the Central regions—North and South—*improved* on their 1988 volume. In the West, which accounts for a quarter of the nation's house starts, building showed a modest gain in 1989 (while the East was in decline), but broke sharply (down 10 percent) in 1990. The issue for 1991: How will each of these regions be reacting to next year's expected credit and economic developments?

Credit conditions in 1991 are likely to affect all five regions more or less equally. A temporary escalation of mortgage rates and a continuing scarcity of ADC funding will, by themselves, be enough to defer a general recovery of house building until



Ours is two new additions to Versatec's family of high performance CADmate™ electrostatic plotters. Turbo CADmate and Turbo CADmate SBus. Turbo CADmate, for 386-based PCs in standalone or networked environments, is up to ten times faster than the plotter on the right. And Turbo CADmate SBus, for Sun SPARCstation™ 1 and 1+ users, is up to a whopping 15 times faster.

And both give you 300 ppi laser-quality reproduction.

You'll also get HPGL/2 compatibility. And the ability to p with gray-scale shading, something a pen plotter can't do.

late in the year. The further prospect of an "energy recession" is bound to be more damaging to the economies of the Northern regions. However, it could be a stimulus to the oil patch. The hardest call is the West, where military-spending cutbacks, rising unemployment, and overpriced real estate make this important region one of the high-risk areas for 1991. The prospect: a further decline of housing starts of between 5 and 10 percent. Two regions—the North Central, where the last energy recession hit hardest, and the South Atlantic, where overdevelopment is still a concern— are vulnerable to declines of about 5 percent next year. In the Northeast, where house construction is already deeply depressed, a case can be made for stability (at best). The South Central alone offers the potential for a modest gain of up to 5 percent next year.

A more generalized recovery of house construction could begin in 1991's second half when underlying conditions take a turn for the better. After midyear, mortgage rates should be on their way down again, and the stress of recession should be fading. As a marginal plus, the S&L rescue operation will be another year along by then. In combination, these changes will let the housing industry do the right thing: lead the rest of the economy into recovery and expansion.

Although the direction of house construction will most likely be upward during the second half of 1991, next year's 12-month total of newly started single-family dwelling units is more apt to be lower than higher. Even if the final quarter's rate of starts reaches 900,000 units, the drag of a first-half average of 825,000 units will hold total 1991 starts to 850,000—a 3-percent decline from 1990's estimated volume of 875,000 units.

Total housing: Reflecting somewhat higher prices and a changing regional mix, total 1991 residential building value will be virtually unchanged from 1990's $11 billion, and consequently will have a neutral effect on total construction-contract value next year. By contrast, roughly half the overall decline of nearly $25 billion of new construction in 1990 consisted of housing.

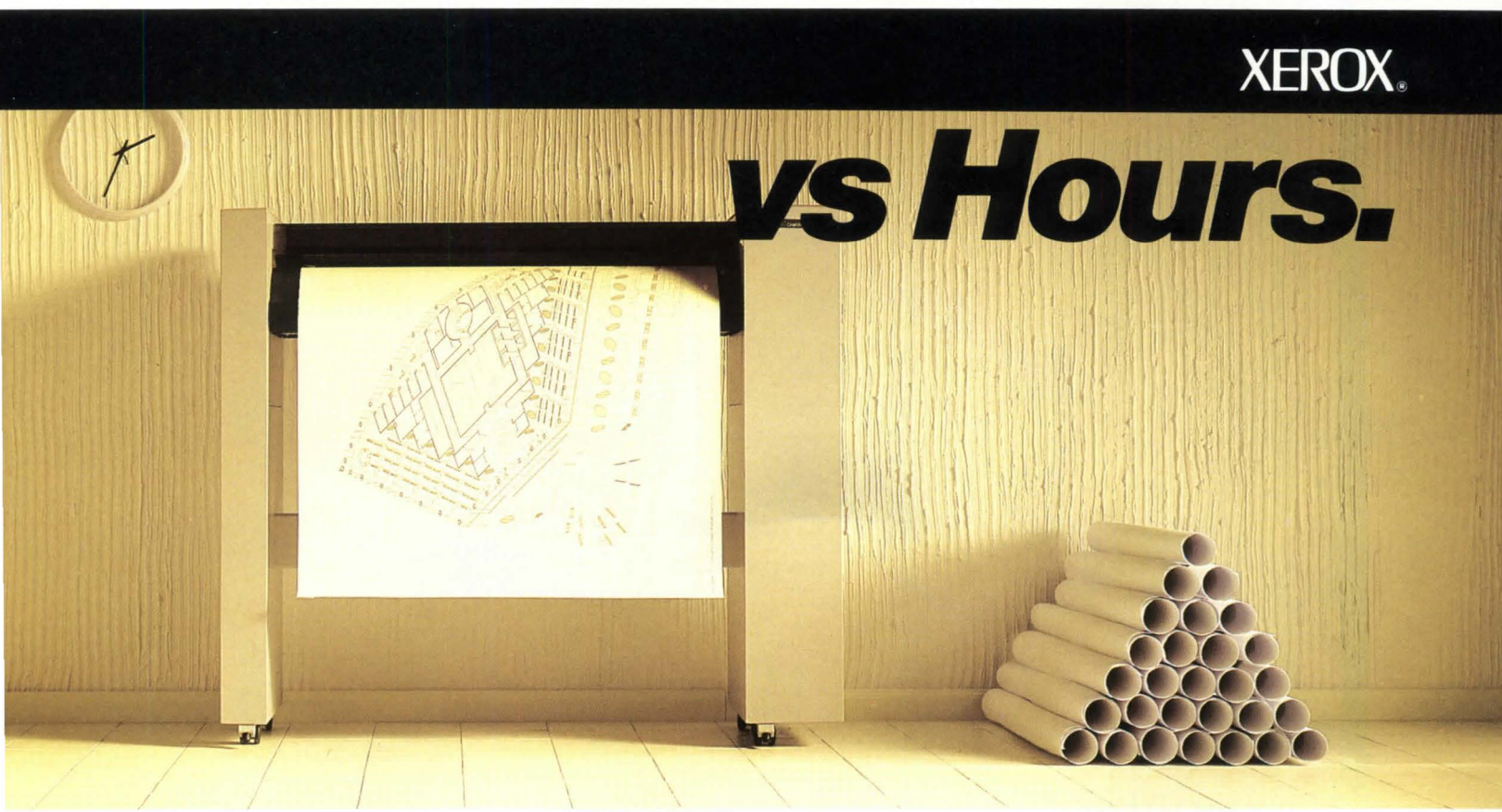
Public-works building: modest decline

Spared from starvation by the budget summiteers, federal public-works programs must nevertheless become accustomed to a leaner diet. Shifting the cost of the development and maintenance of the nation's infrastructure to state and local governments was one of the hidden agendas of the 1991 budget marathon. This transfer has been going on through most of the 1980s under the name of "The New Federalism." But it is bound to take on added meaning with the new five-year plan for deficit reduction.

Happily, most states continue to generate a budget surplus. Nevertheless these surpluses are dwindling in comparison with the second half of the 1980s when state and local governments together became the source of more than half of all public-works construction funding. Even a mild recession in 1991 would strain state and local finances, limiting their ability to take up the slack in federal grants.

Owing to the combination of federal austerity and limitations on state and local capabilites, total construction-contract value of public-works projects is forecast to decline in 1991 for the first time in 10 years. (The last decline, 1981, also coincided with recession conditions.) After a strong expansion through the middle years of the past decade prompted by the Surface Transportation Assistance Act, and several more years of high-level stability, the value of public-works contracting in 1991 could drop back to $42 billion from its current $44 billion.

There is little prospect for near-term improvements. Two substantial tax increases proposed by the 1991 federal budget resolution would appear to be supportive of transportation construction, but aren't.



Plus, with Turbo CADmate we'll throw in a free copy f DESQview™ software. Allowing you to easily use your ıvorite CAD package with Versatec's plotting utilities.

So for more information on our new Turbo CADmate lotters and our Total Satisfaction Guarantee, call our toll-free number now: 800-538-6477. In California, 800-341-6060.

XEROX TOTAL SATISFACTION GUARANTEE

Then go with the new electrostatic plotters that'll save you and your company hours upon hours.

Ours.

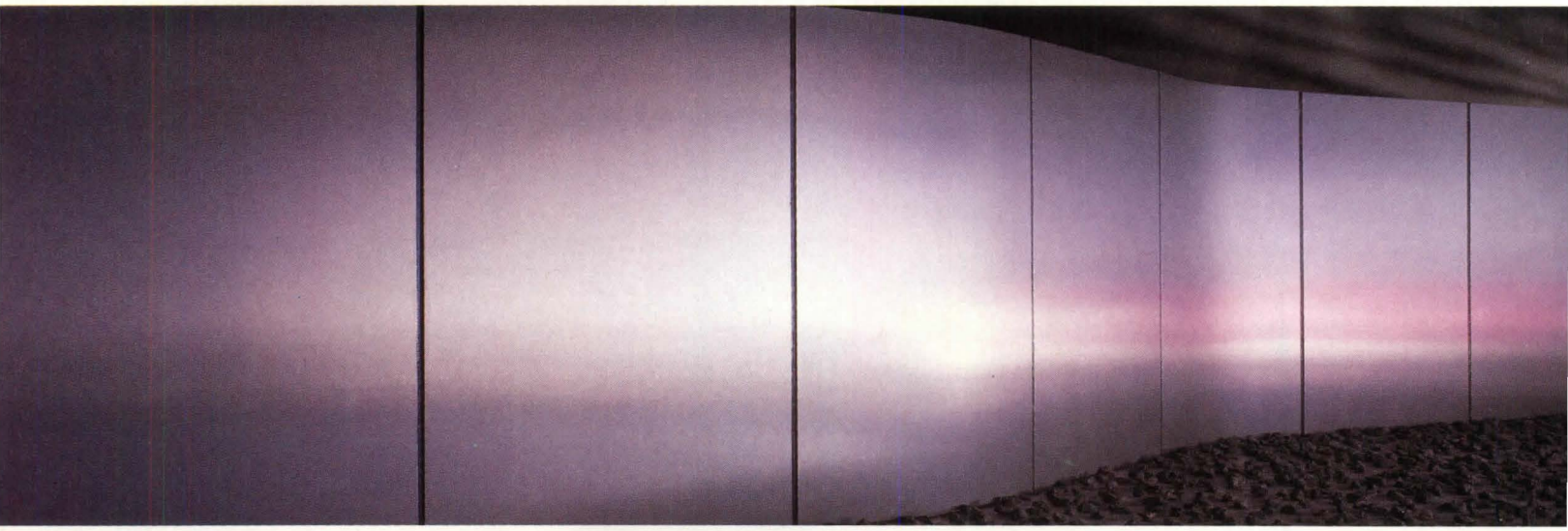
VERSATEC

Sun and SPARCstation are trademarks of Sun Microsystems.DESQview is a trademark of Quarterdeck Office Systems.

Circle 21 on inquiry card

ENVELOPE 2000™ REDESIGNS THE ONE DOLLAR BILL.

Weyerhaeuser's Envelope 2000™ is changing the face of modern architecture. With pre-engineering. High-gloss colors. Custom-made components. A thick, slick aluminum skin. Increased structural support. And one other important benefit. A pricetag roughly half the size of other high-end envelope materials. Which makes Envelope 2000 doubly impressive.



ENVELOPE2000™

Engineered Architectural Wall System

Weyerhaeuser
Architectural Panels Division

Circle 22 on inquiry card

To receive a full color brochure on Weyerhaeuser's new Envelope 2000, call 1-800-426-0870, extension 5082 (Continental U.S. outside Washington State) or 206-924-5082.

Weyerhaeuser

Highway construction is traditionally linked to federal taxes on fuel, which are slated for a two-stage hike from the current 12¢ per gallon. Little, if any, of this potential $10-billion annual revenue will be available to the Department of Transportation, however. It is intended, instead, for deficit reduction. Meanwhile, the 25-percent (and climbing) increase in the price of gasoline since the Persian Gulf crisis will be cutting into revenue earmarked for the highway trust fund as demand—however inelastic it may be—is inhibited.

The other new transportation-related tax, a boost of the federal levy on airline tickets from 8 to 10 percent, will also disappear into general revenue in support of deficit reduction.

A statement of the Administration's policies and priorities concerning transportation, which comes from the 1991 budget, is illuminating, if not encouraging. It makes the following points:

- Development of the transportation infrastructure is a shared responsibility among federal, state, and local governments, as well as the private sector.
- The Administration's highway policy is now undefined, pending the renewal of the Federal Highway Program in FY 1992.
- In mass transit, the Administration puts emphasis on maintenance and restoration of existing facilities rather than funding new systems.
- Modernization of the air-transportation system rates a high priority. An increasing proportion of federal expenditures will be allocated to equipment rather than to construction.

The transition of funding for sewer and waste-treatment facilities from federal EPA grants to state revolving funds (SRFs) has reached the point where all states are now in the program. Reduced dependence on federal sources is one reason for a somewhat-more-favorable outlook for environmental construction than for transportation construction in 1991. However, water supply (which includes transmission, purification, and storage facilities) typically relates to the volume of general building and is vulnerable due to the currently low levels of both housing and commercial construction.

Institutional building's staying power

At a time when everything seems to be going wrong, there's a place where things are going right. That place is the institutional-building market. This one exception to the problem-ridden construction industry is not only sizeable—355-million square feet in 1990 for a value of nearly $40 billion. It also is reasonably well insulated from the stresses bearing on commercial, residential, and public-works construction.

The contrast between institutional and commercial building over the past decade is a version of the fable of the tortoise and the hare played out in hard hats. Contracting for commercial building (stores, offices, hotels, and apartments/condos) got off to a blazing start, reached a peak about halfway through the decade, and subsequently gave up much of its early gain. Meanwhile, institutional building was plodding to a different drummer, showing persistent rather than explosive growth all through the 1980s. By 1990 contracting for schools, health-care facilities, and public buildings lifted total institutional building to very nearly double its 1980 amount. There was a gain of some kind every year.

The staying power of institutional building is a partnership of demographics and finance. The second highest growth of the population behind the '50s generation is at the extremes of the age range—0 to 15 years and 65 plus. More than anything else, the construction needs of these cohorts are, respectively, schools and health-care facilities. Even the fact that much of this construction is publicly funded has not been a handicap. Unlike infrastructure work dependent on federal programs, most institutional building is funded by state and local governments that, until recently, have enjoyed budget surpluses. The bond market provides long-term financing.

Buildings for education, elementary institutions in particular, have been responding to the upturn of birth rates since the 1970s, leading to an acceleration of building during the second half of the past decade. The other fast-track category, public administration buildings, is being driven mainly by prison expansions. Health-care facilities showed most of their growth in the first half of the 1980s and slowed considerably in recent years.

The prospect of recession in 1991, as it squeezes state and municipal revenues, threatens to stall the long expansion of institutional building. The experience of 1980-82, however, when building advanced despite a much deeper recession and higher bond rates than anticipated for 1991, suggests that the threat isn't a serious one. More likely: a smaller-than-average gain of 1 or 2 percent next year vs. the 6-percent annual rate of increases for the past five years.

The other R word: recovery

Although construction markets face the risk of further decline over the winter of 1990/91, it is not too soon to anticipate the next recovery and the cyclical expansion that will follow. Excerpts from the latest edition of the F. W. Dodge five-year forecast of national and regional construction markets are the basis for this scenario for the first half of the new decade.

1991. Next year should bring the conclusion of the building slump which began early in 1990. As construction recessions go, this one could be ranked as medium-severe. After adjustment for inflation, the rate of contracting during 1990 and 1991 will have been 15 percent stronger than in either of the previous two cyclical troughs (1981/82 and 1974/75).

1992. As usual, housing will show the way to recovery of construction markets. Falling interest rates through the second half of 1991 will set the stage for a modest advance of housing starts. A replay of the 50-percent surge (from 1.1 million to 1.7 million units) that 1983 brought, or even the 30-percent first-year rebound that followed the 1975 recession, are not within reach, however. Fading demographics, stubbornly high vacancy rates in multifamily units, and a less-than-satisfactory resolution of the savings-and-loan disaster will dampen the usually strong early recovery of residential building. Nevertheless, the 1992 total of 1.4 million units will be a 20-percent improvement over 1991.

Despite little support from commercial building or from public-works construction, total contract value will advance approximately 15 percent to $275 billion, demonstrating once again that the recovery of the construction sector is almost always an exclusively residential event.

1993. It gets better. With the long-awaited comeback of commercial building, the nonresidential side of the construction market will be reinforcing the further expansion of housing to more than 1.5-million units, lifting total construction-contract value to the vicinity of $300 billion.

1994. The thrust that keeps total construction contracting expanding in 1993 will be coming principally from nonresidential building and to a lesser degree from public works. By then housing will have settled into a sustainable 1.4- to 1.5-million-unit range appropriate to the expected rate of household formation in the mid-1990s. Both commercial building and infrastructure projects have the potential for double-digit gains in 1994, carrying total contract value to $325 billion.

1995. Across-the-board dollar gains between 5 and 10 percent for all three broad categories of construction will boost total contract value to almost $350 billion by mid-decade. At this time, however, the recovery/expansion of the early and mid-1990s will be losing its momentum. More of the year-to-year gain will be due to inflation than to real growth. □

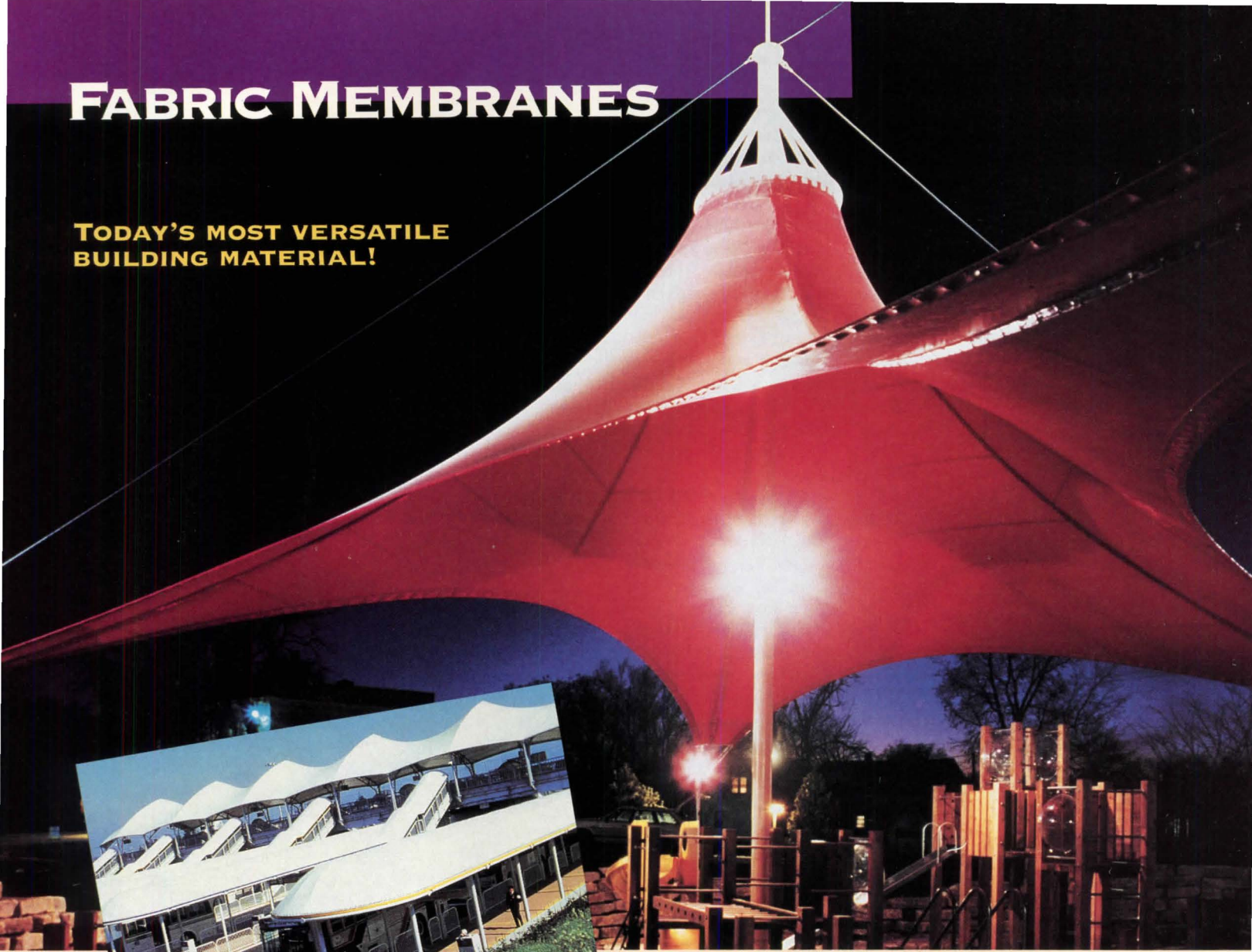
Prepared October 1990 by the Economics Department of the McGraw-Hill Construction Information Group.

George A. Christie, vice president and chief economist
Robert A. Murray, managing economist

Copyright ©1990 by McGraw-Hill, Inc. with all rights reserved

FABRIC MEMBRANES

TODAY'S MOST VERSATILE BUILDING MATERIAL!



FABRIC MEMBRANE STRUCTURES SHELTER PEDESTRIANS AT A MAJOR BUS PASSENGER TERMINAL.

SHELTER FOR PLAYGROUND APPARATUS AT CHILDREN'S SQUARE U.S.A., COUNCIL BLUFFS, IOWA.

ARCHITECTS AROUND THE WORLD ARE USING TENSIONED MEMBRANE STRUCTURES TO CREATE EXCITING NEW SOLUTIONS TO AGE-OLD SHELTER REQUIREMENTS. THE FESTIVE, RED MEMBRANE STRUCTURE (ABOVE) SHADES CHILDREN'S CLIMBING APPARATUS AT DISCOVERY PARK IN COUNCIL BLUFFS, IOWA. VIRTUALLY NO OTHER TYPE OF ROOF OR SHELTER COULD ACCOMMODATE THE PLAYGROUND'S FREE-FORM LAYOUT, AND ITS BRIGHT, SOARING DESIGN MAKES IT A HIGHLY VISIBLE LANDMARK.

THE WHITE MULTI-LEVEL FABRIC MEMBRANE STRUCTURES AT A LARGE BUS TERMINAL (ABOVE) DEMONSTRATE THEIR VERSATILITY IN MEETING UTILITARIAN NEEDS. HERE THEY PROVIDE SUN AND RAIN PROTECTION FOR PEDESTRIANS ON OVERHEAD WALKWAYS, STAIRWAYS, AND BOARDING AREAS FOR INDIVIDUAL BUS ROUTES.

THE VARIETY OF APPLICATIONS FOR TENSIONED FABRIC MEMBRANES IS AS WIDE AS YOUR IMAGINATION. THEY ARE IDEAL AS STAGE SHELTERS FOR ALL TYPES OF PERFORMING ARTS FROM SYMPHONY ORCHESTRAS TO ROCK CONCERTS AND EVERY SORT OF DANCE OR THEATRICAL PERFORMANCE. THEY ARE EQUALLY USEFUL AS AUDIENCE SHELTERS FOR AMPHITHEATERS BECAUSE OF THEIR ABILITY TO SPAN VAST SPACES WITH A MINIMUM OF INTERIOR SUPPORT POSTS. SMALLER MEMBRANE STRUCTURES ARE POPULAR AS POOLSIDE SUN SHELTERS, AS OVERHEAD SHELTERS FOR OUTDOOR RESTAURANTS, AS ENTRANCE GATEWAYS AT THEME PARKS OR EXPOSITIONS, OR SIMPLY AS SHADE STRUCTURES IN PARKS.

HELIOS INDUSTRIES, INC., THE INTERNATIONAL OPERATIONS DIVISION OF TAIYO KOGYO CORPORATION, IS A WORLD LEADER IN DEVELOPING NEW TECHNOLOGIES IN THE DESIGN AND UTILIZATION OF FABRIC MEMBRANE STRUCTURES ALL AROUND THE GLOBE. OUR EXPERTISE AND EXPERIENCE IN MEMBRANE STRUCTURES IS READY AND AVAILABLE TO ASSIST YOU.

FOR MORE INFORMATION OR ASSISTANCE WITH A SPECIFIC PROJECT, PLEASE CALL OR WRITE:

HELIOS INDUSTRIES, INC.

20303 MACK STREET
HAYWARD, CALIFORNIA 94545, U.S.A.
FACSIMILE: (415) 887-0134
(AFTER 7 OCTOBER, 1991: (510) 887-0134)
TELEX: 176226
TELEPHONE: (415) 887-4800
(AFTER 7 OCTOBER, 1991: (510) 887-4800)

HELIOS INDUSTRIES, INC. HAS LOCAL REPRESENTATIVES IN THE FOLLOWING COUNTRIES:

SPAIN
BOETTICHER Y NAVARRO, S.A. (BYNSA)
C.T.R. (COMMERCIAL TECNOLOGIAS RECREATIVAS)
AVDA. DE ANDALUCIA, KM. 9
28021 MADRID, SPAIN
FACSIMILE: (1) 796-6892
TELEX: 47964 BYNSAE
TELEPHONE: (1) 797-8266

HONG KONG
L.F. SAM (H.K.) LTD.
7/F FIRST COMMERCIAL BLDG.
33-35 LEIGHTON ROAD, HONG KONG
FACSIMILE: 834-5283
TELEX: 62872 LFSAM HX
TELEPHONE: 891-8448

HELIOS INDUSTRIES, INC.
INTERNATIONAL OPERATIONS DIVISION

TAIYO KOGYO CORPORATION

Circle 23 on inquiry card

GETTING WHAT YOU WANT FROM SPECIFICATIONS

A guide to choosing the right specification methods for your firm. By Timothy Kirby

This article is the first of a series on specifications, with emphasis on techniques, automation, and dealing with new products and materials.

In response to changes within the profession, many architectural firms are restructuring their organizations and revising their management objectives.

Firms that once had separate design, production, and construction-administration departments are evolving into ones in which the project design team remains intact from project conception to completion. Some firms have developed a modified version that combines the department and the team-studio types. Others are redefining the work in which they specialize to concentrate on specific clients. While design firms go through these transitions, the traditional role of the specifications department, the specifications writer, and creation of project manuals is not immune to the current state of affairs.

Integrating specifications and design

Specifications, once considered a separate and distinct process from design, now needs to be part of it—developed, not at the end of the contract-document phase, but continuously from pre-design or schematics. The reasons are obvious.

Increasing pressures about costs and building performance force architects to make specifications part of communicating design solutions in all phases to all involved parties—including clients. And they force specification writers to be information specialists—creating master texts, building-material databases, and product-selection criteria, evaluating materials, and assisting in cost analyses.

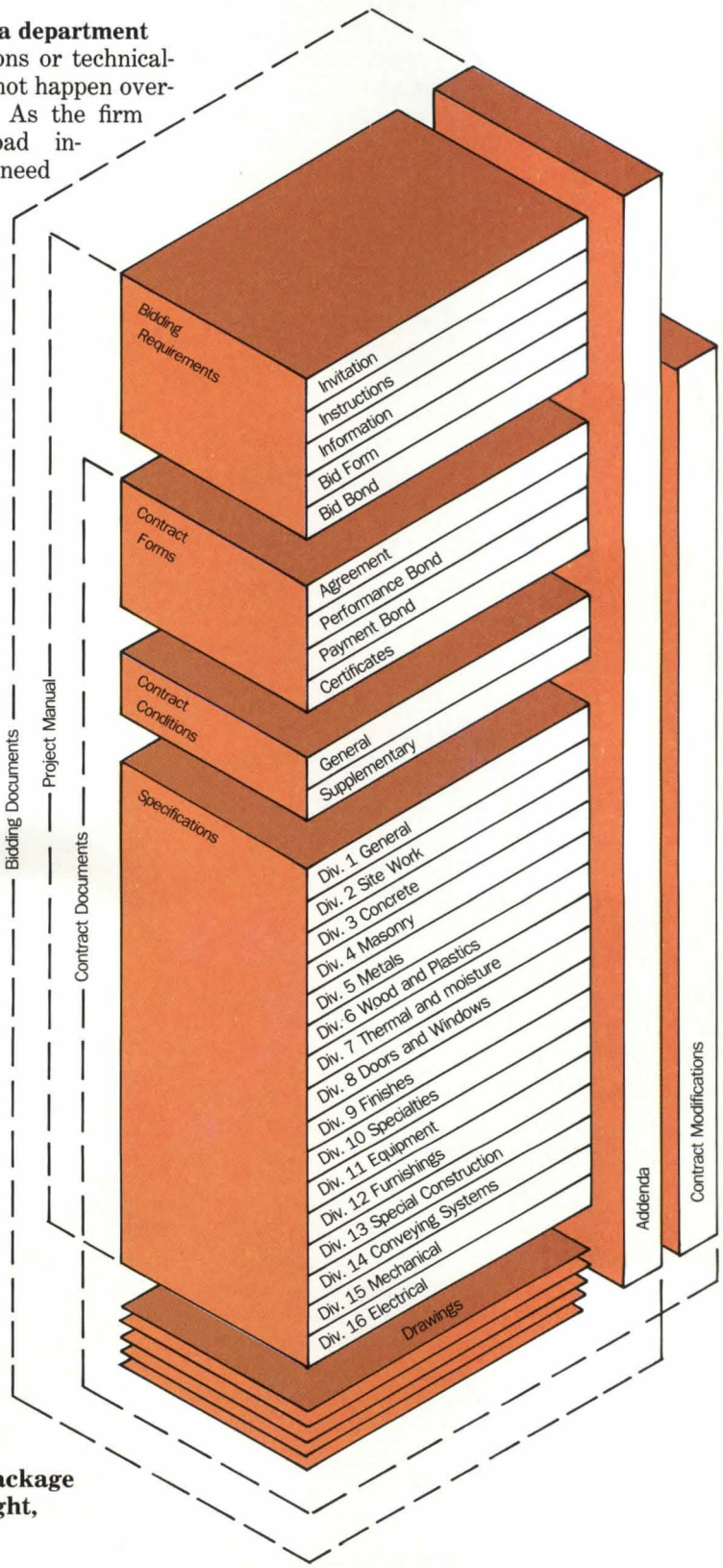
In such an environment, the project manual (diagram, right), containing the written requirements for a project, becomes a joint effort between principals, project designers, specifications writers, and all the other members of the project team. As a result, everyone in a firm has an interest in creating readable, fair, and enforceable documents.

Knowing when you need a department

The need for a specifications or technical-services department does not happen overnight. It usually evolves. As the firm grows and the workload increases, so too does the need for specification capabilities. In a small design firm, the project manual is commonly delegated to a part-time specifier, usually the principal who has the greatest interest in things technical.

The result is frequently based on a previous specification similar to one for the project at hand. Typically, the part-time specifier, in order to establish the extent of documents and determine the project requirements, studies a partially complete set of drawings, prepares a preliminary table of contents of the project manual, discusses the project with the designer, marks up the old specification, has the edited version run through a word-processor, and prints it before the prescribed deadline in hopes it will cover most project requirements. If it is lacking or inappropriate, an addenda of modification can be issued identifying the required corrections. Although this method of preparation may appear to be efficient, it may repeat irrelevant requirements from the previous project's specification.

In an attempt to rectify this procedure, the firm may subscribe to a commercially available speci-



How specifications and the rest of the project manual fit into a package of bidding documents is graphically illustrated in the diagram, right, prepared by the Construction Specifications Institute.

fication system, such as the American Institute of Architects' MASTERSPEC program, or the Construction Specifications Institute's SPEC-TEXT program. Additionally, the firm may consider retaining the services of an independent specification consultant, whose vocation is to prepare the project manual or develop and maintain an office master-text specification system for a fee.

Both the commercial specification system and the independent specification consultant have advantages and disadvantages. The commercial system may be complete and comprehensive, but require extensive expertise and editing time to adapt to a specific project. The specification consultant, although knowledgeable and experienced, may spend lots of time just becoming familiar with a project before starting work.

Still, for a small-size firm, a part-time specification principal, a commercial specification, or a specification consultant may satisfy needs.

Setting Up a Specifications Department

- Predict future volume of activity. Decide if the department will create specifications or assist project managers to do this individually or by creating master texts.
- Establish the extent of product research, library maintenance, and such functions as in-house education the department should do.
- Determine the time, personnel, space, and costs to do the job.
- Decide the methods of specifying that suit your office. (See box below.)
- Determine the types of specifications to be used. (See box, right.)
- Establish procedures for checking and issuing specifications.

Methods of specifying*

Proprietary. Specifies actual brand names, model numbers and other proprietary information.
Reference standard. Does not identify particular products, but requires that they meet an established standard.
Performance. Specifies required results and criteria of products by which the performance can be verified; the contractor is free to find material complying with the performance criteria.
Descriptive. Defines exact properties of materials and methods of installation without using proprietary names.

* *Construction Specifications Institute Manual of Practice.*

The traditional department will become as out of place as cut-and-paste documents.

However, as the number, size, and complexity of projects increase and more staff comes on board, a technical-services department or, at least, a full-time specifications writer should be evaluated.

The evaluation should cover existing and future needs, the time, personnel, and financial resources required, how such a department might be started, space and equipment requirements, and, most critical, the purpose of the specification department. The purpose may include preparing individual-project specifications or developing an office master text that allows project managers to do them. Or it can be a combination of both. If so, a clear understanding of who does what when is essential.

The department may manage a supporting resource library, meet with manufacturers' representatives for product updates and the discovery of new ones, and do product research and evaluation. Giving in-house seminars for the staff is another possibility. All of this may take up a lotof time.

Knowing the specifications you want

With a department established, it is a good time to use the new expertise to look at what method of specifying you want to use, if you have not already done this. (For options, see box left, bottom.) If the choice is proprietary, know that you cannot use it on government work. If reference-standard, know which references you will want to use. If performance, know which criteria the products must meet.

It is also a good time to look at the type of specification (box, right). Each choice requires different decisions. "Or Approved Equal" specifications mean that a person or persons must be designated to decide what is equal. Single-product specifications mean knowing your choice is best.

Other decisions: those who can issue addenda and modifications, who in the firm is legally accountable for the specifications. Establish procedures to assure in-house quality control in the preparation and review, and for issuing documents. If a construction contract is to be bid instead of negotiated, descriptions must be specific.

If the specifications department is to create an office master-text specification system, other subjects need to be addressed: the level of experience of staff members who will use it (dictating ease of use) and how the master will accommodate preliminary outline specifications, specifications for pricing and procurement, from outside consultants, and finally, those for the construction contract.

Getting the most from the tools at hand

In many architectural firms, another responsibility of the specifications department is to come up with an automation system that not only produces specifications, but also does the other text processing throughout the firm. Coordination of the specifiers' automation requirements with those for administrative-support services, marketing, and accounting produces integrated text-processing operations that experience has shown to be the most efficient and cost effective.

In the future, the traditional specifications department, reacting only when called at the end of production, will be as out-of-place as the old cut-and-paste method of putting together a project manual. A well-planned, organized, and efficient technical-services department, working along with the design team, can add significantly to a firm's profitability and reputation—producing specifications that are a contribution to the stature of the firm. □

Mr. Kirby is a senior associate, chief of specifications, and manager of architectural library services, Thompson, Ventulett, Stainback & Associates. He is an immediate past chairman of the AIA Masterspec Architectural Review Committee and is a member of the Construction Specifications Institute.

Types of Specifications

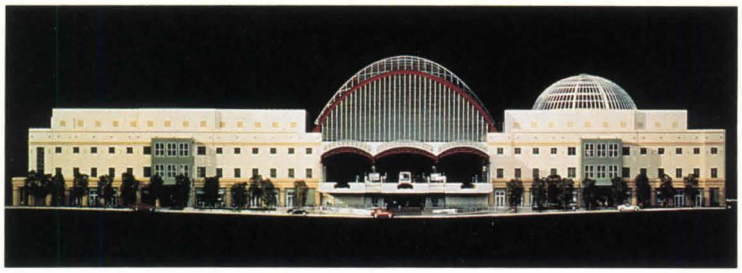
Closed, sole-source, or single-product. States that only the product (brand, trade name, model number, manufacturer) named is acceptable. No substitution will be considered
Multiproduct. Lists two or more products (brand, trade name, model number, manufacturer) that meet the design requirements. All designated products are considered equally acceptable.
"Or approved equal." Names a single product or lists multiproducts followed by the term "or approved equal" which allows another product to be chosen if it can be shown to be equal to those cited.
Prior approval. Use of products not specified must be approved prior to bid date.
Voluntary alternate. Product offered by bidder with submission of bid in lieu of specified product.

AMERICAN FIRMS IN BRITAIN: A REPORT CARD

Charles Knevitt, architecture critic of *The Times of London*, reviews recent work by American architects in his home town.

"Wall Street on water" is what they call Canary Wharf, Canadian developer Olympia and York's $7-billion real-estate gamble on the Isle of Dogs in London's Docklands. Under construction just 2.5 miles from the City financial center on derelict wharves, which until 20 years ago were the centerpiece of the world's biggest port, it is a project of mind-boggling proportions.

By 1995 three towers and 19 mid-rise buildings, totaling 10 million square feet of office space, will stand on the 71-acre site. If O & Y chairman Paul Reichmann and his brothers have got it right, the complex will be full of tenants paying about $32 a square foot—significantly below the $100 a square foot companies pay these days for prime City and West End locations.



DAVID CHEN

Canary Wharf: the grand view as planned by SOM (above), Pelli's controversial tower (left), and his retail/transit complex (top).

"Canary Wharf: It will feel like Venice and work like New York," proclaim gigantic posters all around the capital. Those in love with Manhattan, such as former government environment secretary Lord Jenkin and former president of the Royal Institute of British Architects Michael Mannor, would like nothing better than to see its concrete canyons replicated in London.

Comparisons with Venice and New York City may have some validity, but many Britons ask, "What on earth have they got to do with *London*?" Canary Wharf says a lot about the state of urban design and planning in London, Britain, and Europe, as well as the state of their economies. It is also a showcase of what big American practices are doing over here (although many firms have projects in other parts of the United Kingdom and across Western Europe. See RECORD, October 1990, pages 23-25.)

What Canary Wharf does *not* say, however, is "contextualism" in anything but the detailing and materials. But then Richard Rogers' $340-million Lloyd's of London building does not attempt that either.

What the Reichmanns have brought to London are not only Cesar Pelli, Skidmore, Owings & Merrill (both the New York and Chicago offices), Pei Cobb Freed & Partners, Kohn Pedersen Fox, et al, but also the scale of the New World—something that fits less comfortably in Little England. One impression is given by the beautifully executed aerial perspectives of Canary Wharf as it will manifest itself in situ, quite another when one views the 30-foot model as a typical man-in-the-street.

London's, and indeed Europe's, tallest office building to date is Richard Seifert's 600-foot National Westminster Bank Tower in the City. Pelli's 800-foot tower at Canary Wharf will put that building in the shade in terms of size, if not quality of design. In addition, the mid-rise blocks at Canary Wharf, rising straight up from the banks of the River Thames, will be much higher than anything else around and packed together at a far greater density.

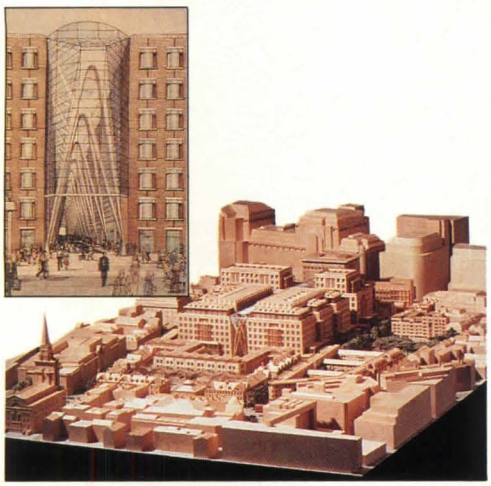
Real-estate logic

"Why does it have to be quite so *high*?" quizzed Prince Charles, of Pelli, in front of television cameras. The architect had no real defense, in planning terms, although a landmark building always makes real-estate sense. By claiming, as he did, that the tower had something to do with the essence of London, Pelli also stretched credulity too far.

Lord St. John of Fawsley, a former government Arts Minister and now chairman of the Royal Fine Art Commission (a public watchdog on design), blamed greed, not style, for the generally poor state of new architecture and urban design in his 1989 annual report. Building heights and plot ratios are doing more harm than good in many places, irrespective of the chosen style, materials, and detailing, stated the report.

Canary Wharf is one case in point, but there are others. The proposed redevelop-

ment of Spitalfields Market on the edge of the City has Swanke Hayden Connell as master planners and principal architects *for a $500-million* scheme of 1 million square feet of offices and shops. While a skillful response to a demanding program made more problematic by conservation-area restrictions, the five huge main buildings will be an alien Leviathan in an otherwise tight-knit urban fabric of smaller



Spitalsfields Market: a $500-million complex of offices and shops designed by Swanke Hayden Connell.

ones. The scheme is in stark contrast to the sensitive conversion of Sir Christopher Wren's St. Olave's House, also in the City, that Swanke Hayden Connell designed for U. S. lawyers Sullivan & Cromwell.

Similarly, Pei's partner Henry Cobb (considered to be almost more English than the real thing) has produced a rather extraordinary zig-zag plan for offices called Thamesgate, upstream of the Houses of Parliament at Vauxhall, in an area not noted for its architectural or urban panache. The use of bay windows and limestone cladding cannot ever compensate for its unwelcome intrusion or stumpy square towers that will bear down on the Thamesside walk.

SOM's latest projects

Infinitely more appropriate and acceptable to local eyes are projects that take their scale and form from their immediate surroundings: for example, SOM's latest phases of the 14-phase Broadgate redevelopment, next to Liverpool Street Station in the City, and its plans for the re-use of County Hall, diagonally opposite the Houses of Parliament.

What is guaranteed to make the natives wince, however, is anything as "clever" and patronizing as Philip Johnson's attempt to re-create the Houses of Parliament at London Bridge City, Phase Two, opposite the Tower of London. Johnson's original design was turned down by the planners. Now the government will have to make a decision among three rival designs: Johnson's mark two, a neoclassical pastiche modelled on St. Mark's in Venice, and a straightforward Modernist design (the last two by British architects).

While Canary Wharf will have the closest likeness to Chicago or Manhattan in terms of scale, design, and detailing, buildings in other parts of London will have their own discernible "U. S. style." SOM's Bishopsgate street frontage to Broadgate has been described accurately as "fin de siècle Chicago." Venturi, Scott Brown and Associates' extension to the National Gallery in Trafalgar Square, under construction, will display its self-consciously American approach to Europe (i. e., academic rather than endemic).

Richard Meier, who received the Royal Gold Medal for Architecture, will be doing a typically Meierish project for Maybury business park in Edinburgh, Scotland. And HOK will still be HOK whether it's working in Hertfordshire, in the south London suburb of Croydon, or in Sheffield or Birmingham.

Previous American forays

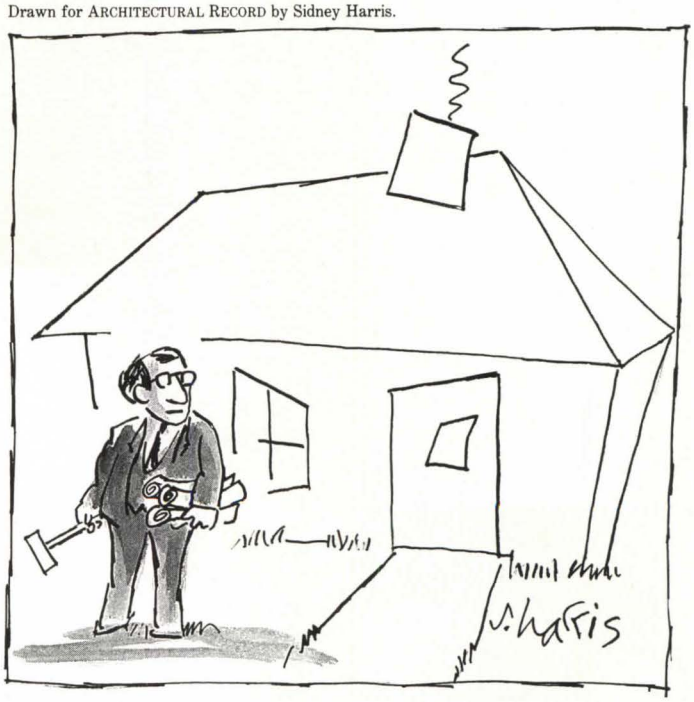
The friendly professional invasion of London by American architects is not resented. Far from it. After all, there are historical precedents—from Daniel Burnham's welcomingly familiar contribution to the design of Selfridge's department store on Oxford Street to the less appreciated hand of Walter Gropius in the Playboy Club, Park Lane. British architects still look up to their American cousins, especially when it comes to the design of skyscrapers.

National Gallery addition: Venturi Scott Brown on Trafalgar Square.

Many U. S. firms find the interventionist approach of British planners irksome, but no more so than their English counterparts. The net result, on balance, is no better and certainly no worse than what homespun architects are up to, given that it is the larger, more commercial American practices doing the larger, more commercial London projects. Avarice and greed are not uniquely North American attributes. Neither are egotism and chutzpah.

Just as architectural talent is one of our biggest exports (Foster, Rogers, Stirling), so the input of American talent is proving to be an invigorating experience. And with European trade barriers coming down in 1992, American firms based here are poised to enter the single biggest marketplace in the world—one that has been enhanced by recent events in Eastern Europe and a united Germany. □

Drawn for ARCHITECTURAL RECORD by Sidney Harris.



The Architect speaks: "I discarded Frank Lloyd Wright, I discarded Philip Johnson, I discarded all the Post-modernists, and I went back to my roots. This house is based on a drawing I did when I was six."

In the Public Interest 1990

Although the contention that good clients make good buildings (and the other way around) has become something of a cliché among architects, the editorial jury for RECORD's third In the Public Interest awards was readily persuaded of its continuing freshness. For this year's program to recognize excellence in public architecture, we invited simply "civic" buildings: those that house or support government functions. Yet the best entries, led by the nine winners shown in this issue, went beyond mere utility. Tacitly or explicitly they declare that the client agencies also adopted—and conveyed to their architects—a broader goal: not just to house but to nourish the body politic.

A harbormaster's quarters combine with a yachters' rest-stop to bring old-salty flavor as well as new amenity to Chicago's lakefront, while the piquant salsa of a public marketplace spices up the economy of a struggling Miami neighborhood. In Columbus, Indiana, where public architecture is an avocation, the most important—and most civil—recent government building is, improbably, a jail. Also unexpected are Toronto's downtown police headquarters, which courts the public with welcoming open space, and the partnership of public and private interests that nestles a Boston fire station under the wing of a spec office building. In neighboring Andover, Massachusetts, a sensitive renovation restores the abandoned 1850s city hall to a lively new role in community life, while in Julian, California, the brand-new post office recalls the same era to reflect the community's self-chosen frontier image. Nearby Oceanside, California, also harks back—but only to the 1920s, continuing in its expanded civic center a rich regional legacy. And for the Denver suburb of Aurora, a justice center draws on neoclassical roots to seed a vital civic core for a town growing into the 21st century.

Variety, yes. But the buildings show likeness too in their embrace of values that perhaps find their most apt expression in architecture for all: sensitivity to the community ethos, human scale, and, well. . . pizazz.

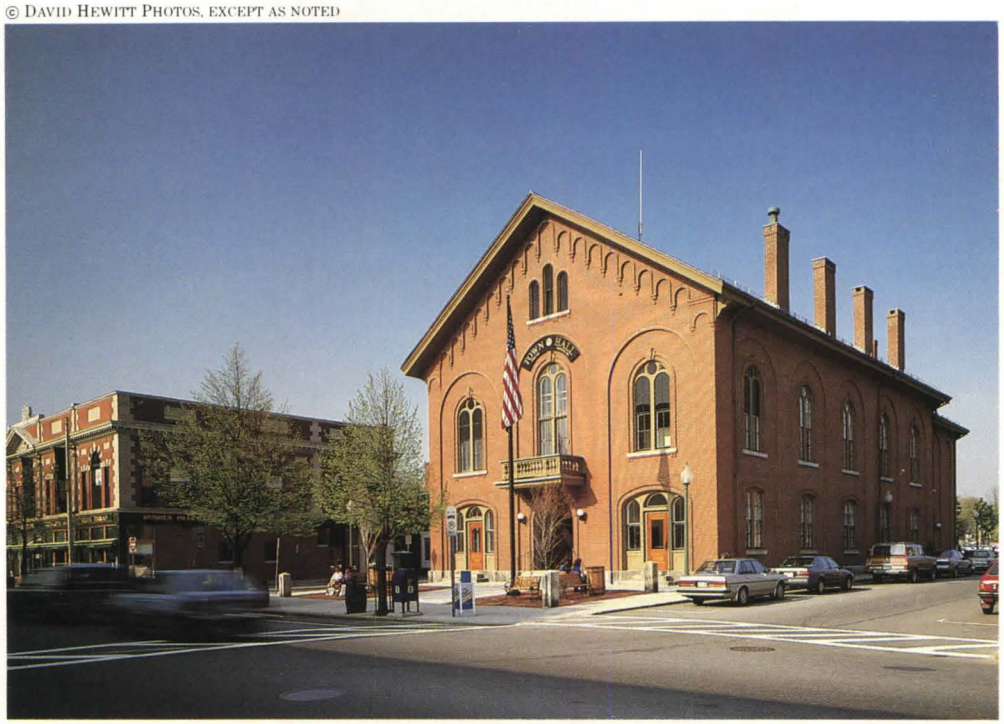
MARGARET GASKIE

A Wild West post office adds to its town's frontier image.

To Gather Together

After years of neglect, a restored 19th-century town hall near Boston is once again the focus of a community's pride.

© David Hewitt Photos, except as noted

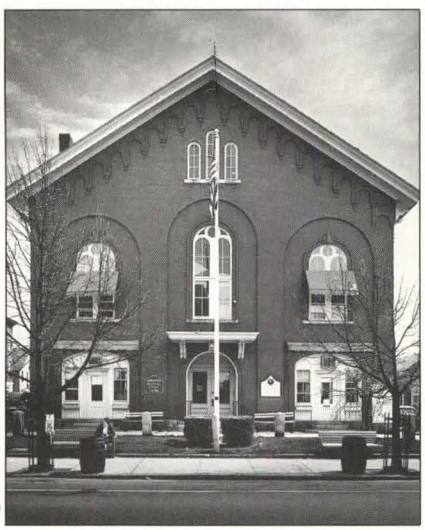


Town Hall occupies a prominent site on Main Street in downtown Andover.

The patrician Boston suburb of Andover is hardly the kind of place that forsakes its historic civic buildings. Yet for many years Andover Town Hall sat forlornly on Main Street like some scruffy uninvited guest at an elegant New England garden party. Although the red-brick Italianate structure, designed by Theodore Voelkers as Andover's first public building after the town separated from the community of North Andover in 1855, had never descended into total dereliction, Town Hall was definitely underused, undermaintained, and underappreciated, especially after the town's government abandoned it for new offices in 1986.

That same year, a group of local citizens led by the Andover Historical Commission began pressing for the building's renovation and adaptive use. The town commissioned Ann Beha Associates, a small Boston firm specializing in preservation, to develop a plan that called for restoring the building's handsome, but delapidated, second-story auditorium to its original function as a public gathering place, with the ground floor given over to commercial use and a downtown branch of the U. S. Post Office.

"The project initially was about generating enthusiasm," recalls Ann Beha. "The building's original features had been unsympathetically altered over the years, and most people in Andover were unaware of its architectural character." Following months of public hearings—and encouraged by a videotaped tour of the building that was broadcast over a local cable channel—residents attending Andover's annual town meeting in April 1987 voted to spend just under $2 million in local capital monies for the structure's restoration.



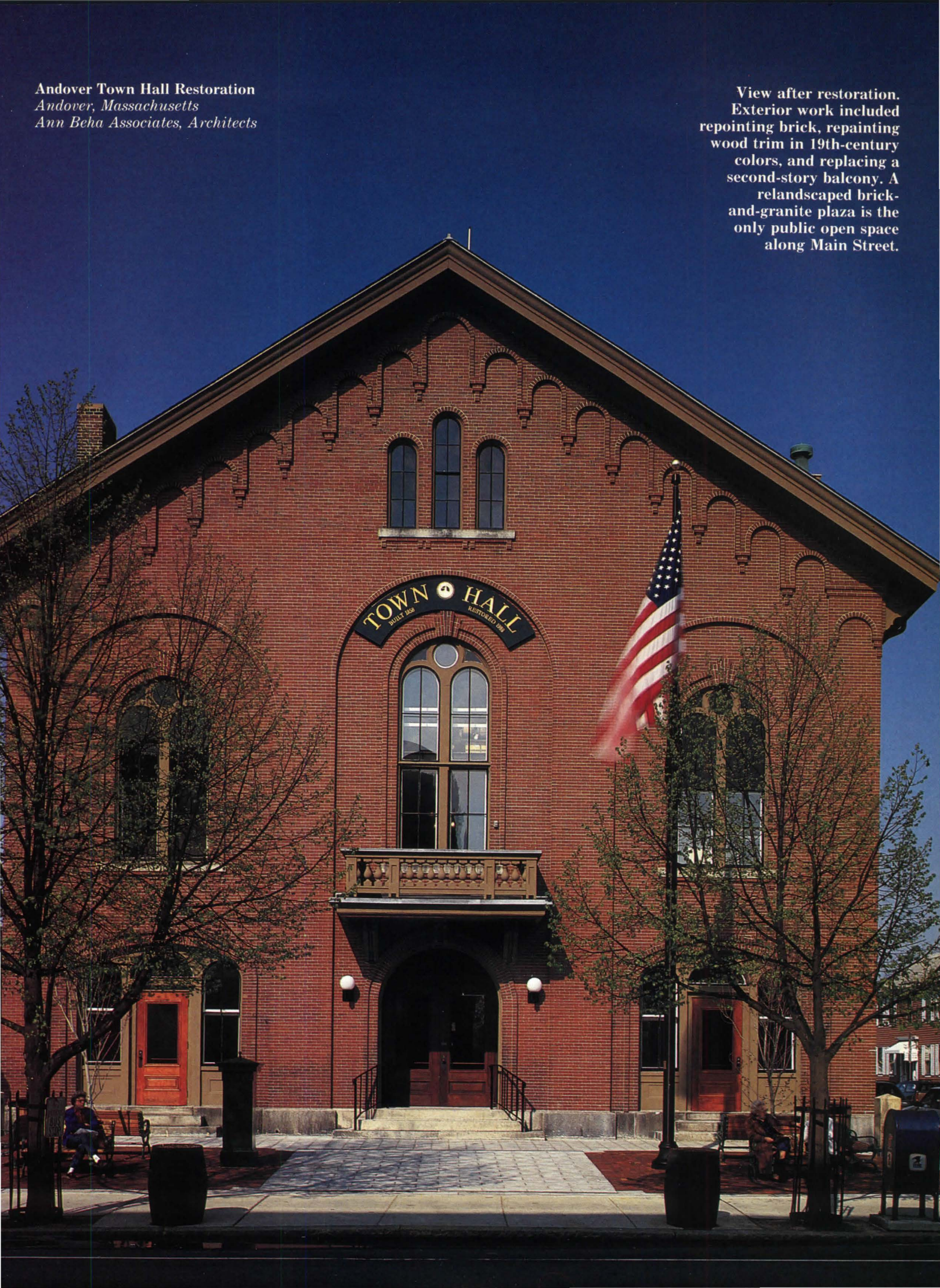
© James Higgins

View before restoration. The building was largely vacated after Andover constructed new town offices in 1986.

Much of that funding went toward reinforcing the building's brick piers and wood structural members with new steel beams along the underside of the auditorium and additional rows of steel columns that were extended into the basement and anchored in concrete footings. Though the building was in no immediate danger of catastrophic failure, the architects strengthened existing structural connections with metal anchors, joist hangers, and truss plates to bring the facility up to current code, and they inserted new steel trusses into the attic to support the auditorium's air-handling units.

What's more, Beha and her colleagues carefully incorporated elements relating to the current-day need for energy efficiency, accessibility, and comfort. New roof insulation and interior aluminum storm windows, for example, temper the impact of Andover's harsh winters, and a small elevator slipped into a former rear stairwell allows the physically challenged to bypass Town

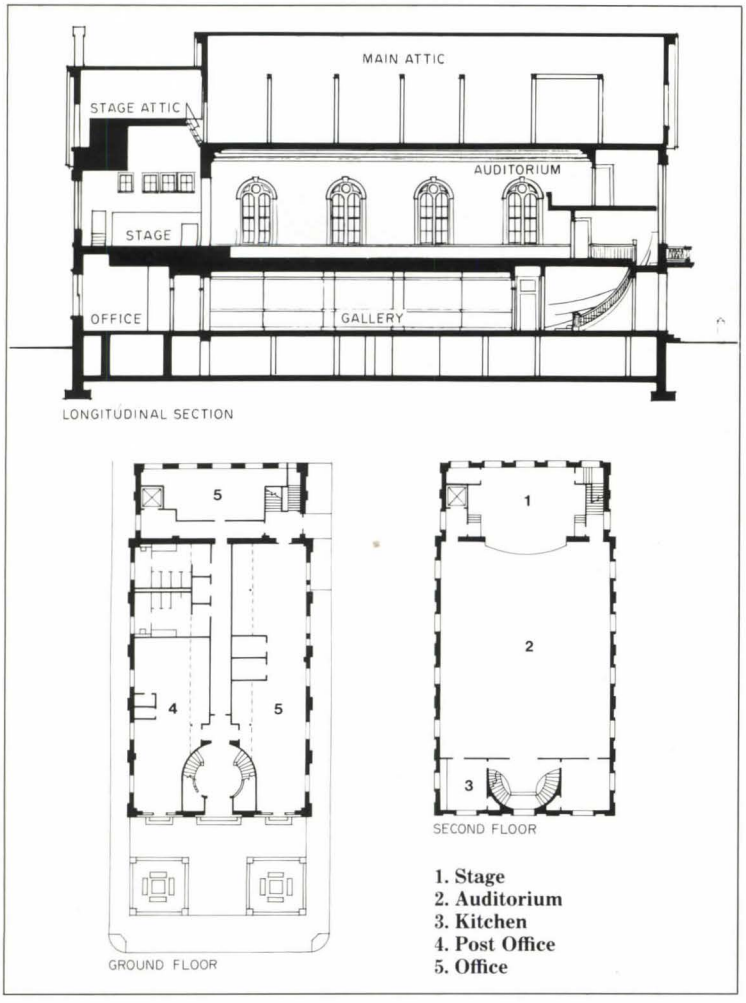
Andover Town Hall Restoration
Andover, Massachusetts
Ann Beha Associates, Architects



View after restoration. Exterior work included repointing brick, repainting wood trim in 19th-century colors, and replacing a second-story balcony. A relandscaped brick-and-granite plaza is the only public open space along Main Street.

Painter Michael Orlando reproduced the auditorium's decorative wall stenciling from a surviving 19th-century section that the architects discovered underneath later wood paneling. Repainted window shutters are original.

A curved stair (top right) leads to the restored auditorium (below right). Aided by a 19th-century pattern book, the architects replicated the room's plaster cornice in glass-fiber-reinforced concrete.



Hall's daunting (for the handicapped) curved main stairway.

Although work on the building's exterior was extensive, it was relatively straightforward—a new slate roof, repointed brick, and a rebuilt version of a missing second-story balcony. Not so for the interior, where the architects based much of an elaborate restoration program on photographs of the building taken around 1900 and on paint analysis carried out by the Society for the Preservation of New England Antiquities.

In the auditorium 80-year-old painter Michael Orlando reproduced 19th-century wall stenciling from a surviving section that project architect Pamela Hawkes discovered beneath later wood paneling. The auditorium's original plaster cornice and stage frame, removed during the 1950s, were refabricated in glass-fiber-reinforced concrete with the help of a 19th-century plasterer's handbook and a single discarded modillion found behind a door. The room's air-conditioning supply grilles are set neatly between stencil patterns in the ceiling, while brass chandeliers and sconces are stock items that evoke the spirit, if not the exact detail, of the original gas fixtures. The architects chose to furnish the auditorium with 200 modern contract stacking chairs because, according to Hawkes, "the building never had fancy seating before—just utilitarian wood benches—and the town required easily removable seats."

© JAMES HIGGINS

The auditorium before $2.1-million restoration.

Since its rededication earlier this year, those seats have been well used, for events ranging from wedding receptions and class reunions to chamber-music recitals and community theater. A senior-citizen drop-in center occupies part of the ground floor, and the post office is expected to open by year's end. Recalling the long approval process that led to the building's rebirth—and the fact that some people initially wanted Town Hall demolished for downtown parking—town manager Kevin Mahoney said that "this project could have split Andover apart. Instead, it has brought everyone together."

PAUL M. SACHNER

Andover Town Hall Restoration
Andover, Massachusetts
OWNER: *Town of Andover*
ARCHITECT: *Ann Beha Associates—Ann M. Beha, principal-in-charge; Pamela W. Hawkes, project architect; John Englund, Jean Carroon, project architects*
ENGINEERS: *Structural Technology (structural); Fitzemeyer & Tocci (mechanical); EBM, Inc. (electrical)*
CONSULTANTS: *Ripman Lighting (lighting); Cavanaugh-Tocci (acoustics); Society for the Preservation of New England Antiquities (historic finishes); Patricia Pratt (landscape)*
GENERAL CONTRACTOR: *Mansco, Inc.*

Double Identity

© Balthazar Korab Ltd. Photos

The brick and "stone" jail is visually linked with the 1870 courthouse (far left in photo above) as well as period structures closer by. A packed program is divided between a long linear support building and the domed cell-block.

As the brochure dedicating the new Bartholomew County Jail acknowledges, "a jail is never a welcome addition to any community." And when the community is Columbus, Indiana, with its pantheon of 20th-century architecture and its building-conscious public, the observation is especially apt. Yet architect Don Hisaka & Associates has given this uncongenial institution a civic presence rivalled only by the nearby County Courthouse, a picturesque Second Empire structure built, along with an accompanying jail, in the early 1870s.

Hisaka at first proposed, in fact, that the new jail be placed, like the 1870 facility and an immediate predecessor built in 1963, on the south edge of the parklike square around the courthouse, where it would add density to the nucleus of city and county buildings anchored by the courthouse and the triangular City Hall on the block diagonally to the southeast (site plan right). Instead, the city elected to push the civic core in the opposite direction, eastward along the Second Street route by which most visitors to Columbus arrive and depart. Accordingly, the new jail was allot-

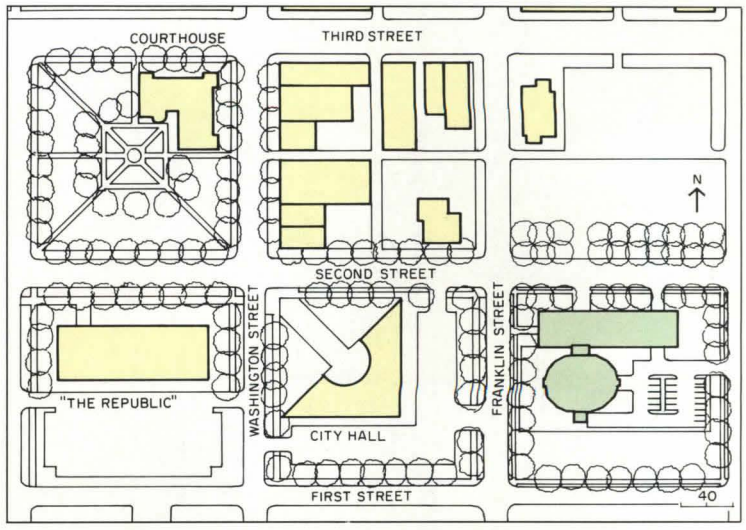
Bartholomew County Jail
Columbus, Indiana
Hisaka & Associates, Architects

In Columbus, Indiana, even the jail is a model architectural citizen.

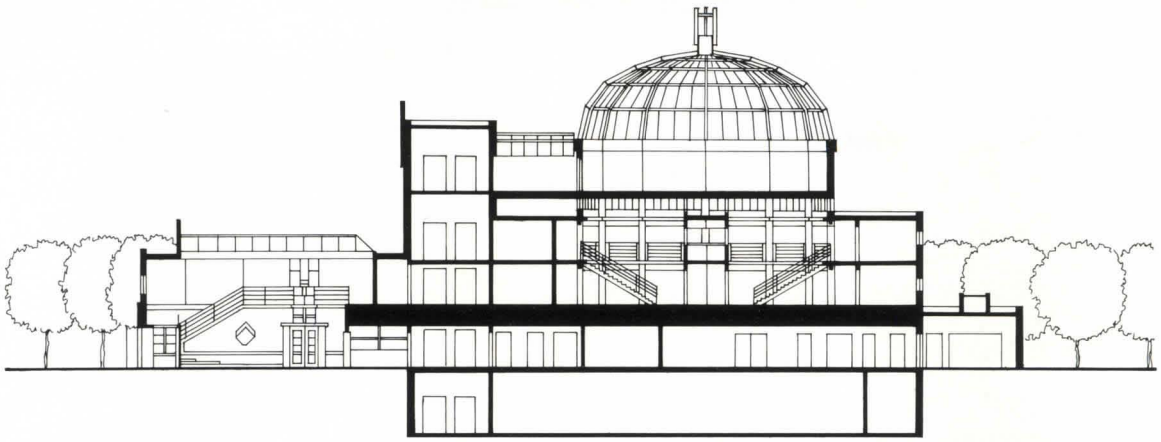
ted a city block between the existing City Hall and a proposed post office, where it can be seen from the old courthouse but relates more directly to the downtown commercial district.

Concentrated on Washington Street, this rediscovered group of two- and three-story brick and stone buildings dates to the turn-of-the-century, but is fast being rejuvenated to form a cohesive, humanly scaled ensemble of considerable charm. Don Hisaka responded to the implied shift in civic focus by choosing to reinforce this still loosely woven urban fabric—and at the same time establish a clear civic identity for the jail itself—by reaching back toward these reminders of Columbus's past rather than to its celebrated gallery of Modernist icons, which, however distinguished individually, were for the most part conceived as independent objects.

Taking advantage of a program that called for offices and training facilities for the county sheriff's department as well as a jail with housing and support elements for 60 inmates, Hisaka divided the 50,000-square-foot building into two distinct ele-



Although split-face block and precast concrete substitute for limestone, bold ornament helps give scale and ties the jail to older buildings. The main entrance (below) achieves monumentality with the layering of portal, pediment, set-back tower, and domed cell-block.



In addition to shielding the jail from public gaze, the two-story support building disguises its bulk. The full-block site that fosters privacy and security also allows addition of another cell-block when needed.

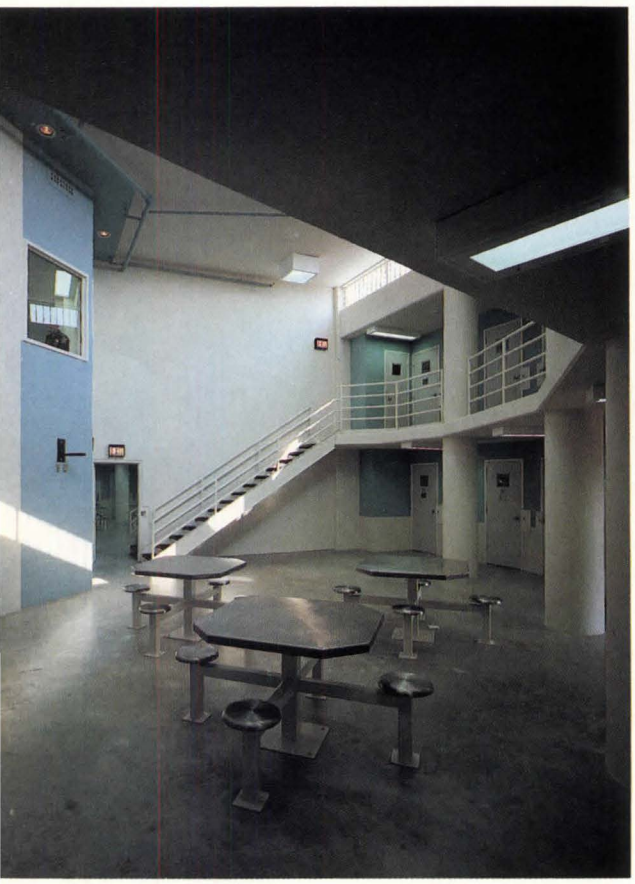
ments. The secured cell-block is a multifaceted oval drum set to the rear of the site, in a field surrounded by trees, employee parking, and a decorative perimeter fence. Joined to it by a vertical circulation tower and sallyport, the administrative areas and public spaces occupy a long, low rectangular building on Second Street, where, in addition to defining the street edge, it presents a friendly public face.

At pedestrian level, the long facade is further softened by a line of honey locusts marching across the grassy strip of the building's block-long "front yard." On a larger urban scale, the trees also strengthen Second Street's emerging identity as a well-defined boulevard by continuing the streetside plantings that shelter the courthouse square and the glass-fronted *Republic* newspaper plant to the west, tying together otherwise unrelated downtown structures.

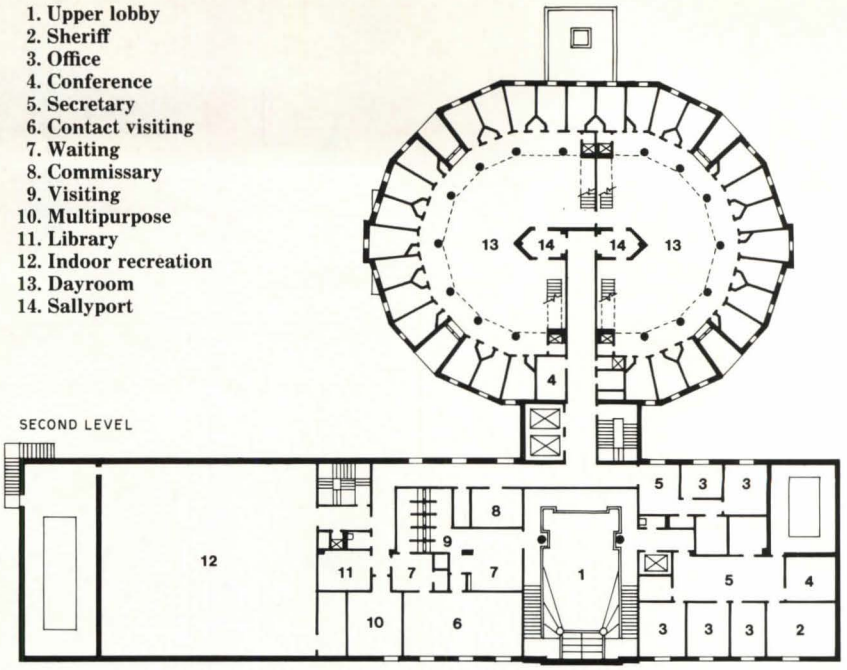
Both the distinctiveness of the jail and its easy relations with its surroundings are heightened by the use of materials and details that complement those of older buildings close by but avoid direct imitation. (A sharp eye might, however, match the jail's blue-tiled diamond medallions with similar bull's-eyes on the courthouse tower.) Rosy brick in two subtly differing shades is frosted with milky split-face block and precast trim—stand-ins for traditional ornament in Indiana limestone. Applied with an offhand freshness won through painstaking study, bold patterns appliqué window sills and lintels, bases and belt courses, tempering the building's scale. In addition, larger shieldlike panels bearing vaguely heraldic devices announce such elements as the connective tower between the service building and cell-block, and the building's several entrances.

The main entrance (photo opposite) from Second Street opens to a cleanly handsome two-story lobby/atrium that gives secured access to public and working areas on either side of the building and the jail beyond. Like the interiors throughout, it also illustrates Hisaka's skillful use of simple, rugged materials (split-face block, enameled metal, drywall) and abundant natural light. On the ground floor, flanking doors, amplified to portals

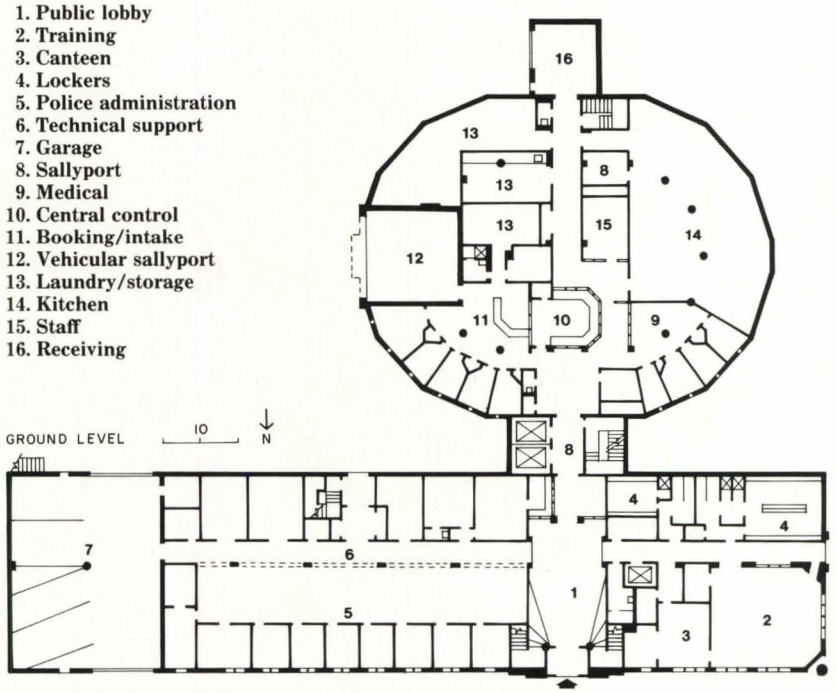
Though the choice of materials was constrained by a sense of fitness as well as durability and cost, interiors throughout the jail are carefully detailed. The public lobby (opposite) sets the tone with its cool white shell, patterned brick floor, inner layer formed by stair and balcony, and oversized door frames. In the cell-block, each 30-person pod (below) wraps two floors of cells around a clerestory-lit dayroom with central observation port.



1. Upper lobby
2. Sheriff
3. Office
4. Conference
5. Secretary
6. Contact visiting
7. Waiting
8. Commissary
9. Visiting
10. Multipurpose
11. Library
12. Indoor recreation
13. Dayroom
14. Sallyport



1. Public lobby
2. Training
3. Canteen
4. Lockers
5. Police administration
6. Technical support
7. Garage
8. Sallyport
9. Medical
10. Central control
11. Booking/intake
12. Vehicular sallyport
13. Laundry/storage
14. Kitchen
15. Staff
16. Receiving



by outsize surrounds, lead to staff facilities: lockers, a large training room, and the canteen on the east; on the west, the offices of the county police. Edging the space, a double stair and inner balcony lead to more secure spaces on the second floor. The smaller wing to the east houses offices for the sheriff—whose tall corner window looks directly toward the County Courthouse—and his immediate staff. The opposite wing contains inmate visiting rooms, associated waiting areas, and indoor recreation facilities including a gymlike double-height space that raises the roof above it to three stories.

The lobby also issues on the elevator and stair tower that serves as a sallyport between the service building and the lozenge-shaped cell-block. Within the cell-block, the ground floor is reserved for such support elements as the main control room, medical suite, kitchen and laundry, booking/intake area with holding cells, and vehicular sallyport. On the level above, a central shaft houses sallyports and observation rooms on either side, overlooking two-story dayrooms ringed by inmate cells divided between two levels. It is on the fourth and highest level, a lantern over the cell-block drum, that an open-air recreation area crowns the jail with a metal-mesh-covered steel-framed dome—the quintessential civic emblem. **M. F. G.**

Bartholomew County Jail
Columbus, Indiana
OWNER: *Bartholomew County Jail Building Corporation/ Bartholomew County Commissioners*
ARCHITECT: *Hisaka and Associates Architects, Inc.*
SECURITY CONSULTANT: *Silver & Ziskind*
PROJECT REPRESENTATIVE: *Architect Group, Inc.*
ENGINEERS: *Weidlinger Associates (structural); R. G. Vanderweil Engineers (mechanical/electrical)*
LANDSCAPE ARCHITECT: *Michael Van Valkenburgh Associates*
GENERAL CONTRACTOR: *David Engineering and Construction, Inc.*

Yankee Ingenuity

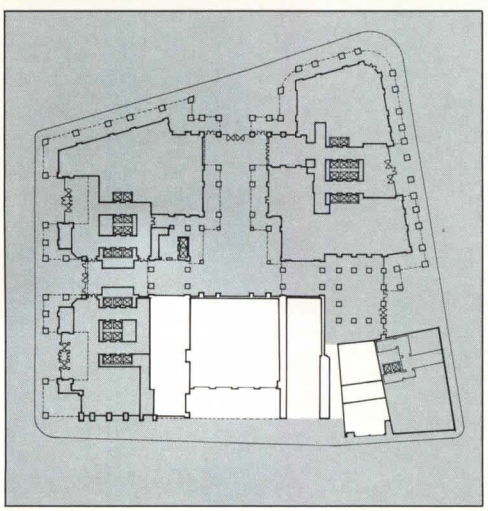
Jung/Brannen Associates have deftly inserted Boston's new downtown fire station into a major high-rise office development.

Division 1 Headquarters
Boston Fire Department
Boston, Massachusetts
Jung/Brannen Associates, Architects

© PETER VANDERWARKER PHOTOS, EXCEPT AS NOTED

The story of Boston's new Division 1 fire headquarters is the tale of a city which, after years of selling its red-brick-and-gray-granite soul to developers of overscaled office towers, has finally recognized that tax-generating commercial development does not mean sacrificing the civic adornments that help define a community's sense of place. Perhaps more than any other major American metropolis, Boston over the past five years has rewritten its zoning code to reflect a new attitude toward the city's central business district. The message to developers—and architects—is clear: you can build large-scale office projects downtown, but you must return something of substance to the public realm. And you should expect the active participation of the Boston Redevelopment Authority (BRA), the city agency that has used its regulatory powers over the past five years to ensure that any potential abuses of private development are held in check by enlightened public policy.

The BRA played a key role in the evolution of 125 High Street, a 1.8-million-square-foot mixed-use project currently under construction on a block-square site at the edge of the city's financial district. Robert Kroin, chief senior architect with the BRA, recalls that when a consortium comprising New England Telephone and real-estate developers Spaulding & Slye and The Prospect Company first presented 125 High Street to his agency in 1987, it proposed putting up "a hulking 700-foot tower." Through a series of negotiations, Kroin and other BRA staff "coaxed the developer into making a real urban setting" by retaining three red-brick 19th-century warehouses that occupy the southeast corner of the site. They also convinced the developer to reduce the project's perceived scale by breaking the single office monolith into two towers of 30 and 21 stories, which rise from a five- to nine-story base threaded with pedestrian arcades. Finally, the BRA made its ultimate project approval contingent on an unusual public/private enterprise: a new 25,000-square-foot fire station and ambulance facility in the base of the development to replace an old central fire house on nearby Oliver Street that had to be demolished to make way for the second of the development's two towers. In an ingenious financial arrangement, the developers agreed to underwrite the fire station's $5.2-million price tag, and were allowed to deduct that sum from their purchase price of the city-owned land.



Division 1 Headquarters (opposite and unshaded area of site plan) occupies the lower two floors of a five-story office podium, between the 30-story tower of 125 High Street and three restored 19th-century buildings (top). The division's ambulance facility is housed in one of the restored structures.

Aside from the agreement's obvious financial benefit to Boston—a new flagship fire house serving the downtown financial district at virtually no cost to the city—the accord allowed architect Jung/Brannen Associates to give 125 High Street's highly visible rear elevation, which faces the Central Artery, an imposing civic presence not normally associated with private development projects. The station occupies two stories of a five-story bay on Purchase Street, sandwiched between an 850-car


CITY OF BOSTON FIRE DEPARTMENT
Boston Tower Unit
SQUIRT UNIT

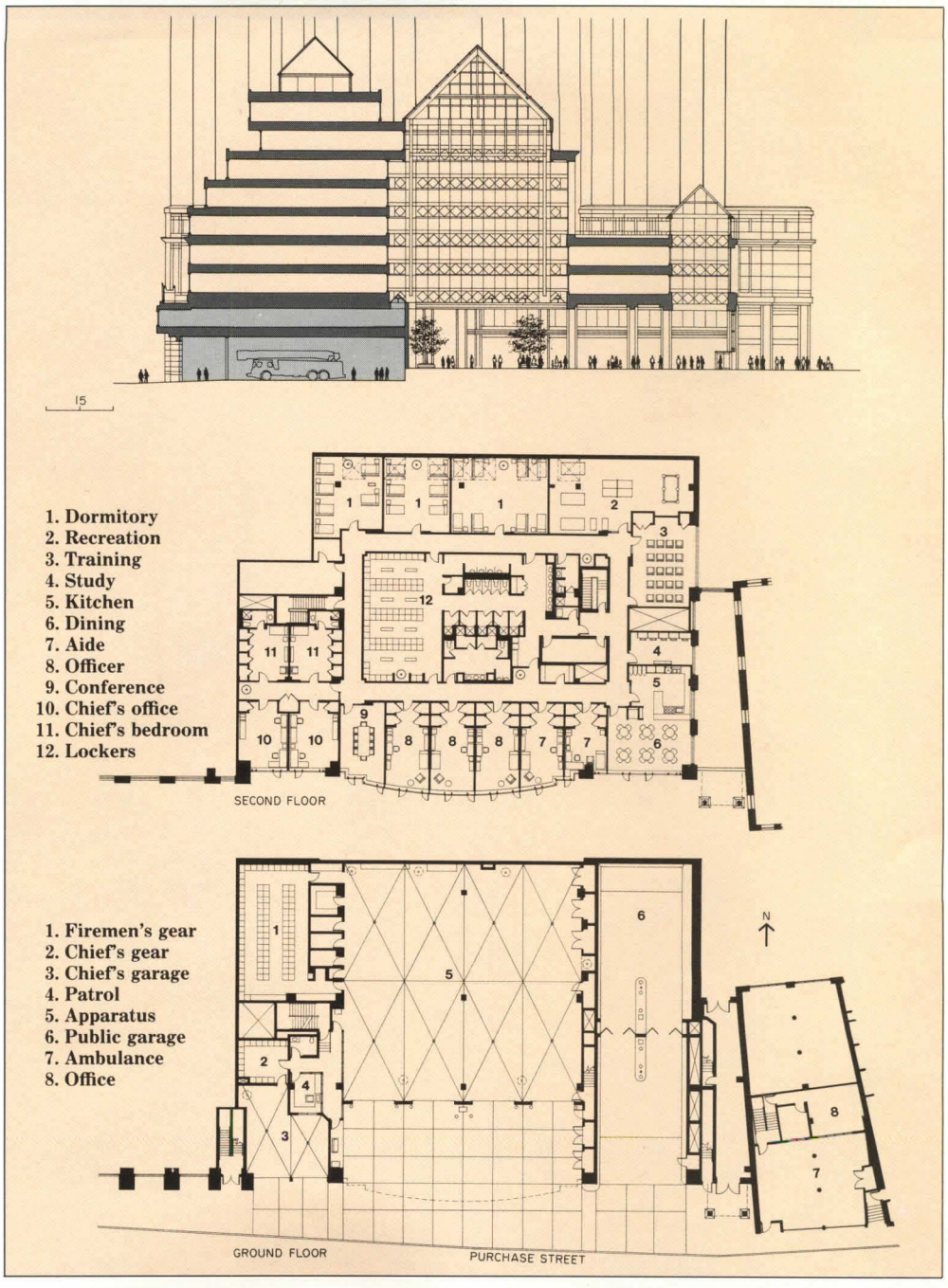
Although Boston's Division 1 headquarters uses the same polished- and flame-finished-granite masonry as the rest of 125 High Street, galvanized metal ornament (top left) and a bronze medallion bearing the city seal (below) give the fire house a distinct civic presence. Firemen stationed in the control room (far right in bottom left photo) have an unobstructed view of the division's four engine companies through a full-height window wall. Daybeds in a second-story dormitory (bottom opposite) are grouped around a brass firepole, one of five in the facility.

© RICHARD MANDELKORN

public garage (29 parking spaces are reserved for the exclusive use of firefighters) and three stories of privately leased office space. Although the architects extended 125 High's richly textured vocabulary of pink Stony Creek granite, gray Deer Island granite, and green-painted aluminum ornament onto the station, they established a distinct identity for the public facility by crowning a gently bowed second-story bay with a bronze medallion that bears Boston's city seal.

Jung/Brannen integrated the fire station with the steel-frame office complex by suspending the main portion of the structure from an 80-foot-wide steel truss. Separate wings for the divisional chief's offices and the ambulance facility are situated to the left and right, respectively, of the central apparatus bay. Four ground-floor bays house a ladder company, an engine company, a hazardous-materials company, and other emergency vehicles. High and low wall ventilators purge the ground-floor bays of diesel fumes each time an alarm sounds.

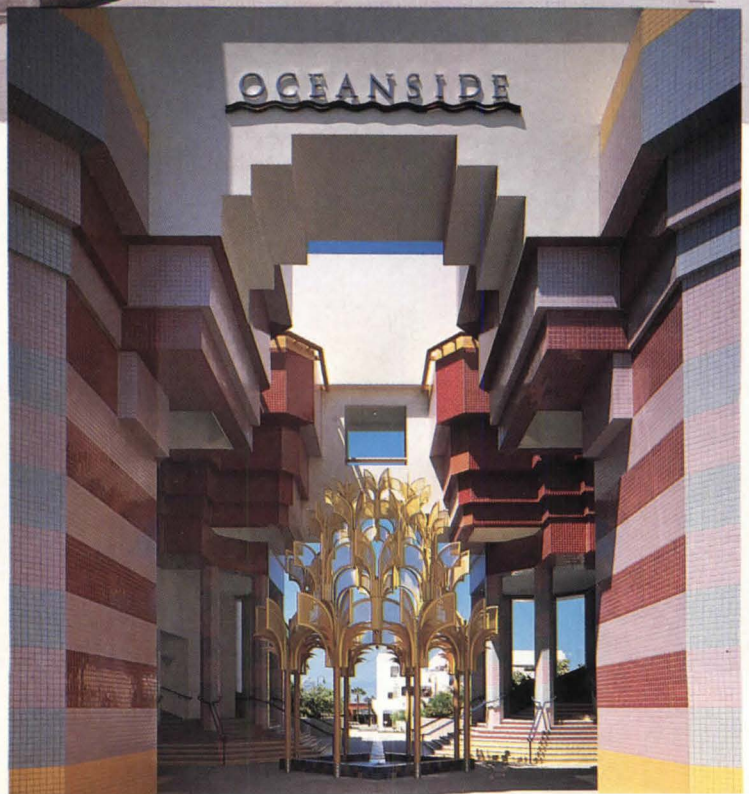
The architects' principal challenge on the second floor was to fit all the building's administrative and living spaces into just 15,000 square feet of space. (The fire department rejected an early proposal to spread the facility over three floors.) The second level is organized as a large square doughnut, with wet areas—locker rooms, bathrooms, and a laundry room—placed in the center. Offices and sleeping areas for company captains and divisional chiefs enjoy natural light through south-facing windows; by contrast, eight-person dormitories located along a windowless north-facing wall borrow light from the adjacent office-building atrium through skylights equipped with motorized shades. Other amenities include a recreation room, training room, small library/study, and a kitchen outfitted with a commercial-grade gas range—the last feature a special request of a group whose vocational skills traditionally are matched only by their culinary talents. **P. M. S.**



Division 1 Headquarters
Boston Fire Department
Boston, Massachusetts
Owner: *One Twenty-Five High Street Limited Partnership*
Architect: *Jung/Brannen Associates, Inc.—Yu Sing Jung, principal-in-charge; Norman Adams, project director; Neil Middleton, design coordinator; Robert Hsiung, senior designer; Eric Ward, project architect*
Engineers: *LeMessurier Consultants, Inc. (structural); Cosentini Associates (mechanical, electrical, plumbing)*
Consultants: *Jon Roll & Associates (graphics); Claude R. Engle (lighting)*
General Contractor: *Morse/Diesel-HCB, joint venture*

Homage to Gill

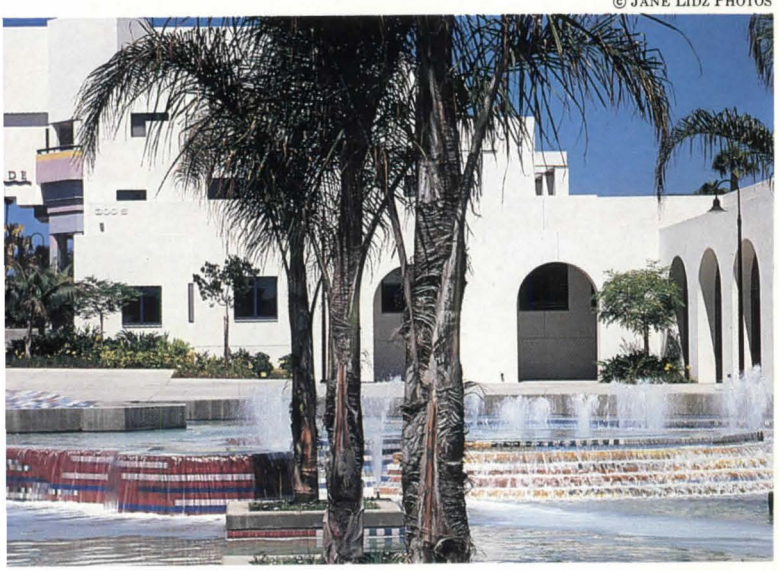
The early 20th-century Southern California regionalist provides cues for a new civic center by Charles Moore.



Above and near right: the junction of the north and south wings of City Hall is the focal point of Oceanside's new civic center, marking the hub of pedestrian circulation. Far right: buildings diminish in scale as they approach the perimeter streets of Oceanside's low-rise central business district.

Oceanside Civic Center
Oceanside, California
Charles W. Moore/Urban Innovations Group, Architects

© JANE LIDZ PHOTOS



If one were to envision a civic center designed by Charles Moore for an aging but still zestful Pacific coast community located between Los Angeles and San Diego, the image brought to mind might well be some richly embellished latter-day Alhambra. The reality of the Oceanside Civic Center, however, is altogether different. Designed by Moore with the Urban Innovations Group as the result of a national competition, the 100,000-square-foot complex rises like an alabaster pueblo—simple and rectilinear in form, gleaming white in color—in Oceanside's small-scale, somewhat dowdy central business district. More oasis than monument, the center shares its four-block site with two buildings by the celebrated early 20th-century regionalist Irving Gill.

Moore readily acknowledges that the center's design "started from the legacy of Gill and his search for a clear, simple, and honest architecture that luxuriates in the temperate climate and lush landscape of coastal Southern California. We use his plain white walls, unadorned arcades, disciplined fenestration, and flat roofs as our architectural vocabulary, and then allow ourselves the exuberance of bright colors with the tiles and niches at the entrances, in the jambs and soffits of deep-set openings, and the contrast of palms and broad-leafed plants surrounding our structures."

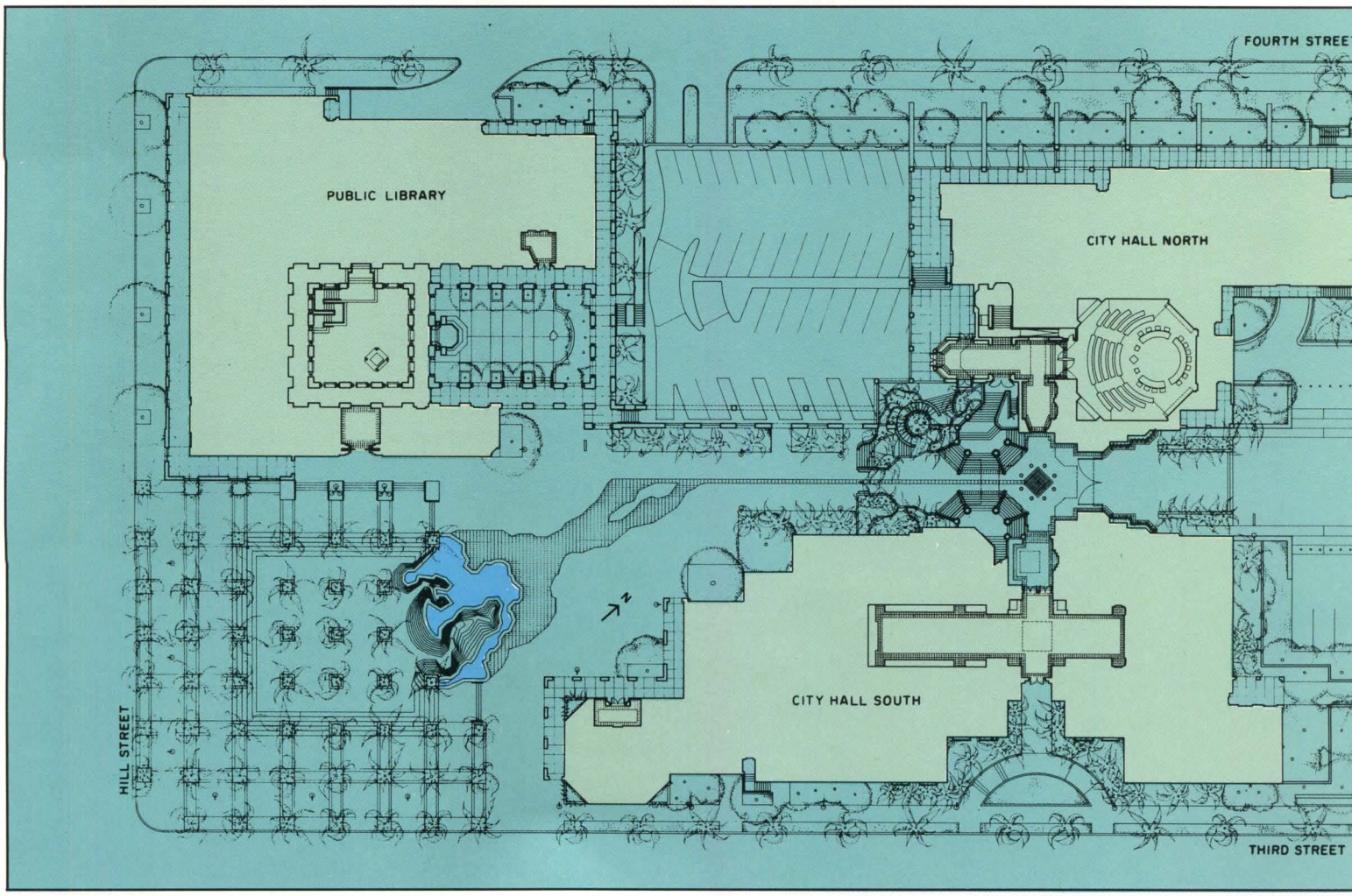
Studied introspection, enlivened by color

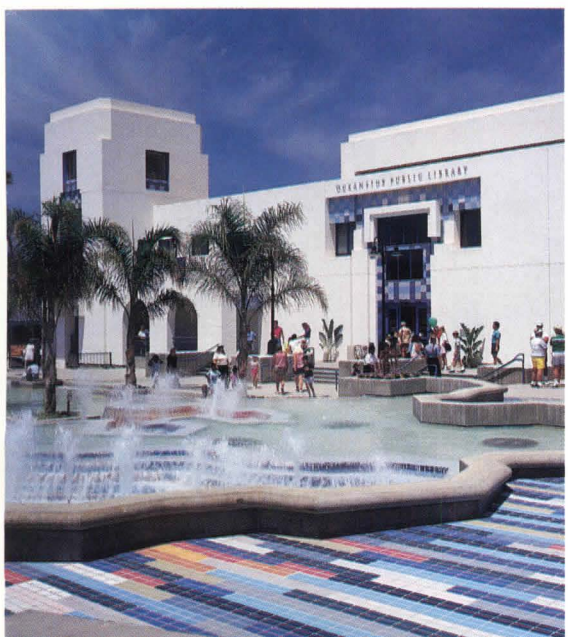
The lack of monumentality in Moore's design was deliberate. The architects divided City Hall into three separate-but-interconnected elements to minimize the building's mass and create more interesting open spaces. Although this seat of local government is low-scaled along the street, it builds up in height toward the interior of the site. The other major facility in the complex is a new main public library, located at the site's northwest corner. A low tower symbolizes the library's importance to the community, and a street-facing arcade introduces Irving Gill's trademark arches, a consistent element throughout the civic center.

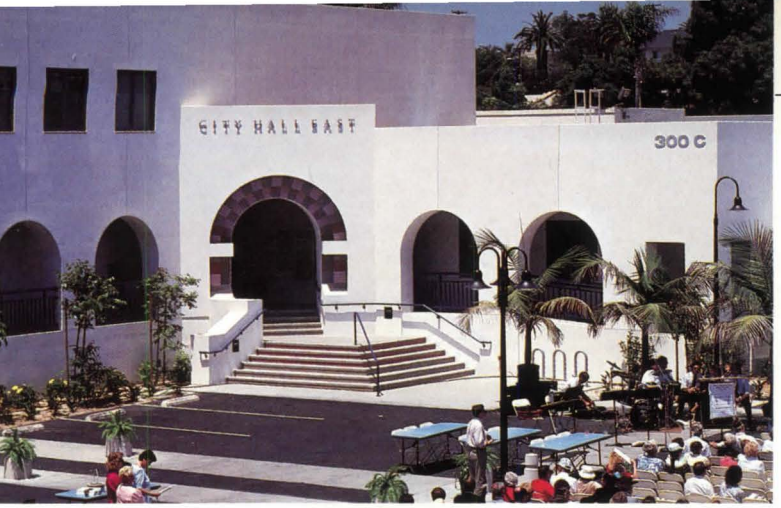
A "palm court" marks the complex's southwest corner; above, on an east-facing slope, a large freeform water feature comprises fountains and pools lined in multicolored tiles. From this point, an "alluvial fan" of tiles embedded in the paving ascends to the civic center's visual climax: a tiered, colorfully tiled opening between City Hall's north and south wings. Overhead is a pedestrian bridge with wonderful ocean views; below is a star-shaped tile fountain and the tall arcadian fantasy of a gold-colored metal torchère.

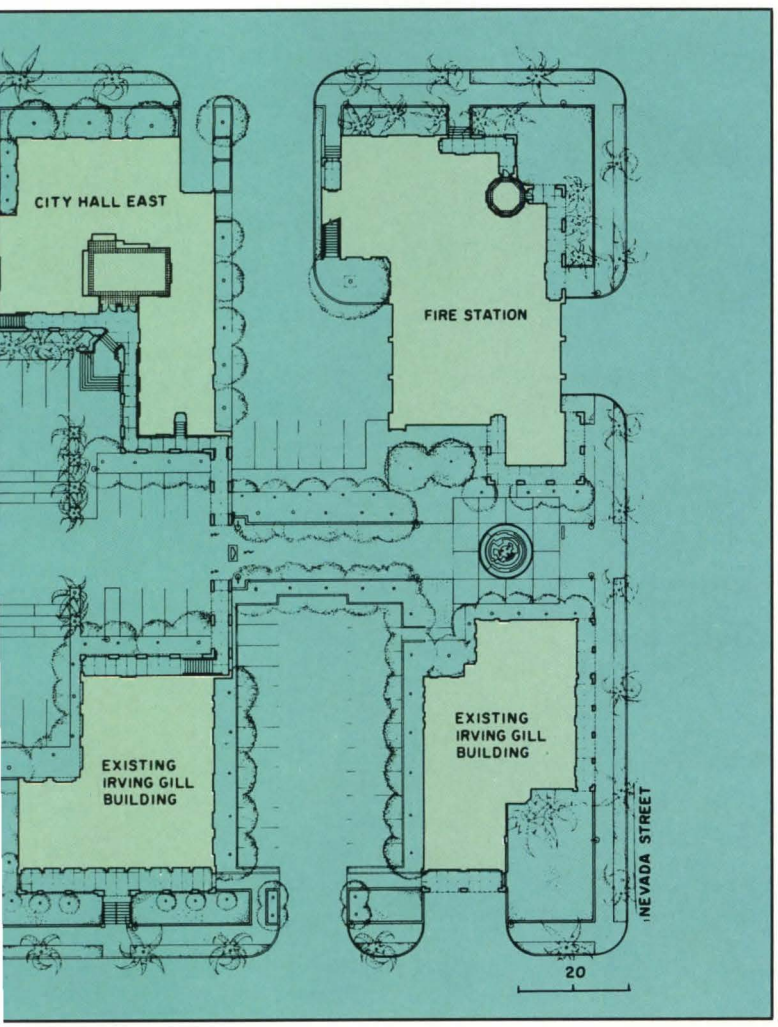
Up to this point Oceanside Civic Center is a spirited composition of open spaces and building forms and surfaces. The eastern portion of the site, however, is more loosely knit. The east wing of the City Hall is smaller-scaled than City Hall's other wings and is linked to the rest of the complex by a bridge that houses office space. Otherwise the project's second phase, now underway, will consist entirely of remodeling existing buildings, including the two attributed to Gill. The city intends to unify this half

Photos this page: tile lines pools and fountains, then continues as a pathway of color to the north and south wings of City Hall. Opposite top: City Hall's east wing, located across a street that penetrates the 4-block site, is linked to the north wing by a bridge of offices. Opposite bottom left: a round-arched arcade runs alongside the public library. Opposite bottom right: an entrance to the community room, adjacent to the library, is enlivened by colorful ceramic tile. A new central fire station originally proposed for the site (upper right corner of site plan) will be built at another location.









of the civic center with landscaping, continuing the axis through the opening between the new city hall buildings. There is also hope of creating a formal plaza here.

The grand hall of the library is the complex's largest single interior space—an airy volume with arcades high overhead. The architects punctuated the hall with custom-designed lighting fixtures; however, old furniture transferred from the library's previous quarters is not altogether sympathetic with the new library's design. (Another disappointment, again related to budget, was the scrapping of Moore's original design for the children's library, which is now a decidedly unjoyful space off the great hall.) Beside the library is a very pleasant courtyard with a delightful fountain. It was intended to be an outdoor reading room as well as a lounge for the library and adjacent community meeting rooms. But present library policy forbids taking books into it.

The three city hall wings all have impressive atrium lobbies. Most dramatic is the lobby outside the council chamber—a richly colored, expressive space with huge decorative doors to the chamber. The ceiling of the chamber itself bears a sculpture that can easily be mistaken for acoustical clouds and serves to conceal the cameras that televise council proceedings.

Most of the parking for the complex is housed in a garage on the north edge of the site, with bristling buttresses facing the street. Since most users of the civic center will arrive by car, special efforts were made to assure that the garage would offer a pleasant introduction. A landscaped court brings natural light and ventilation to all levels of parking.

An innovative cooling system

The buildings' air-conditioning system consists of a chiller unit that manufactures ice at off-peak hours by means of glycol/water-filled coils looping through a water-filled subgarage storage tank. When cooling is needed, the cold glycol and water mixture is pumped through the system and the chiller is not used. The chiller unit is cooled by the fountain in front of the library. Thirty nozzles spray water into the air, where it cools as it falls back into the fountain.

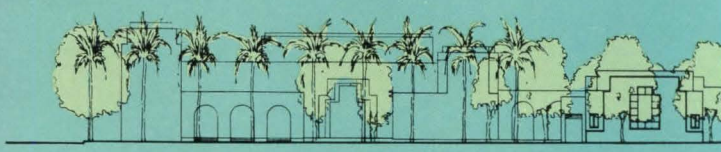
The cooled water is then returned to the chiller.

The buildings have a steel frame with an outer skin of glass-fiber-reinforced gypsum panels screwed to the metal-stud wall system. The panels were covered with a base coat of waterproofing and a finish coat of thin plaster sprayed over mesh and then trowelled. The architects believe the Oceanside project to be the largest use of this combination to date. The system is less subject to cracking than stucco and less expensive than a full exterior insulation and skin system. Just as important, moreover, it provides a visually appealing surface for a highly pleasing complex that in turn gives Oceanside a new center and a source of civic pride.

DONALD J. CANTY

Oceanside Civic Center,
Oceanside, California
OWNER: *City of Oceanside*
ARCHITECT: *Charles W. Moore/Urban Innovations Group—Rex Lotery, principal-in-charge; Robbin Hayne, William D. Graeber, project architects; John Echlin, Robert Flock, Claire Weisz, design team; Ali Arbouli, Arthur Anderson, Farhad Ashofteh, Marty Borko, Hans Chao, Brunhilde Meier, Randall Nishimura, Anne Pendleton, Carlos Quandt, Patsy Shigetomi, Stephen Svete, Ensieh Tasdighi, Mina Vijeh, Jim Winkler, Sarah Zimmerman, assistants*
ASSOCIATED ARCHITECT: *Danielson Design Group—Doug Danielson, principal-in-charge; Don Gillis, Don Iller, project architects; Diane McLean, project manager*
ENGINEERS: *Johnson & Neilsen (structural); Mullen & Associates (electrical); Don C. Gilmore (mechanical); Sholders & Sanford (civil)*
CONSULTANTS: *Tina Beebe (colors); Doug Brotherton (graphics/signage); Campbell & Campbell (landscape); Richard Peters (lighting); Cartwright & Co. (interiors); Edgardo Contini (special consultant); Mike Feerer & Associates (space planning); UCLA Graduate School of Architecture & Urban Planning (computer graphics)*
GENERAL CONTRACTOR: *Taylor-Woodrow*

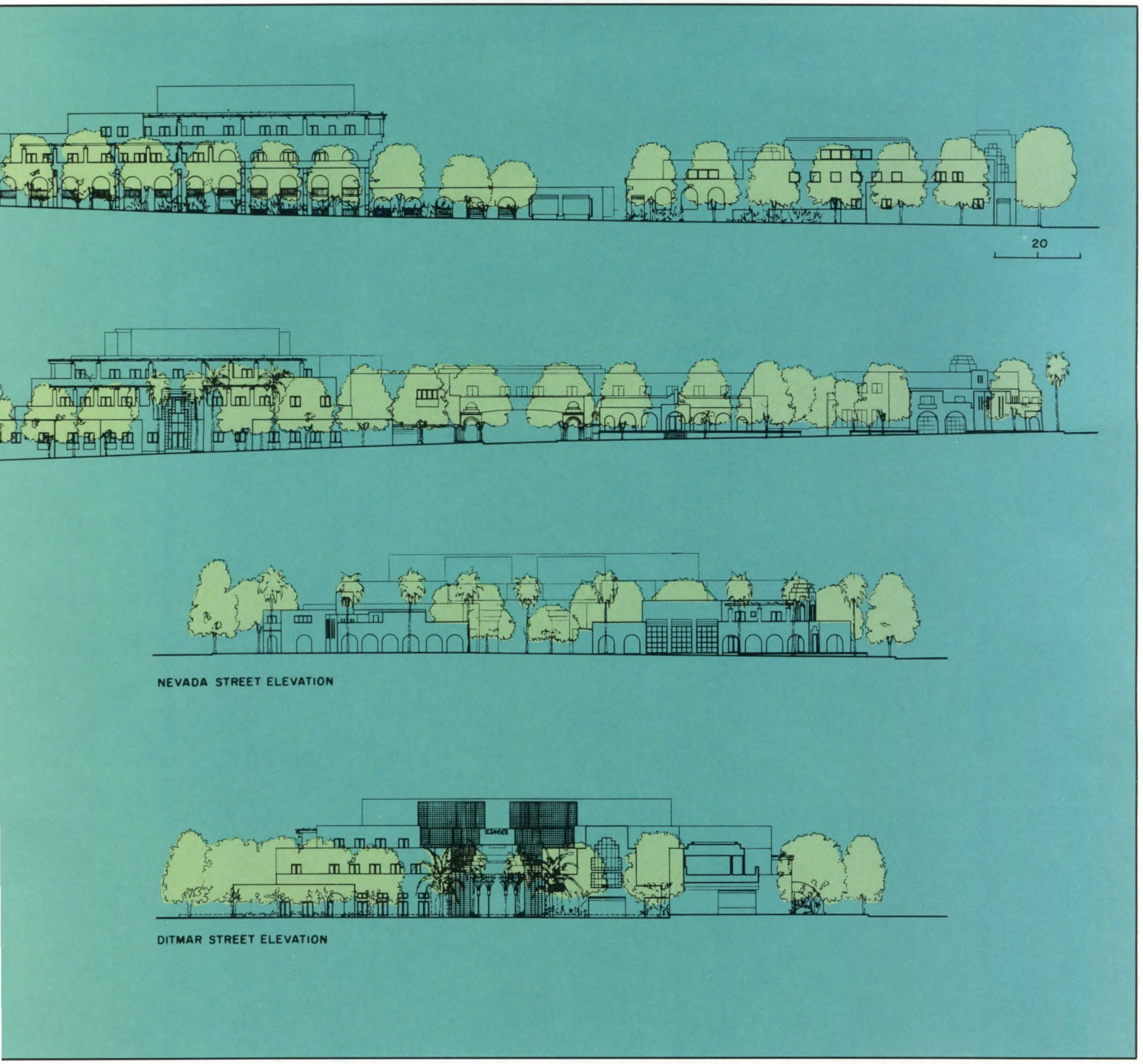
FOURTH STREET ELEVATION

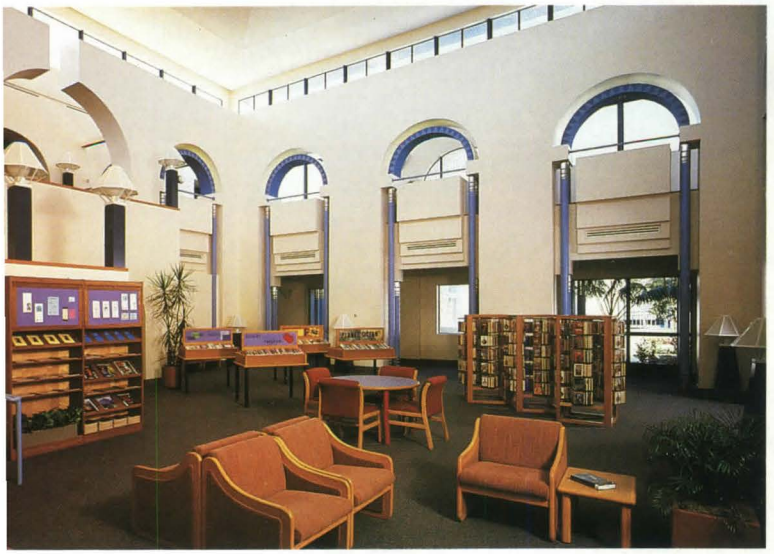


THIRD STREET ELEVATION

HILL STREET ELEVATION

Although the building forms at Oceanside are relatively simple, the elevations (above) vary widely. Along Fourth Street, from left, are existing buildings to be remodeled, the east wing of City Hall, a pedestrian bridge over the street, the north wing of City Hall with garage in foreground, the library court, and the library. On Third Street, from left, are the palm court with library in background, the south wing of City Hall, and the old Gill city hall and firehouse.





Photos, from far left below: A decorated arch and silver and blue columns were repeated throughout the complex. A carrel is set in an arch on top level of library. The council chamber features a heroic doorway and ceiling sculpture. Arched windows and a high clerestory bathe the library interior in natural light.

Snug Harbor

A public harbor station on Chicago's park-lined lakeshore welcomes boaters and landlubbers alike.

With the city in the near distance and a lakeside park in its backyard, the new station faces the harbor with a low L-shaped mass balanced by a two-story corner tower. From the land side (inset left), a breezeway accents the division between public facilities and those reserved for visiting boaters.

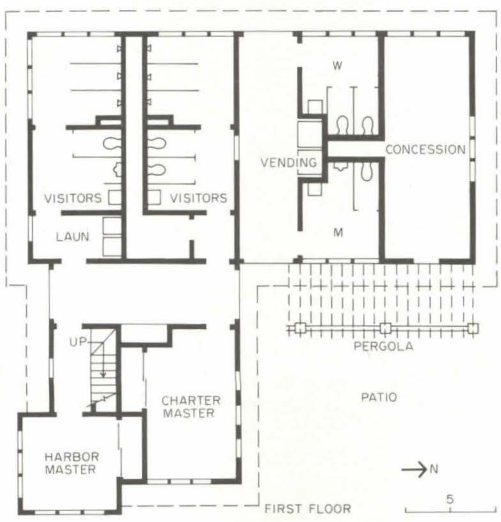
Soldier Field in the immediate background and the Sears Tower rising from the more distant skyline fix the new Burnham Harbor Station firmly on Chicago's lakefront despite a near-universal maritime style that would make it equally at home on the coasts of New England or Northern California. Less directly, the urban backdrop celebrates Chicago's foresight in preserving its waterfront for public enjoyment. Dotting the more than 24 miles of Lake Michigan shoreline owned and maintained by the Chicago Park District are seven small-boat harbors, of which Burnham is among the largest. Augmenting an existing boat-launching ramp and outworn harbor master's office, its new station offers a set of related facilities that are oriented chiefly to visiting yachtsmen but also include amenities for local users of the neighboring park.

Set on an L-shaped site alongside the boat ramp, the building too assumes an L-shape. On the long side facing the city, the low gabled form combines two segments separated by a gated breezeway. One wing houses public restrooms and a food concession with a pergola-sheltered outdoor café and patio; the other provides toilet, shower, and laundry facilities for visitors. Thrusting out toward the mooring basin, a shorter ell contains a ground-floor office for the charter-boat director and a two-story suite for the harbor master, including a tower eyrie with 360-degree views.

Rising from a tidy landscaped patch of lawn, the sturdy building with its weathervane-crowned, tall-windowed, corner tower suggests a lighthouse and keeper's cottage—an illusion abetted by the use of tough traditional materials visibly able to withstand foul weather. The heavily insulated two-by-six frame is clad in white-painted clear-pine clapboard with a wainscot and authentic six-over-one double-hung windows, while the cedar-shingled roof is protected by copper gutters, flashing, and ridge cap. Interiors, though equally durable, employ a more contemporary vocabulary of raked-joint ground-face concrete block supplemented by ceramic tile in the restrooms and dry wall in the office areas. Oak baseboards and door and window casings are detailed with Modernist-inspired reveal trim. **M. F. G.**

Burnham Harbor Station
Chicago, Illinois
Owner: *Chicago Park District*
Architect and Engineers: *Chicago Park District—William Latoza, senior architectural designer; Eric Davis, architectural designer; Vijzi Guptz, assistant structural engineer; Glenn Ross, senior electrical designer; Marion Lisowski, Ron Voder, civil engineers; Robert Thompson, landscape designer*
General Contractor: *Firehouse Construction—Egidio Berni, manager*

Robert P. Pleva Photos

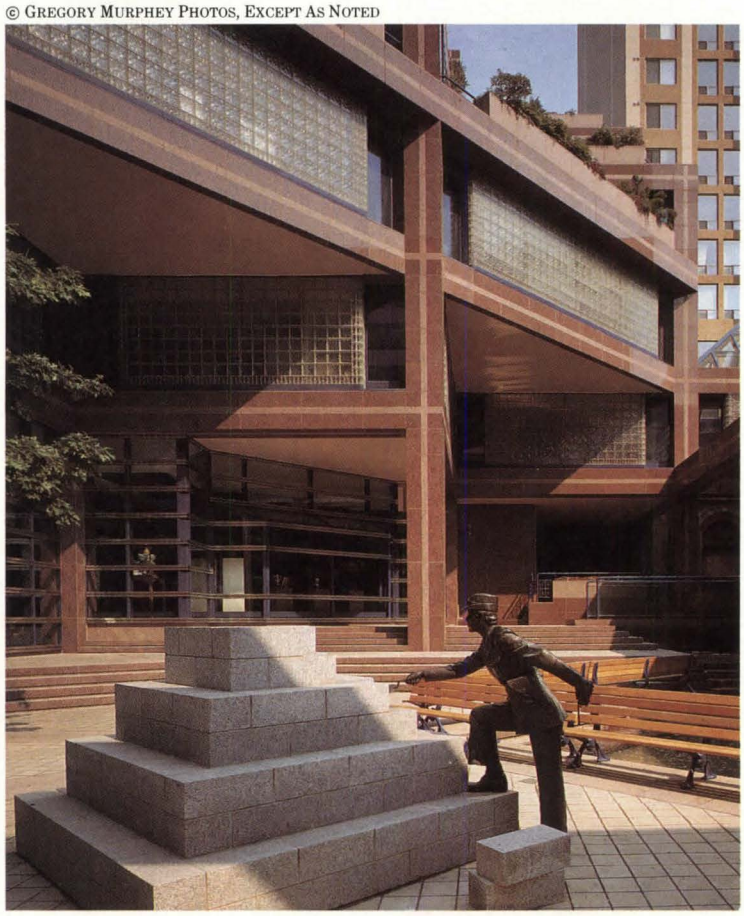


Offsetting the station's sturdy marine exterior, cleanly detailed interiors feature an office for the charter director and the harbor master's two-story suite (above) as well as public amenities.

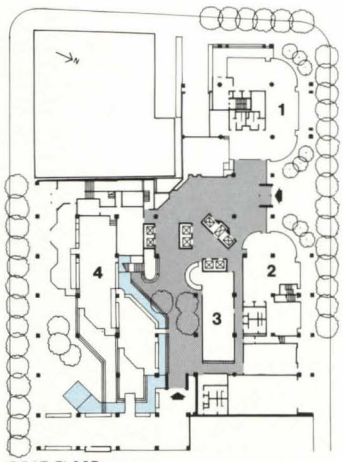
Police Hospitality

Working together, two firms—Shore Tilbe Henschel Irwin Peters and Mathers and Haldenby—broke stereotypes when they designed the Metropolitan Toronto Police Headquarters.

© Gregory Murphey Photos, Except As Noted



A sculpture in the headquarters' courtyard is one of three works of art dealing with the process of building.



FIRST FLOOR

1. **Community programs**
2. **Public affairs**
3. **Duty desk**
4. **Museum**

Traditionally, police architecture has aimed to impress rather than to please. Thick walls, small windows, and tight security invariably made police stations and headquarters read as fortresses, none-too-subtle reminders of the long and powerful arm of the law. Having earned a reputation as efficient, but rather stodgy, toilers in the fields of justice, the Metropolitan Toronto Police decided to change their image. They made it clear to Shore Tilbe Henschel Irwin Peters and joint architects Mathers and Haldenby that their new headquarters in a busy section of downtown Toronto should be open and friendly, not stiff-lipped and formal.

As a result, the architects designed a building that cascades down a series of terraces and embraces a triangular courtyard open to the public. Located on the southeast portion of the site, the landscaped courtyard catches the sun and faces a nearby subway station. Playful touches such as a winding channel of water and a sculpture of a policewoman building a small pyramid attract pedestrians.

Wrapping around a nondescript building to the southwest, the headquarters rises to its full height of 12 stories (150 feet) at the site's most prominent intersection, the corner of Bay and Grenville streets. As the building extends along Grenville, it steps down to meet the preserved facade of the old Jenkins Art Gallery, now attached to a banal condominium tower.

While the courtyard on College Street serves as the most public entrance, the architects didn't want the less-active Grenville Street entrance to come off as a back door, says Stephen Irwin, the partner-in-charge. A polished-granite pediment helps give this entry stature. Stacked above it are curving glass-block bays enclosing meeting rooms.

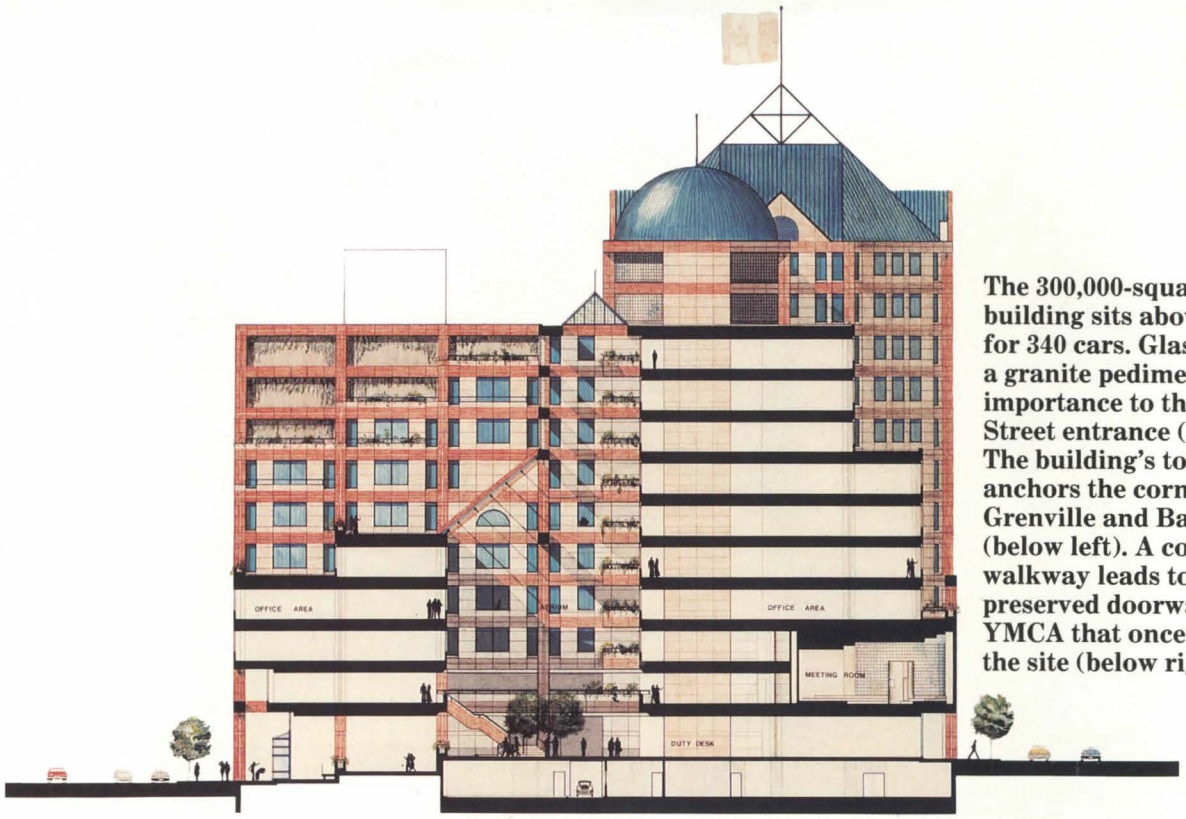
Throughout the building, the architects clearly express the concrete-frame, concrete-slab structure with polished granite and treat nonstructural planes with glass. A 10-story atrium, the most important interior space, announces itself on the exterior with a glass pyramid, while the elevator core emerges as a metal dome.

The first two floors of the 300,000-square-foot building serve primarily public functions, such as community programming and public relations. A police museum (exhibiting such curiosities as holdup notes and murder weapons) looks onto the College Street courtyard and is separated from the rest of the atrium's first floor by a continuation of the courtyard's water channel. On the second floor, a large meeting room is equipped with a 139-seat grandstand that can slide out of the way for cocktail parties or other functions.

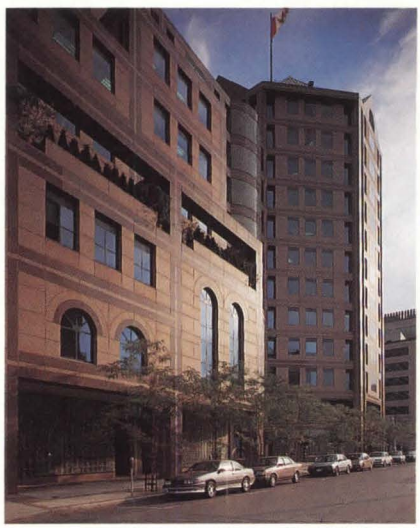
Before moving into its new headquarters, the Toronto police force was scattered among seven different locations. Blocking out the proper space for each of the four squads (fraud, homi-

The building's stepped massing helps it negotiate a change in scale from 12 to 4 stories and provides a series of terraces and outdoor spaces for most floors.


METROPOLITAN TORONTO POLICE
HEADQUARTERS



The 300,000-square-foot building sits above parking for 340 cars. Glass block and a granite pediment add importance to the Grenville Street entrance (opposite). The building's tower anchors the corner of Grenville and Bay streets (below left). A covered walkway leads to the preserved doorway of the YMCA that once stood on the site (below right).

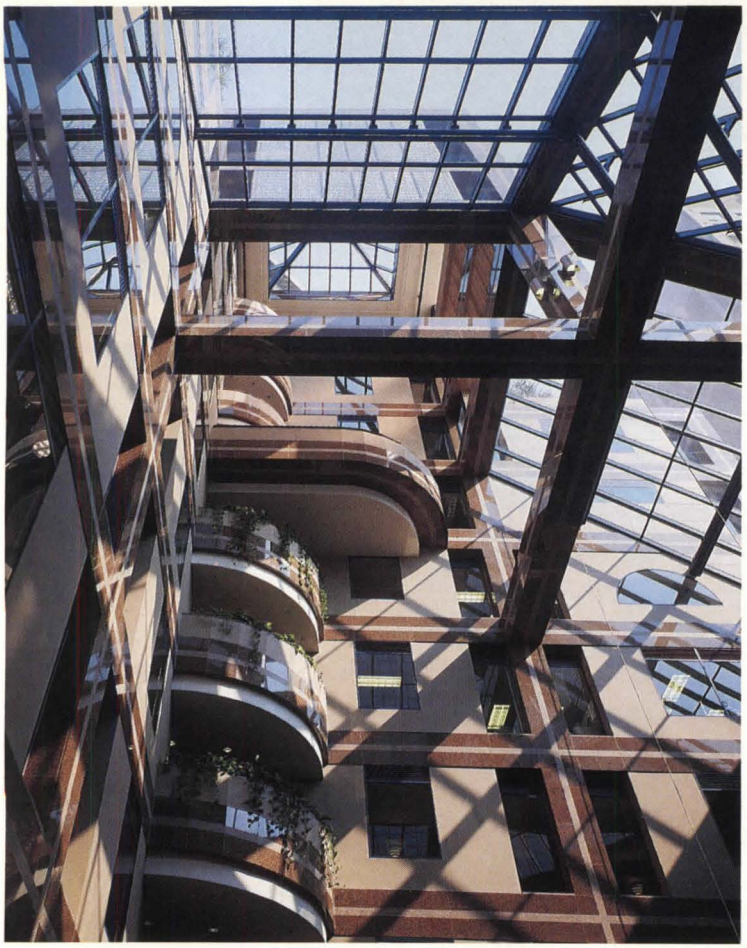


cide, sexual assault, and hold-up), as well as all of the support services (such as forensic laboratories and computer fingerprint registries), helped determine the massing of the building, explains Irwin. Widely varying floor plates accommodate the needs of the various departments, while providing space for terraces on many stories. The result is a building with an unusual amount of direct connection to outdoor areas, offering workers the chance to get some fresh air without leaving their floor. Such easy access to the outdoors is particularly appreciated by smokers who aren't allowed to indulge their habit indoors.

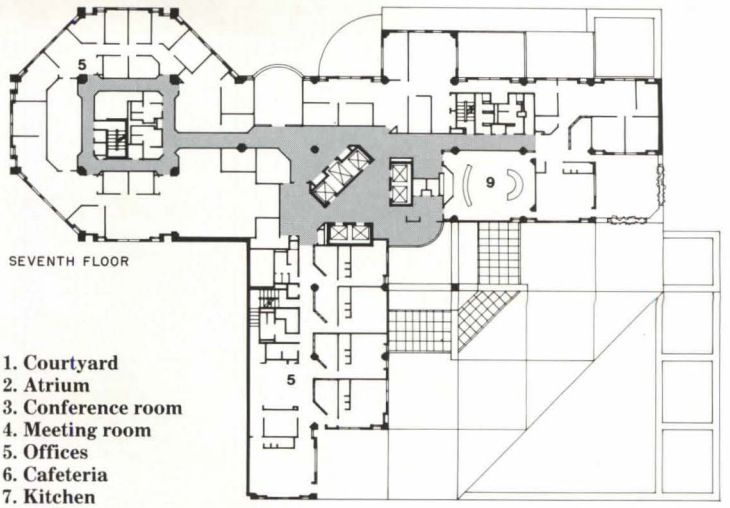
Flexibility was a key concern throughout the building. The top four floors of the building's tower were left unfinished to accommodate future growth. Less than two years after the building's completion at the end of 1988, these floors already are being prepared for occupancy. Access flooring, recessed six inches into concrete floor slabs in three-quarters of the offices, provides critical flexibility in locating computer cabling.

The architects laid out interiors using a 30-foot module that accommodates systems furniture and various overhead lighting arrangements. Strips of clerestory windows bring extra light from the atrium to offices, also helping to break the tradition of dark and mazelike police interiors. **CLIFFORD A. PEARSON**

Metropolitan Toronto Police Headquarters
Toronto, Ontario
OWNER: *Municipality of Metropolitan Toronto*
ARCHITECT: *Shore Tilbe Henschel Irwin Peters Architects and Engineers and Mathers & Haldenby—Douglas Haldenby, executive architect; Stephen Irwin, design architect; David Mitchell, Richard Fenner, project architects; William Robertson, project coordinator*
ENGINEERS: *Carruthers & Wallace (structural); The Mitchell Partnership (mechanical); H. H. Angus & Associates (electrical)*
CONSULTANTS: *John C. Preston (space planning)*
GENERAL CONTRACTOR: *Ellis-Don General Contractors*

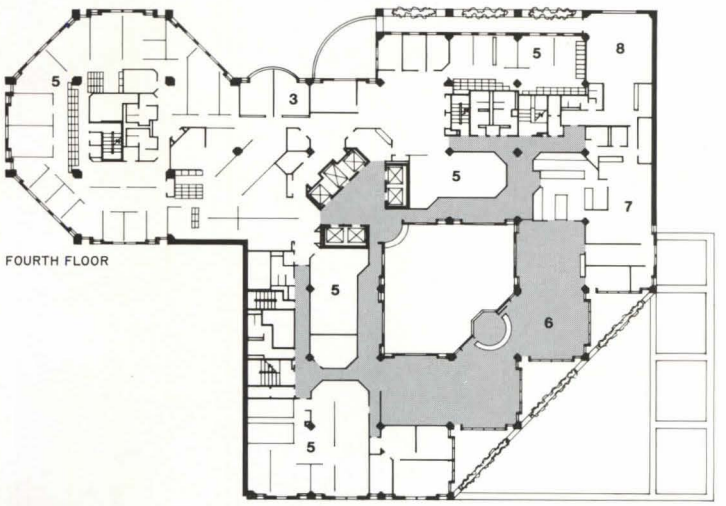


The 10-story atrium serves as a focus for offices, as well as a cafeteria and a police museum. Interiors feature polished, honed, and flame-finished granite.

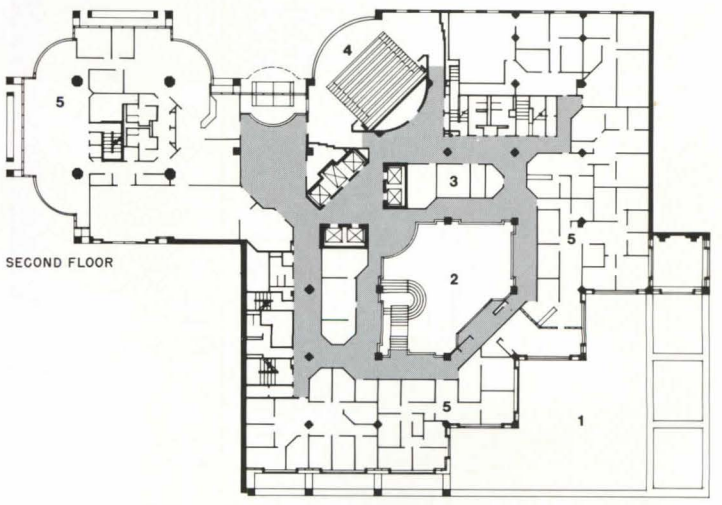


SEVENTH FLOOR

1. Courtyard
2. Atrium
3. Conference room
4. Meeting room
5. Offices
6. Cafeteria
7. Kitchen
8. Officers' lounge
9. Board room



FOURTH FLOOR

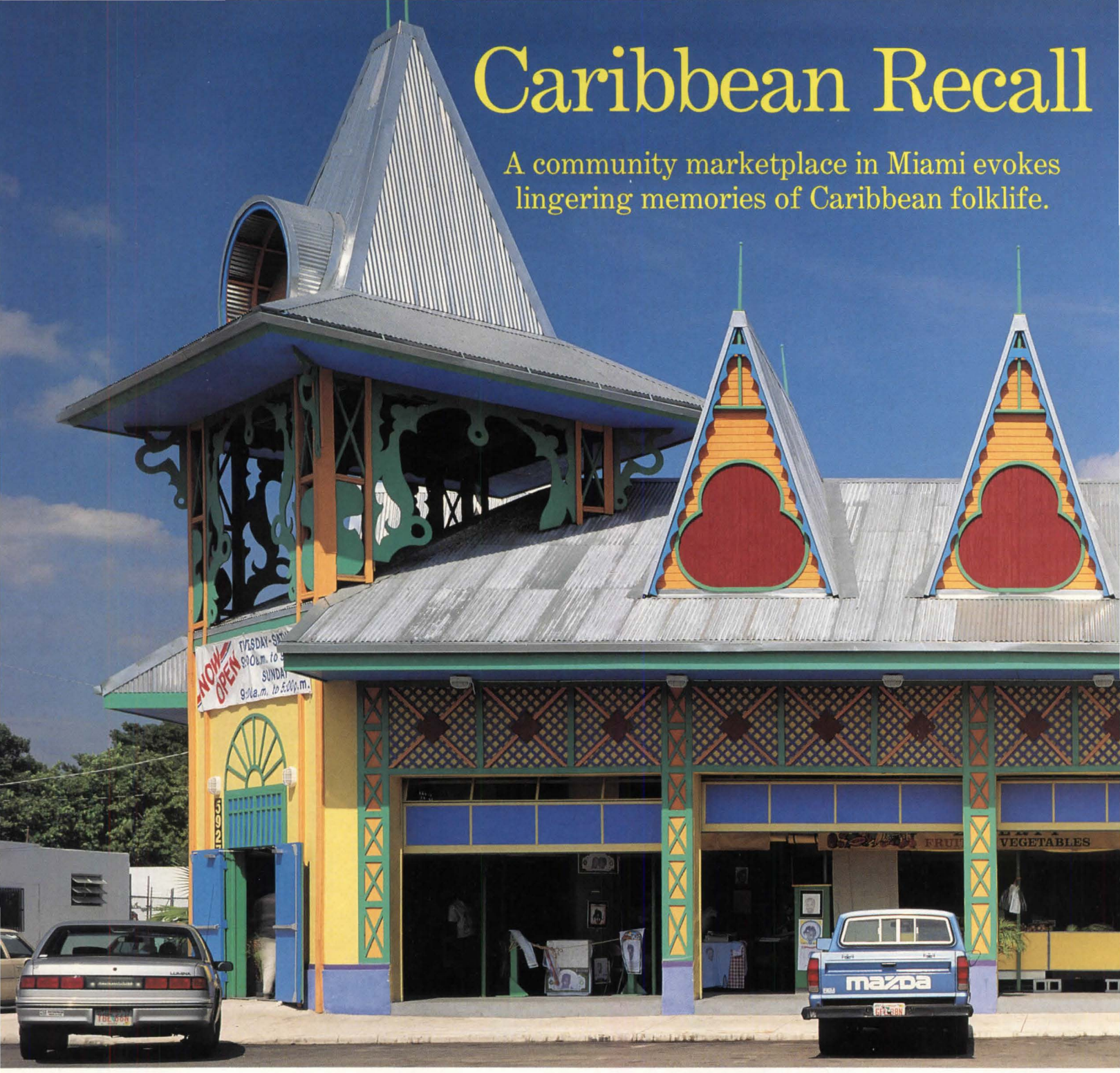


SECOND FLOOR

Public functions such as information, community programming, public relations, and a police museum occupy the first floor of the atrium. A large meeting room also used for public gatherings is on the second floor. Police squads and support services requiring tighter security occupy higher floors.

Caribbean Recall

A community marketplace in Miami evokes lingering memories of Caribbean folklife.



In adapting a former antiques warehouse to new use, Charles Harrison Pawley lifted the roof high and designed a series of gables and turrets. Intended to be seen from a distance, the marketplace is a beacon in Miami's Little Haiti.

Drawn directly, even literally, from the fanciful forms and vivid, heartfelt hues of the tropics, Miami's Caribbean Marketplace speaks eloquently of Haiti. Yet it is not intended to be nostalgic but to impart a sense of tradition that endures—as an architectural and cultural symbol of a new life in a new place and as an emblem of hope.

Over the last decade, as thousands of Haitians began fleeing their homeland in leaky handmade boats, many have settled in a historic Miami neighborhood once known as Lemon City. Now it is called Little Haiti, and with reason: conservative estimates pin Miami's Haitian immigrant population at 46,000; unofficial estimates run three times that.

The marketplace sits in a prime location on Northeast Second Avenue, the area's main shopping street, which itself has undergone rapid change. Little more than a derelict row of empty shops in the post-riot Miami of the early 1980s, it is now filled with small Haitian businesses—grocers, hairdressers, sundry shops—as the neighborhood takes new shape as an enclave of Caribbean culture. Still plagued by the twin evils of poverty and unemployment, Little Haiti is not thriving by conventional economic measures, but Northeast Second Avenue nonetheless bustles with streetlife.

Certainly, the marketplace is a cornerstone to this ongoing revival. Its genesis goes back to a 1984 competition cosponsored by the Miami Chapter of the American Institute of Architects and the nonprofit Haitian Task Force. At the time, Charles Harrison Pawley's winning proposal (entered with Miami architect Rufus

Caribbean Marketplace
Miami, Florida
Charles Harrison Pawley, Architect

© STEVEN BROOKE PHOTOS

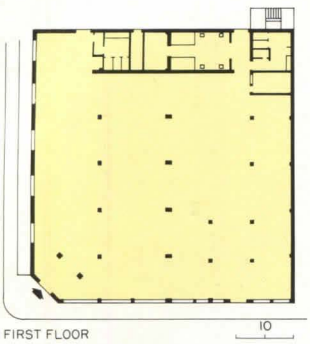
Nims, who later dropped out of the project) was termed by the jury a much-needed "grand vision." And indeed, it was then an ambitious plan: a market much like the Iron Market in Port-au-Prince, covering the street for two blocks and designed in the fashion of Haiti's most romantic turn-of-the century buildings. The anticipated budget was $1.5 million.

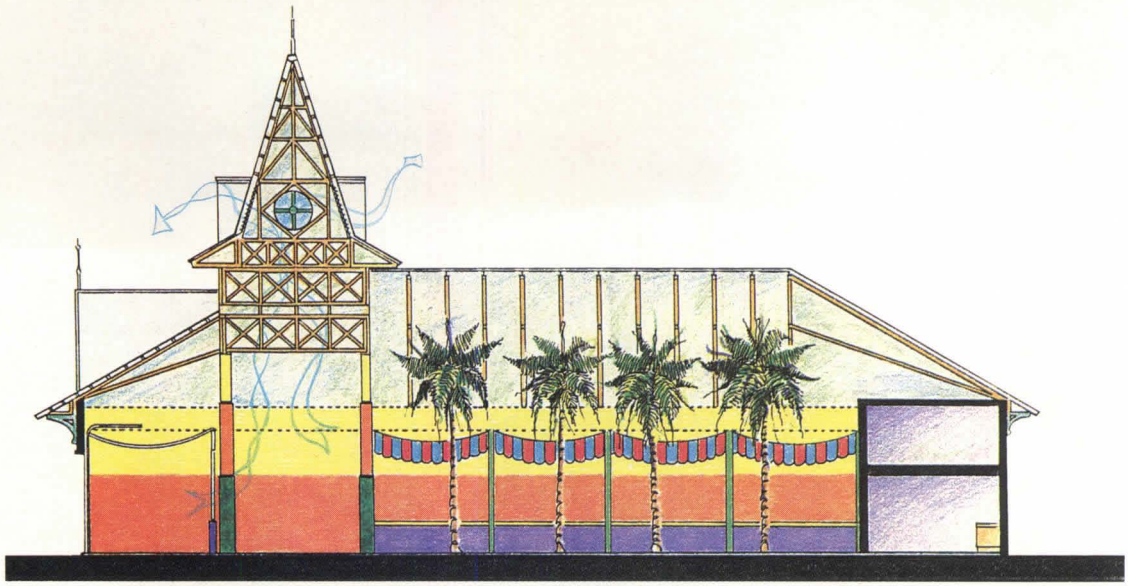
Eventually the project was scaled down, for reasons of both costs and logistics, and the original idea of taking over the street for the market was scuttled. The Haitian Task Force instead bought a former antiques warehouse and mustered $550,000 in grants from the Ford-Foundation-funded Local Initiative Support Corporation and from the city, county, state, and federal governments.

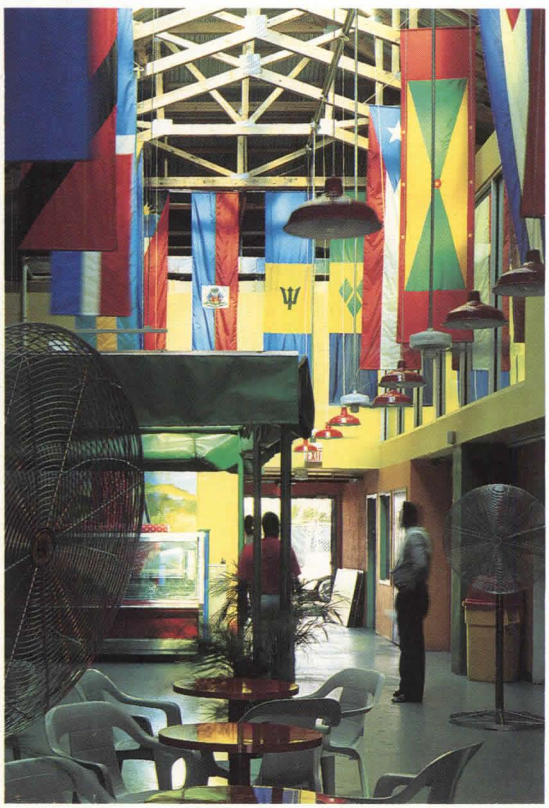
Even before entering the competition, Pawley, who is Haitian-born but Miami-bred, went to Haiti to research building types and architectural details—both the spectacular and the commonplace—with particular attention to the dazzling colors of vernacular buildings. The trip netted ideas for the overscaled turn-of-the-century turrets and gables that form the market's roofline. It also inspired the palette, which is an intense, unmistakably Caribbean scheme of bright primary and secondary colors—no noncommittal pastels in this spectrum.

To provide natural ventilation, Pawley gutted the warehouse, then equipped it with two slow-moving four-foot-diameter exhaust fans and 30 low-slung ceiling fans. Walls are lined with garage doors that open to increase air flow and make the market an integral part of the streetscape. The corrugated roof, supported by ex-

Meant to look "unfinished," the market relies on simple, off-the-shelf materials: garden lattice, pretreated lumber, and corrugated metal. Roll-up garage doors open the whole building to the street, giving it the character of an outdoor Caribbean bazaar.







A series of fans forms a simple, tropical ventilation system, letting shoppers move seamlessly into the market from the outside. The market originally sold everyday items but is now being oriented more toward the exotic, to lure the tourist shopper.

posed wood trusses, is of galvanized metal with corrugated fiberglass at the edges to let light filter through. The interiors, completed with the assistance of Miami architect Hermine Richetts, rely on a simple system of booths that open and close with green vinylized canvas awnings—a familiar feature in the Caribbean—hanging from the roof trusses.

Throughout, Pawley sought to have an "exposed, handmade quality," avoiding crispness in favor of an "almost fuzzy" look. Thus the crosshatch ornament is actually off-the-shelf garden lattice, spray-painted and placed along the walls. Other trim is simply painted pretreated lumber.

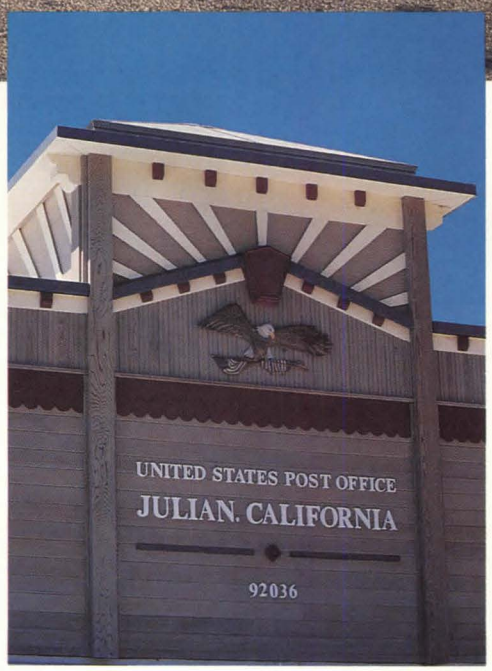
The result is a show-stopping, riveting celebration of the texture, the color, the spirit, and the lifestyle not just of Haiti but of the Caribbean as a whole. More than mere buying and selling, the role of the Caribbean Market is one of preserving and communicating a culture in an American city that is unafraid to pay tribute to its citizens' distant roots. **BETH DUNLOP**

Caribbean Marketplace
Miami, Florida
OWNER: *Haitian Task Force Inc.*
ARCHITECT: *Charles Harrison Pawley—Ernesto Cabrera, project architect; J. Beattie, Jose Silva, Victoria LaGuette, project team*
ENGINEERS: *Franyie Engineers, Inc. (structural); Rodriquez Associates (mechanical); Currier Associates (electrical)*
GENERAL CONTRACTOR: *Beauchamp Construction Co.*


The Caribbean Marketplace
•BUSINESS HOURS•
TUESDAY-SATURDAY
9:00a.m. to 19:00p.m.
SUNDAY
9:00a.m. to 5:00p.m.
CLOSED MONDAY
ERTY
SPECIALS
VEGETABLES

Western Front

SANDRA WILLIAMS PHOTOS



Even with its civic symbols, the post-office facade evokes a general store.

Julian is a turn-of-the-century mining town in the coastal hills, 45 miles east of San Diego. An official California state landmark, it is a popular destination for weekend trips because of its natural beauty and well-preserved Old West atmosphere. As in most rural communities, the post office here serves as a social center. When the U. S. Postal Service proposed a new facility, some felt it should be on Main Street; however, the Postal Service wanted the building to be easily accessible to users from outlying areas and ultimately chose a site on one of the main highways into town.

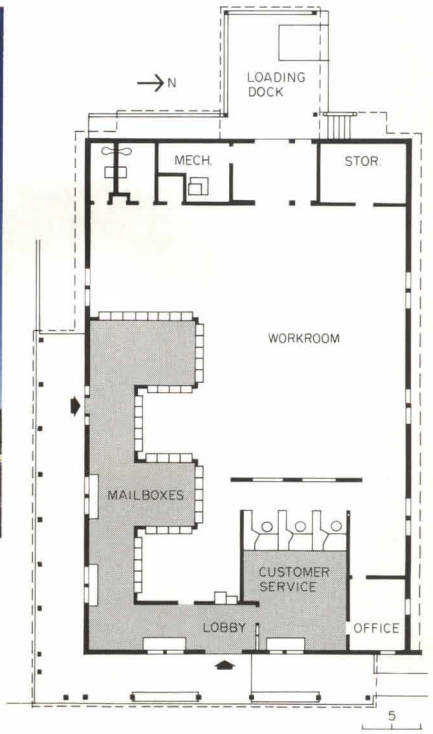
Keniston & Mosher's design is meant to introduce passing motorists to Julian's distinctive character. The architects began by analyzing the elements of this character: board-formed concrete foundations, horizontal wood cladding, a covered porch, a strong vertical entrance. With the help of a local historian they also investigated colors of the period and came up with red oxide, French blue, and buttermilk white. They incorporated all of these characteristics into the new post office, along with other elements—a cupola, a custom-designed eagle—that mark the 5,040-square-foot structure as a civic building. Given that the rear service area faces another entry into town, it also was given greater-than-usual attention and detailing. Beside the building is a replica of the sheltered benches that used to serve as mail drops along stagecoach lines.

Though the Postal Service offered its standard plan for facilities in the area, which included 8-foot ceilings and numerous interior columns, the architects came up with an alternative structure yielding a 54-foot clear span that allowed 2 feet of added volume and higher windows to bring in more natural light. Heat gathered in the skylit cupola is recirculated into the interiors. In warm weather excess heat is vented through louvers beneath the cupola by a small exhaust fan.

Postmaster Janet Taylor is especially pleased with her "light and bright" work area, and she terms the new post office "an attractive, welcoming place." **D. J. C.**

Julian Main Post Office
Julian, California
ARCHITECT: *Keniston & Mosher, Inc.—Stanley Keniston, project designer; Jack Mosher, project manager; Dan Allen*
ENGINEERS: *Horsman Engineering (structural); LSW Engineers (mechanical/electrical)*

Keniston & Mosher's Julian Main Post Office reinterprets the Old West character of a historic California town.



The post office's stepped false-front facade (top) mimics the most distinctive feature of turn-of-the-century Western architecture, and its enclosed outdoor bench was modeled after a former stop on the old Butterfield Stagecoach Line. The facility's loading dock (above) is enlivened by a decorative rail and gabled canopy.

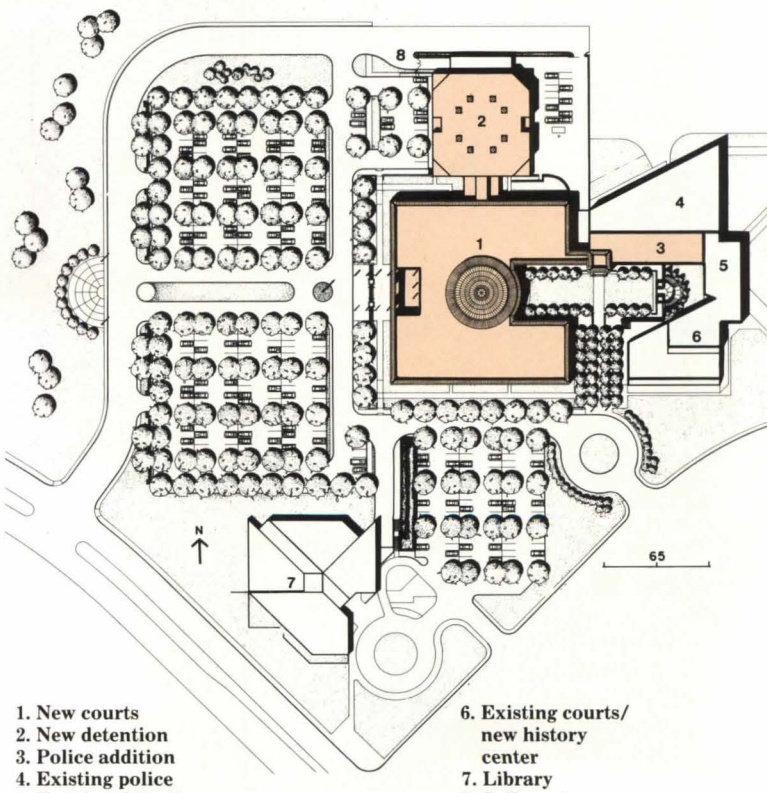
Justice Served

JON MILLER, ©HEDRICH-BLESSING PHOTOS, EXCEPT AS NOTED

Aurora, Colorado, is a city without a center, swarming amorphously across the plains at the foot of the Rockies to merge indistinguishably with Denver's eastern edge. But it is also a thriving municipality with a population nearing 200,000, an astute city government, and a master plan it takes seriously. Lately it has completed a substantial installment on a civic building program around which a vital core can grow. The catalyst is a 205,000-square-foot justice center in which a new courthouse and detention facility join with a renovated and expanded police headquarters in a neoclassical complex that unmistakably proclaims "government."

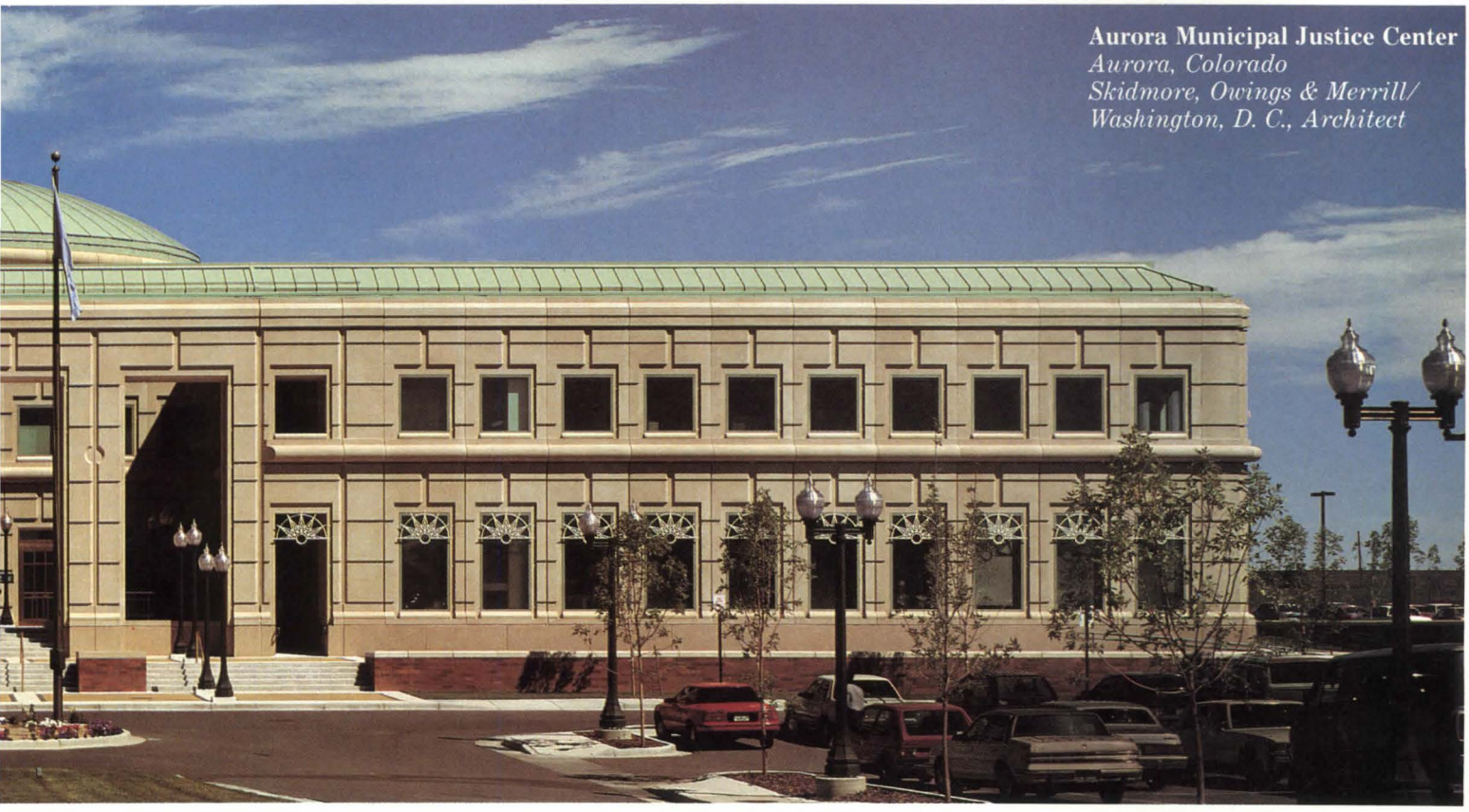
Set in the bend of a major traffic artery through the city, the center was conceived as the western anchor of a larger civic complex—also planned by Skidmore, Owings & Merrill/Washington, D. C.—that will include a new 15-story City Hall directly to the east. An existing library and the former detention facility (to be removed) and courts building (to be converted to a history center) share the new center's 600,000-square-foot site, which is bordered by land slated for a future city park.

In keeping with Aurora's farsighted approach to planning, the justice center was designed to meet the needs of the court system through 2010. (Of 20 courtrooms, only eight have been *finished, leaving* a "bank" of loft space for other city uses.) However, as the program was refined, it became apparent that the ways the several users proposed to work implied facilities more tightly interlinked and more convenient to walk through than the six-story structure envisioned in the master plan. As a result the justice building dropped to two stories—albeit with



1. New courts
2. New detention
3. Police addition
4. Existing police
5. Existing detention (to be removed)
6. Existing courts/ new history center
7. Library
8. Sallyport

Skidmore, Owings & Merrill's justice center in Aurora, Colorado, weds civic classicism with innovative precast technology.



Aurora Municipal Justice Center
Aurora, Colorado
Skidmore, Owings & Merrill/ Washington, D. C., Architect

RON JOHNSON

A massive box of double tees on load-bearing walls, the Aurora courthouse derives distinction from boldly detailed—and superbly made—panels precast in a limestonelike mix of white cement with bank-run local sand and gravel. The entry gains an added sense of occasion from a full-height frontal wall—augmented on either side by well-integrated ramps providing handicapped access—that serves as portal to an arcaded inner court (above right). The monumental facade is leavened by large windows in courtrooms and offices and playful metal grilles patterned after the city's sunburst seal.

Continued from page 125
Manuals: Well-written and well-illustrated. There are separate manuals for learning FastCAD 2-D and 3-D, along with a combined reference. Unfortunately, there are also extensive changes in commands, documented in a separate booklet printed after the main manuals were prepared. And the manuals, paperbacks with smooth covers that slide off the lap, are among the least conveniently designed we've seen. The excellent tutorial will take two days to go through, but you can work with the package in less than a day.
Ease-of-use: Great for 2-D drafting. Good for 3-D (you have to watch the DEPTH indicator or you could end up drawing in the plane of the screen rather than the surface of your model). Fair integration of RenderMan with the 3-D program (you have to leave FastCAD to produce fully rendered images). You don't have to use the 2-D package at all to do 2-D work, but it is much faster than the 3-D. You'll notice the difference when you deal with complicated 3-D drawings. It is rather easy to force a time-consuming redraw in 3-D.
Error-trapping: Good. There are some oddities in 3-D that can require touchups. You will probably use the keyboard to enter endpoints of edges of 3-D surfaces, to make sure all the endpoints match and the surface is completely closed. Otherwise, RenderMan gets confused, as does automatic mesh generation over complex surfaces.

You can scale a dimension in a perspective view (rather than an orthographic) and get misleading results.

there (brick, stone, woodwork, and so forth), and pattern sizes change as the scale changes.

To render an image, you work first inside FastCAD 3-D to choose a view and locate light sources and eyepoint. You then create a file that a RenderMan graphics package can chew on, and exit FastCAD. The process is similar to using AUTOSHADE with AutoCAD.

Light sources can be varied as to color as well as intensity and direction. The material that a surface is made out of is determined by the fill pattern (matte, shiny metal, and so forth).

RenderMan uses lots of extended memory and disk space. FastCAD itself uses expanded memory. The "drivers" that come with memory boards for 80386-equipped computers are not all compatible with RenderMan's use of extended memory.

The results can be near-photorealistic. And even if you are using a VGA monitor (which cannot display the full color and shading range), you can save the file (as a TIFF, Tagged Image File Format file) for output on another device.

You may have to go back and create another rendering file with FastCAD before you get everything right. RenderMan sometimes gives you a surface color you do not expect. And primitive curves like cylinders are rendered smoothly while complex curves may not be.

Thus, it is wise to quick-render images first, before letting your computer spend several hours or more rendering a high-quality complex image. *Circle 300*

DynaPerspective Review

DynaPerspective is a remarkably flexible 3-D modeling tool. First, you can draw inside it. It has the basic tools to handle floor plans and massing studies. Drawing fine detail is not as easy. A double-hung window, for instance, would best be represented with simple shapes, or imported from a true drafting package.

The general approach is to start a drawing in plan view, specifying the heights of objects you are drawing in two dimensions. Once the basic outline of the object is finished, you can switch to perspective and add details. Up to four views—top, front, and side elevations and perspective—can be on-screen at the same time.

You can set up walkthroughs and flyarounds quite easily, because you do not have to specify every view you want of a finished model. Instead, you specify some key eyepoints. DynaPerspective fills in the intervening frames to provide a smooth animation. The animation can be stored two ways, as a "simulation" or as a "film." A simulation does not actually store all the images. It stores only the instructions for making each one. Thus, the speed you can achieve is only as fast as the Macintosh can redraw it on-screen. A film file stores the actual images and plays them back at up to 30 frames a second. But such files get very large, very fast. A single full-screen frame using 8-bit color (256 colors possible) takes a quarter-million bytes of fixed-disk space.

Using 32-bit Quickdraw (more than 16 million colors available), a frame takes roughly a megabyte. It can also take hours for DynaPerspective to actually make the film. The time and disk space can be cut by specifying that the animation take up less than the full screen.

Redraws are always slow in the Macintosh world, compared to workstations and DOS computers with graphics accelerator software or hardware. DynaPerspective helps keep things moving by redrawing only when you specify that you want one, and by allowing you to stop a redraw at any point. If you have multiple views on-screen, for instance, the perspective view is always redrawn first. You can click the mouse once the perspective is done, leaving the top, side, and front views for later.

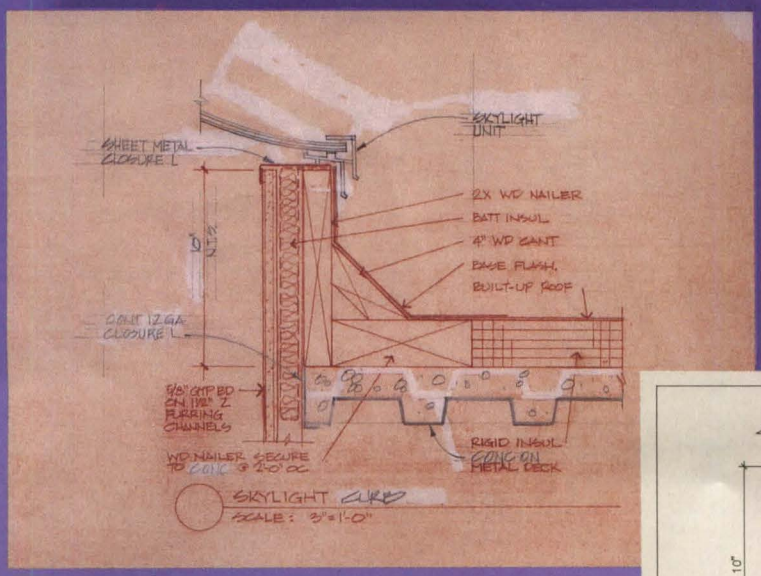
You can also work in up to 16 layers; only the layer you are working on would then have to be redrawn. The other layers can be shown or hidden.

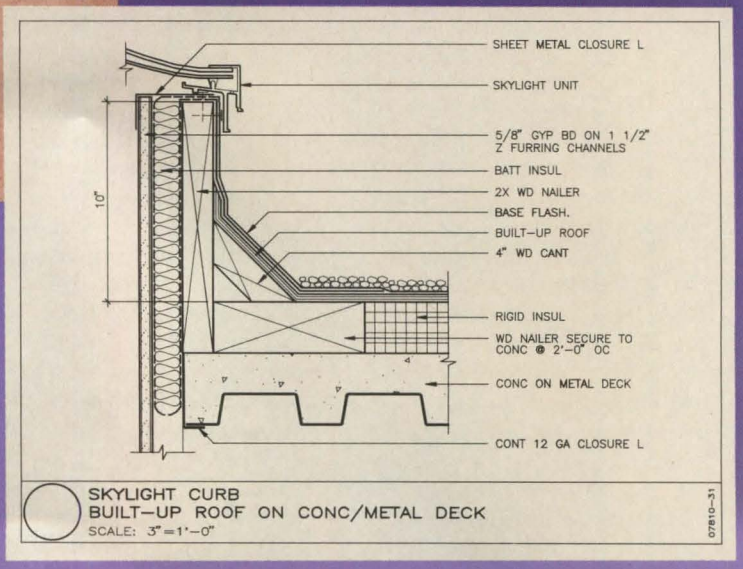
All the standard drawing tools wanted by architects are available. Walls can be drawn as walls (solid or wireframe) once a

DynaPerspective 2.01

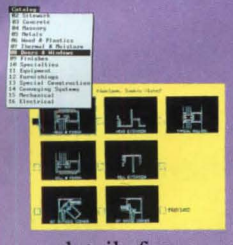
A Macintosh 3-D surface modeling package, for turning CAD drawings into presentation-quality perspective views. It can accept 2-D and 3-D DXF files from AutoCAD and many other drafting programs. It can export DXF as well as PICT and PICS files to drawing and animation software.
Equipment required: Macintosh II or larger, or SE30 equipped with coprocessor and color or grayscale monitor; 2 MB of random-access memory (4 MB recommended). Fixed disk recommended. System 6.03 or later (otherwise, your Macintosh cannot use 32-bit Quickdraw, necessary for this version of DynaPerspective). DynaPerspective can use MultiFinder. IBM version available; UNIX version promised.
Vendor: Dynaware USA, Inc., 950 Tower Lane, Suite 1150, Foster City, CA 94404. 800-445-DYNA. $995 with unlimited telephone technical support.
Manual: Excellent. There's a fine tutorial with emphasis on 3-D visualization.
Ease-of-use: Good. The visualization of 3-D space on a 2-D computer screen is intuitive. You can move around a model by changing the field of view, moving your eyepoint, zooming in or out, or "grabbing" the image and twisting it around. Once drawn, models can be rendered as solid images with just a few mouse clicks.
Error-trapping: Good. It is difficult to issue a command that destroys your work. Minor command missteps can cost you time, especially when building large models on a slow Macintosh. Use a tool on a wireframe after conversion from solid model mode and the surfaces disappear, for instance.

The manual warns that trying to open a new simulation file before closing an old one causes the first one to be closed without warning, and with a possible loss of data. We could not duplicate this, however; we never corrupted a simulation file.





Now, Accuracy & Consistency. Painlessly. Introducing The Vertex Detailer™ & Dynamic Details.™



The Vertex Detailer software can dramatically improve your detail drawing production.

The Detailer, running on AutoCAD Release 10, enables you to *assemble* details from pre-drawn "components." Thousands of building parts and materials drawings are included, ready for you to *snap* together to build details.

This building-block approach beats drawing with CAD primitives, hands down.

Dynamic Details™

Better yet, start with our Dynamic Details. Customized or used as is, they save you even more time. Since Dynamic Details are assembled from Vertex components, they are as easy to work with as details you build yourself using The Detailer. Dynamic Details are packaged in groups by type of construction to match your project needs.

Advanced Features Include:

▼ A drawing database manager to simplify drawing retrieval. ▼ Automated scaling and sheet layout to speed working drawing production. ▼ Support for your office drawing and layering standards.

FREE demo disk

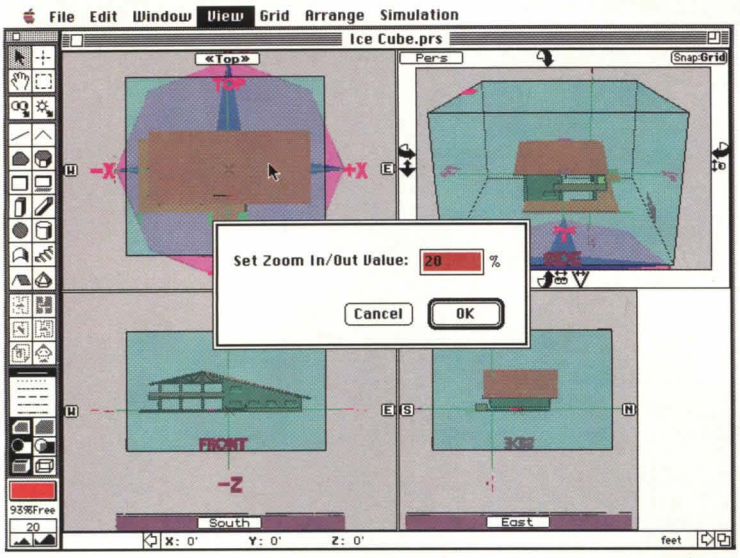
See for yourself what The Vertex Detailer can do for you. Call **(800) 688-2799** for a FREE demo disk today.

Vertex Design Systems
282 Second Street, 4th Floor
San Francisco, CA 94105
Phone: 415/957-2799
FAX: 415/957-2699

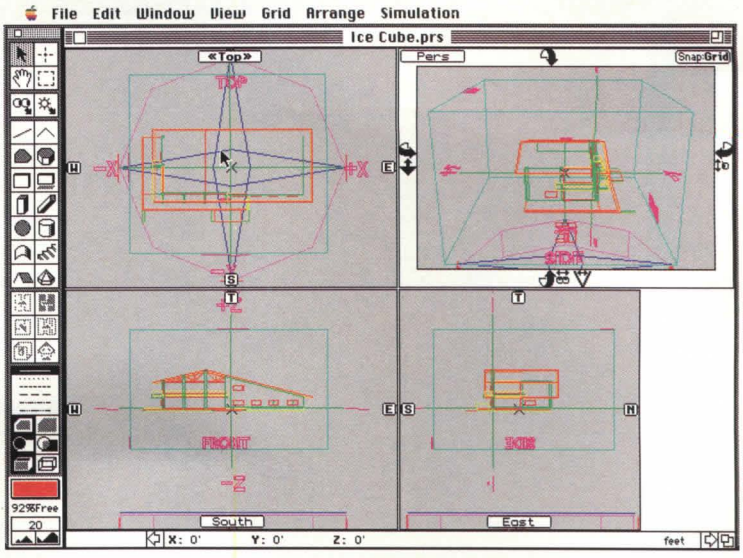
VERTEX™

System Requirements: AutoCAD Release 10 MS- or PC-DOS system with AUI™ capability (AutoCAD's pull-down menus) and a hard disk. Mouse or digitizing tablet. ▼ Vertex, The Vertex Detailer, Dynamic Details, and the "notch" are trademarks of Vertex Design Systems. AutoCAD is registered in the U.S. Patent & Trademark Office by Autodesk, Inc. AUI is a trademark of Autodesk, Inc. ▼ ©1990, Vertex Design Systems

Circle 42 on inquiry card



DynaPerspective's zoom dialog box provides easy access to all needed commands. The "ice cube" views are to help novice users visualize 3-D objects on a 2-D screen.



Wire frames are much faster than solids to work with, but not as easy to visualize. However, it takes very little time to learn to visualize a wire frame as a solid object.

baseline is specified, for example. Polygons (up to 65 sides, no included angles—angles greater than 179 degrees—allowed) can be drawn in two dimensions with a third dimension, thickness or height, specified.

Posts can be drawn as posts (rather than as a polygonal prism); there are separate tools for them. Openings can be punched into walls—for windows, for example—and a "semitransparent" tool can be used to simulate glass. This tool can also be used to draw a glass tabletop or similar object.

You draw a flight of stairs by going to the plan view, specifying a starting point and width with the mouse, and riser height and tread width in a dialog box. The stairs are then drawn for you.

Sloping roofs can be added with the "roof" tool. You specify the height and run of the roof, the area (in plan) it will cover, and the thickness of the roof deck. DynaPerspective calculates the slope automatically. Multisloped roofs are built by specifying the area each slope should cover, in plan. You can also create a 3-D object by revolving a line or surface around an axis of rotation. That makes it easy to create domes and conical roofs.

After DynaPerspective has laid down a 3-D object this way, you can shift it so that it begins and ends exactly where it is supposed to. Commonly used objects such as chairs and window frames can be saved as "library parts." Any number of parts can be stored on disk. You do not "attach" a full library to a drawing. Instead, you select the part you want and insert it into the drawing. It then becomes part of the drawing, and can be manipulated as if it were drawn fresh in the first place. You cannot, however, view the library part before you insert it. It would be wise, therefore, to plot out all the parts you have, and keep a file handy.

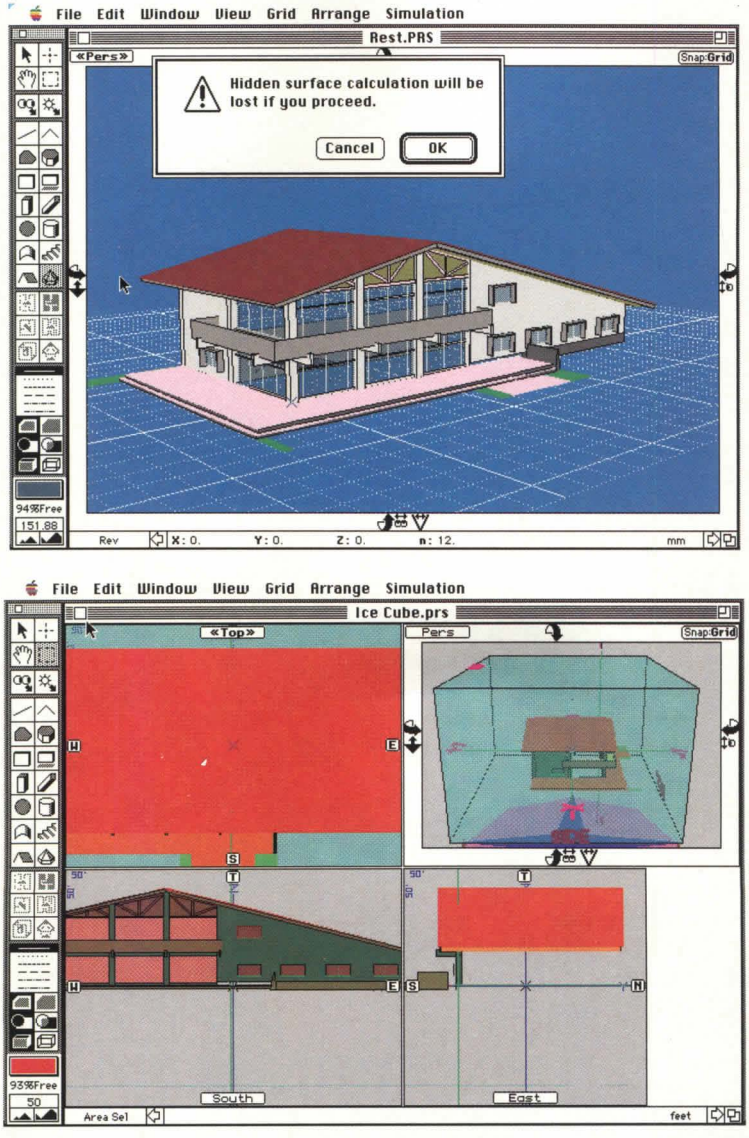
Library parts are not dimensionless. They have the physical size specified when they were created.

Setting the light source is easy—you simply position it on the screen. There is only one source allowed. You don't directly specify how wide the cone of light is that comes from the source. Instead, you specify the contrast—0 has the effect of a large, flat panel of light; 100 is a sharp point (with shadows thus being most contrasty).

All the nice touches of the Macintosh world are here. Menus can be "torn off" the menu bar and moved to convenient places on the screen. Dialog boxes open when necessary, in mid-command if you might need them.

In short, although DynaPerspective is really meant for modeling, a designer in an office that relegates drafting to drafters and associates can use this package for preliminary work.

Circle 301 □



The package gives user prominent warning if an action might remove rendered image from screen (top). "Ice cube" model with 50 percent zoom (bottom).

INNOVATIVE STONE

TWO THOUSAND VARIETIES OF THE FINEST NATURAL AND MAN-MADE STONE PRODUCTS, AND UNPARALLELED SAMPLING AND SPECIFICATION SUPPORT.

COMPLETE STONE PROJECT MANAGEMENT AND STONE PROCUREMENT PROGRAMS FOR LARGE COMMERCIAL PROJECTS.

INNOVATIVE MARBLE AND TILE INC

New York
470 Smith Street
Farmingdale, NY 11735
(516) 752-0318
Fax (516) 752-0411
1-800-62-STONE
W.U. Telex. 880145 INNOVATIVE

European Headquarters
Verona, Italy

California
8436 West Third Street
Los Angeles, California 90048
(213) 653-5533
Fax (213) 653-6072
1-800-62-STONE
W.U. Telex. 880145 INNOVATIVE

See Sweets 04400/INM
BUY LINE 2257

Circle 71 on inquiry card

MAKING EVERY DROP COUNT

The spread of strict water-use legislation has speeded the development of plumbing fixtures that make better use of a scarce resource.

By January 1992, conservation measures requiring the use of water-saving, reduced-effluent, 1.6-gallons-per-flush toilets will be in effect in areas containing half the population of the U. S. After years of study, the American National Standards Institute has published a revised standard, A 112.19.6, setting minimum hydraulic performance criteria for all water closets. This includes a new drain-line transport test designed to answer plumbing professionals' questions about the efficacy of low-consumption toilets. **J. F. B.**

1

1. Total redesign
Kohler's gravity-fed low-water-consumption toilets (the Couture Lite is shown here) represent a complete re-examination of the mechanics and hydraulics of reverse-trap gravity flushing to make the best use of the minimum amount of water permitted under the newer codes. The water-channeling bowl, higher-profile tank, and slightly smaller trap were designed to use most of the water at virtually one moment, creating a siphon, with some water available for a rim-wash. The wave is highly efficient, and provides a complete flushing action that exceeds the new ANSI standards. Kohler Co., Kohler, Wis.
Circle 302

2

3

4

2. Flush valve
A plumbing classic, the Flushometer is now offered with a valve that supplies 1.5 gallons of water at a force that remains constant regardless of the volume of water delivered or variances in water pressure. The water-saving model retains the line's standard non-hold-open action feature, which permits the valve to go through its complete flushing cycle and shut off automatically, even if the handle is held in. Fixture makers now offer pottery designed for the low-water-volume Flushometer valve. Sloan Valve Co., Franklin Park, Ill. *Circle 303*

3. Low-maintenance metering faucet
The MVP faucet is made of brass, stainless steel, and Celcon plastic, materials said to resist both the corrosive chemicals and particulates found in supply water as well as abusive use in public washrooms. The self-cleaning design eliminates high-maintenance, clog-prone faucet components, and has a pilot valve that uses supply-water pressure to open and close the faucet's cycle, meeting operating force requirements for the handicapped. The metering valve adjusts from the outside for cycles of from one to 20 seconds, and fits into many existing faucets. The Chicago Faucet Co., Des Plaines, Ill. *Circle 304*

4. Pressure-assist
The other major low-gpf technology uses a pressure-assist tank. Designed by Water Control International and incorporated in toilets from American Standard and other major manufacturers, the Flushmate is a pressure vessel that compresses air with supply-line water pressure. When the flush valve is tripped, air at 30 psi acts as a siphon-jet to drive water through the bowl. Cadet Aquameter toilets (pictured) come in round, elongated, and 18-in.-high elderly-user models and 11 colors that coordinate with other bath fixtures. While pressure-assist toilets are somewhat more expensive than gravity-fed models, they permit a lower-profile tank, maintain the same water-seal surface and trapway dimension as a standard 3.5 gpf toilet, and have excellent drain-transport performance. American Standard, Inc., Piscataway, N. J.
Circle 305

Products continued on page 135

MAKING THIS BUILDING S
WOULD GIVE MOST CO

But not Vulcraft. We saw it as one of our greatest challenges ever. Because we not only supplied steel joists and joist girders for the project, we also helped design the framing system so that only limited structural damage could be expected from an earthquake measuring up to 7.5 on the Richter scale.

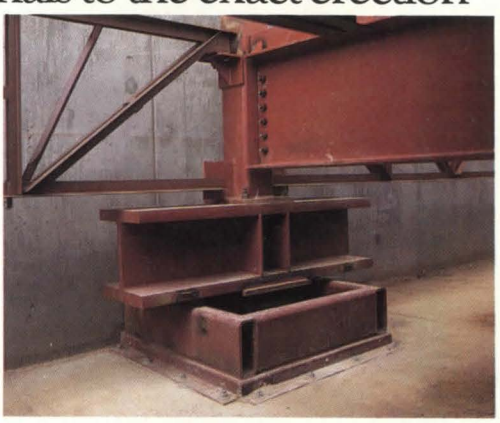
The Evans & Sutherland building, which contains millions of dollars worth of sensitive computer equipment, is located within a mile of the Wasatch Fault in Salt Lake City.

AFE FROM EARTHQUAKES MPANIES THE SHAKES.

That was essential because the building, which was constructed for Evans & Sutherland Computer Corporation, is located within a mile of the Wasatch Fault in Salt Lake City. What's more, Evans & Sutherland is a leading designer of special-purpose digital computers, software systems and display devices — products extremely vulnerable to damage from seismic tremors.

To plan for maximum protection, Vulcraft was asked to join with the architects and engineers at the design stage of the project. Already, they'd decided to use a "base isolation" system, the most advanced buffering method available. But using our steel joists and joist girders was also an important decision. The joists and joist girders are much lighter in weight than wide flange beams, so the entire building required less steel, lighter columns and less foundation. And this not only lightened the load for the base isolators, it saved appreciably on building costs.

Throughout construction, Vulcraft remained constantly involved, tailoring our delivery of materials to the exact erection schedule and meeting deadlines without fail. What's more, our joists and joist girders helped the steel erectors meet their deadlines. That's because our products are fast and easy to erect — a fact that saves time and money on virtually any job where they're used.



The design team chose a "base isolation" system to accommodate seismic loads. They also specified Vulcraft steel joists and joist girders for the building.

So whether you need Vulcraft's help to protect your building from earthquakes or you want to stay out of the hole when it comes to construction costs, contact any of the plants listed below. Or see Sweet's 05100/VUL.

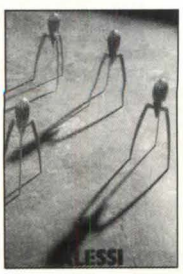
VULCRAFT

A Division of Nucor Corporation

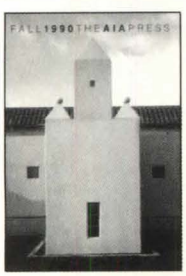
P.O. Box 637, Brigham City, UT 84302 801/734-9433; P.O. Box F-2, Florence, SC 29502 803/662-0381; P.O. Box 169, Fort Payne, AL 35967 205/845-2460; P.O. Box 186, Grapeland, TX 75844 409/687-4665; P.O. Box 59, Norfolk, NE 68701 402/644-8500; P.O. Box 1000, St. Joe, IN 46785 219/337-5411. Architect: Erlich-Rominger Architects AIA; Structural Engineer: Reaveley Engineers & Associates, Inc.; General Contractor: The Bettilyon Corporation; Steel Fabricator: D&H Steel Supply, Inc.; Steel Erector: Steel Deck Erectors, Inc.

For more information, circle item numbers on Reader Service Cards

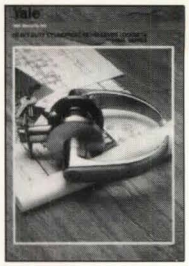
Wright-influenced gifts
Decorative elements by the architect are interpreted in jewelry, scarves, stationery, tableware, and other gift items. A 16-page catalog illustrates each reproduction. The Frank Lloyd Wright Home and Studio Foundation, Oak Park, Ill. *Circle 412*



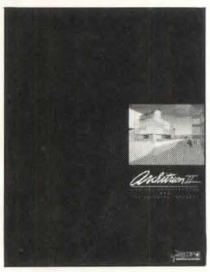
Architectural kitchenware
Functional objects from Michael Graves's bird-topped kettle to an hors-d'oeuvre tray by Ettore Sottsass and cutlery by Achille Castiglioni are pictured in Alessi's 76-page 1990 Production Yearbook. The Markuse Corp., Woburn, Mass. *Circle 413*



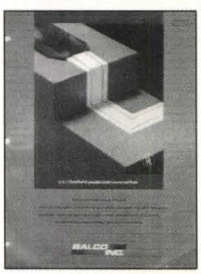
Design publications
New architectural monographs, notecards, practice-oriented case studies, and posters are described in a catalog from the A. I. A. Press. Ordering information included. The American Institute of Architects Press, Washington, D. C. *Circle 414*



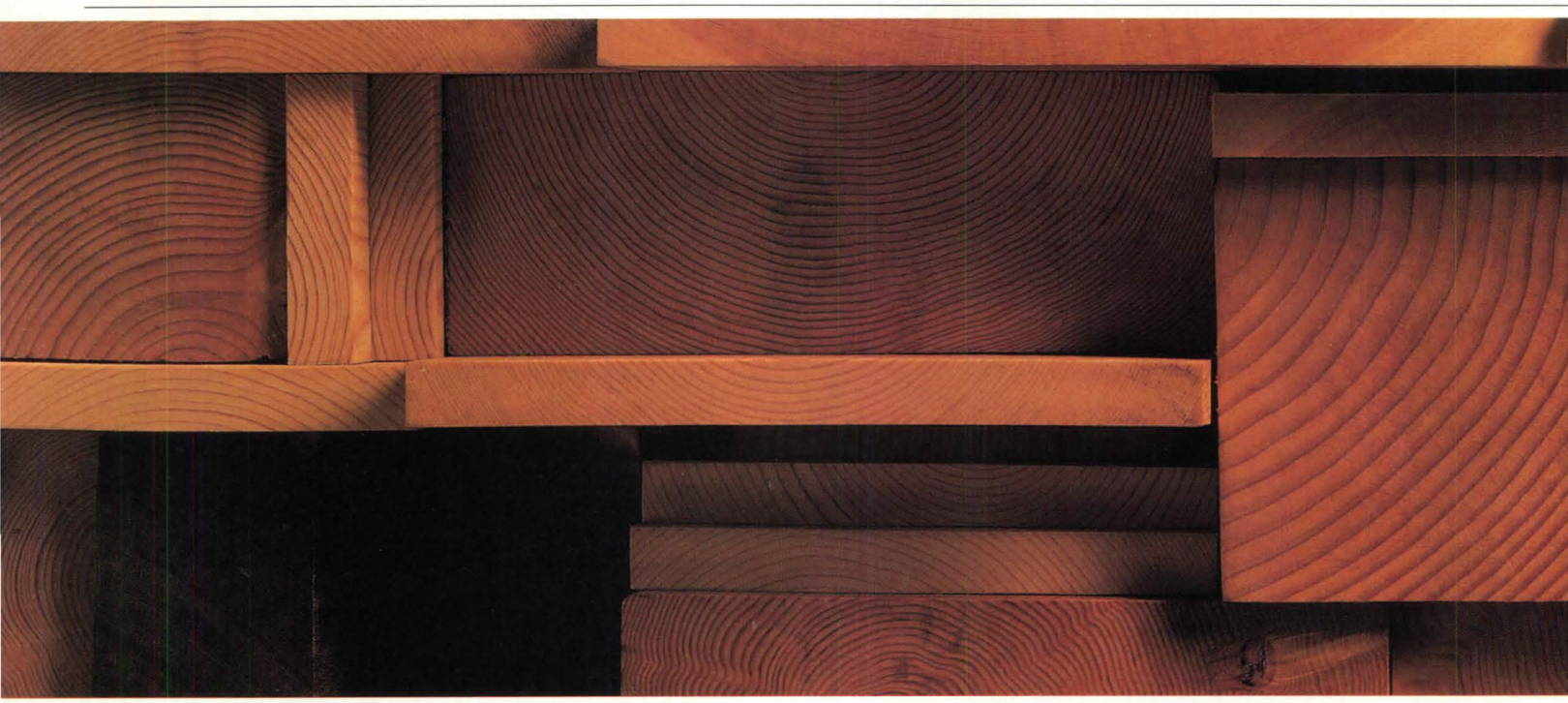
Locksets
A 12-page brochure provides detailed information on new 5400L Series locksets, an easy-to-rekey key-in-lever design that meets handicap code requirements. Yale Security, Inc., Charlotte, N. C. *Circle 415*



MAC-based CAD
A folder explains Architrion progressive-CAD software, said to let the user create an accurate scale model with the same effort usually required to draw a preliminary plan, and illustrates 3-D modeling. Gimeor, Inc., Washington, D. C. *Circle 416*



Expansion-joint covers
Joint covers and seals for many architectural applications are detailed in a 20-page catalog. Clean-line floor covers, a new design, allow a carpeted insert on the joint cover for a less obtrusive appearance. Balco, Inc., Wichita, Kan. *Circle 417*

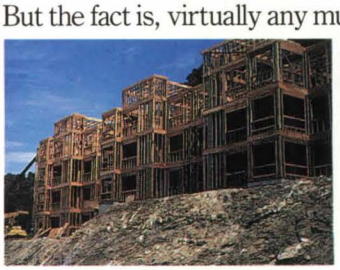


WHEN YOU WERE TAUGHT MULTI-STORY CONSTRUCTION SOME IMPORTANT MATERIAL MAY HAVE BEEN LEFT OUT.

Western Wood.

Chances are, just the mention of wood makes you think house. That's the way most designers have been taught to think.

But the fact is, virtually any multi-story building up to four stories can be framed in versatile Western Wood. It always could be. (The nation's major building codes have allowed it for years.)



Wood frame structures are cost-effective in high density areas and difficult terrain.

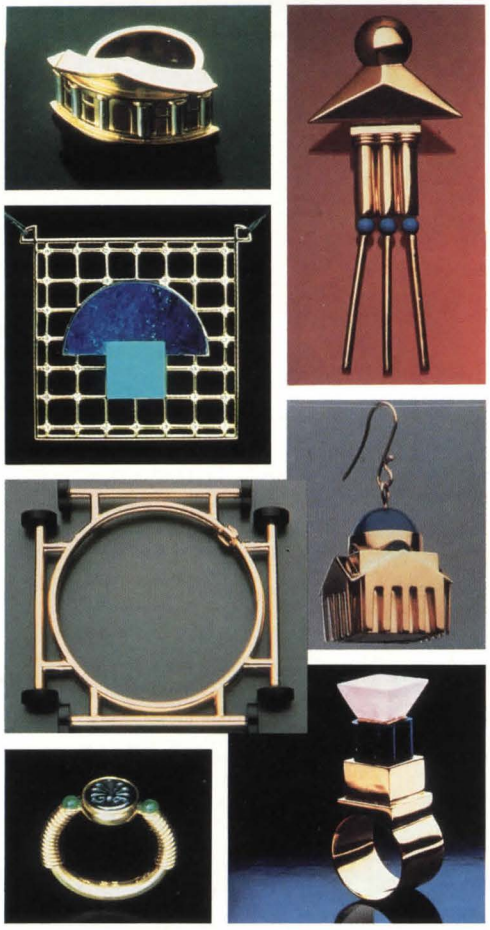
And not just in the West. Award-winning wood frame buildings are going up all over the country. In projects like malls, commercial and multi-family complexes, even hotels.

Continued from page 131

Architecture prête à porter

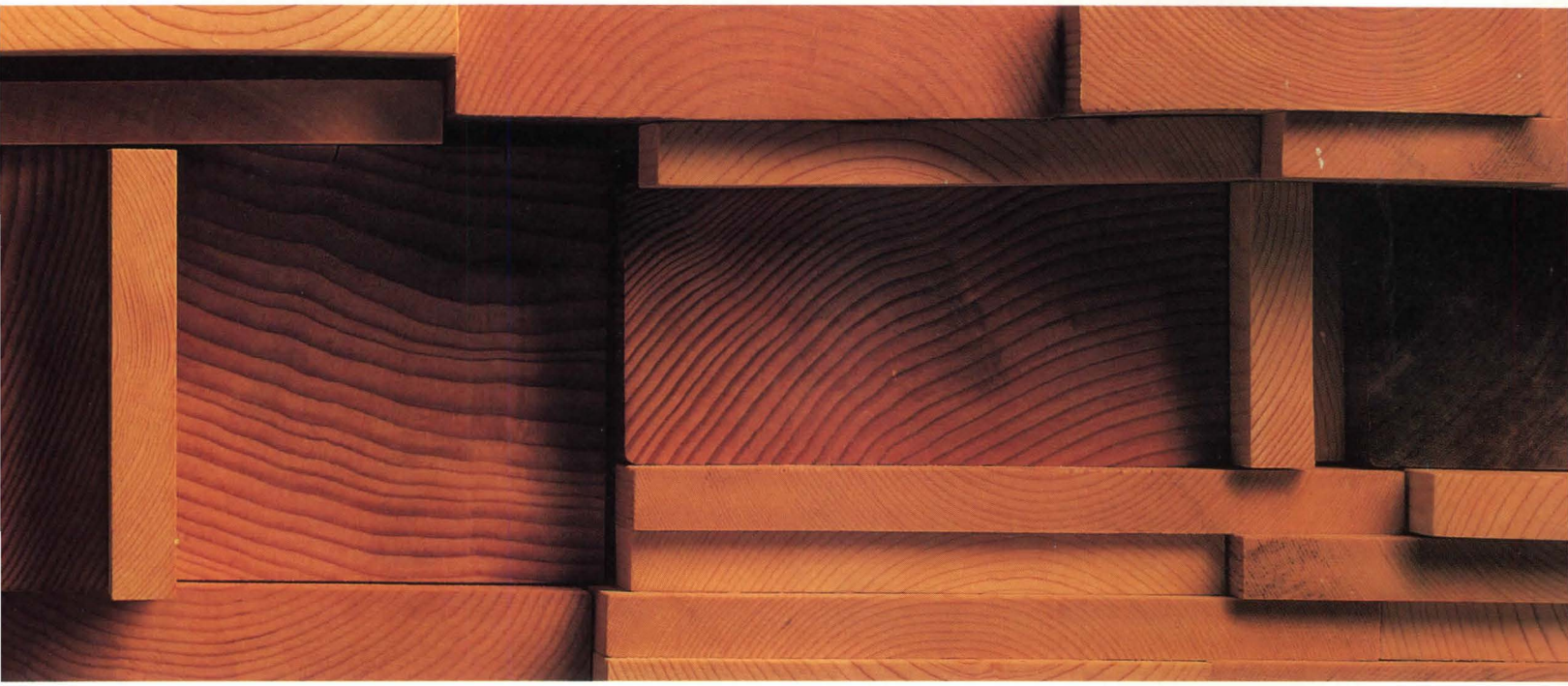
A brilliant collection of jewelry was started by Italian industrialist Cleto Munari in 1985, with on-going commissions from well-known architects and designers with a Postmodern bent. Intended for a certain type of woman, one who might want to wear witty things, the pieces, now over 100 in all, are made by a Munari-sponsored company of goldsmiths in Vicenza, Italy. Many are currently available in this country through Palazzetti, Inc.

Objects in the collection, lavishly photographed, illustrate a 1987 monograph by Barbara Radice for which the author elicited some interesting comments on how architects view their own work. The book on the Collection, Jewelry by Architects, can be purchased for considerably less than the price of a Munari jewel: *they* start at $3,265. **J. F. B.**



Top to bottom left: A ring of 18K gold, designed by Paolo Portoghesi as a Palladian villa; Arata Isozaki's pendant of gold, diamonds, lapis lazuli, and turquoise; a bracelet of gold and black onyx by Ettore Sottsass; a ring, of *gold, green agate*, and hematite, one of the first pieces of jewelry designed by Michael Graves. He feels that his rings are figurative, not abstract, and therefore similar to his architecture.

Top to bottom, right: one of a pair of 18K gold earrings created by Hans Hollein; another earring, this time by Robert Venturi, whose pieces for Munari—he has done rings and necklaces as well—are meant to be representative, a miniature of something else. These bold and delicate, Parthenon-like earrings are made of 18K gold and blue agate. Lower right is another design by Hans Hollein, a ring of 18K gold, lapis lazuli, and rose quartz. Pallazetti, Inc., New York City. *Circle 306*



That's because Western Wood species offer design flexibility that concrete and steel can't match. Not to mention lower costs, faster construction – in all kinds of weather – and better aesthetic qualities.

So before you design your next multi-story building, contact the WWPA for a little homework on Western Wood. It's material you should know.

Award of Excellence for multi-story wood design by Shen/Glass Architects, Berkeley, CA.

Mark the reader service card and we'll send you a packet on woodframe construction – design specs, code provisions, case studies – you name it.

Circle 46 on inquiry card

WESTERN WOOD PRODUCTS ASSOCIATION

Dept. AR/11/90,Yeon Building, 522 S.W. 5th Ave., Portland, OR 97204-2122

BUILDING TYPES STUDIES 1991

ARCHITECTURAL RECORD published its first Building Types Study in 1937: a 56-page special section on the design of department stores, small shops, and restaurants. The purpose of these studies, according to the editors at that time, was "to review authentic current practice with respect to plan, construction methods, materials, and equipment . . . giving a fair idea of modern trends in design and of the practical considerations motivating the trends. It is our belief that there is a distinct need by architects and others for practical planning information, collected together in convenient and usable form."

Over 50 years—and nearly 700 issues—later, the Building Types Study remains the cornerstone of RECORD's monthly editorial calendar. The wisdom of presenting completed works of architecture by functional type as a way of revealing how different architects use different esthetic and technical solutions to solve related programs is as viable today as it was in 1937.

In order to publish the best possible material in this section of the magazine, RECORD invites architects to submit **completed** buildings for editorial consideration in 1991. Here's the list of Building Types Studies scheduled for 1991:

Building Types Study	Editor-in-charge
Academic Buildings	Margaret Gaskie
Commercial Interiors	Karen Stein
Day-Care Centers	Margaret Gaskie
Design for the Aged and Handicapped	Margaret Gaskie
High-Tech Industrial or Research Labs	James Russell
Mixed-Use Projects	Donald Canty
Primary Health-Care Facilities	Clifford Pearson
Record Interiors	Karen Stein
Record Houses	Paul Sachner
Renovation/Adaptive Use	Paul Sachner
Schools	Clifford Pearson
Sports and Recreation Facilities	Karen Stein
Transportation Centers	Donald Canty

ELIGIBILITY:
Buildings must be completed and available for professional photography at least **four months** prior to publication date (e.g., January for the April issue). Entries should consist of good-quality slides or professional 4-by-5 transparencies of the building; reduced versions of floor plans, site plan, and sections *(not* plan rolls); and a one-page or less text outlining the client's goals and the architect's technical and design solutions. You may send submissions throughout the year. Send projects to the appropriate editor-in-charge at ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, NY 10020. For additional information, phone RECORD'S editorial offices at 212/512-2594.

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified

Pages 62-65
Andover Town Hall Restoration
Ann Beha Associates, Architects
Reproduction cornice and moldings: Custom Castings/AFI. Fabric wallcovering: Guilford Industries. Carpeting: Brinton's. Upholstery fabric: F. Schumacher & Sons. Stacking chairs: GF Furniture Systems, Inc. Auditorium chandelier: Nowell's, Inc. Sconces: St. Louis Antique Co. Elevators: Meredith Elevator.

Pages 72-75
Division 1 Fire Headquarters
Jung/Brannen Associates, Architects
Granite: Moliterno (Stony Creek; Deer Isle). Curtainwall: Harmon Contract Glazing. Single-ply roofing: Sarnafil. Windows: Wausau. Glazing: Viracon, Inc. Wood doors: Weyerhaeuser. Metal doors: Bilt-rite. Glass rolling doors: Overhead Door Corp. Locksets, closers, and exit devices: Sargent. Sprinklers: Globe/Reliable. Custom woodwork: Scott and Duncan. Cabinet hardware: Soss. Ceramic tile: Dal-Tile Corp. Lighting: Lightolier.

Pages 76-81
Oceanside Civic Center
Charles W. Moore/Urban Innovations Group, Architects
Exterior finish: Sto Industries (Stolit K-75) over Georgia-Pacific (Dens-Glass) substrate. Metal stud framing: U. S. Gypsum Corp. Exterior luminaires: Bega. Built-up roofing: Multichem (Mult-i-thane). Steel windows and entrances: Hope's Architectural Products. Glazing: PPG Industries, Inc. Pool tile: Dal-Tile. Pool lining: Neogard.
Pages 80-81—Council Chamber doors: Carmel Steel Products. Grilles: Cookson. Stained glass: Jurs Architectural Glass. Council Chamber sculpture: Joy Wulke. Exit devices: Monarch. Door closers: Dor-O-Matic. Suspension grid: Donn Corp. Acoustic panels: Capaul Corp. Operable walls: Modernfold Corp. Paints: Frazee Paints. Wallcoverings: L. E. Carpenter & Co. (Vicrtex). Laminate surfaces: Wilsonart. Carpeting: Lees Carpet. Fixed seating: American Seating. Chairs: Herman Miller. Library furnishings: Brodart Co. Recessed and special lighting: Prudential. Torchières: ASW Corp. Elevators: Dover. Wheelchair lifts: American Stair-Glide Corp.

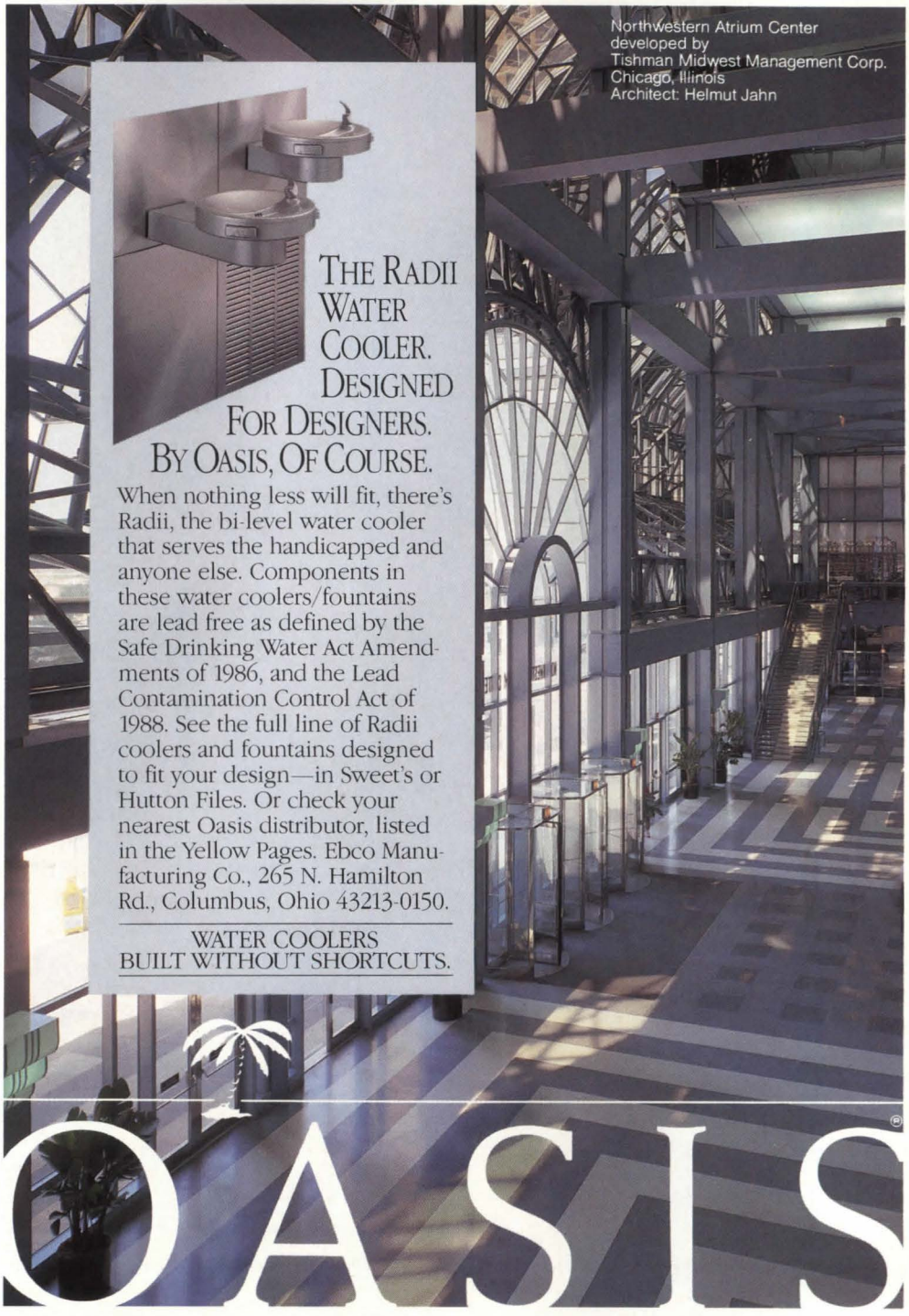
Pages 82-83
Burnham Harbor Station
Chicago Park District, Architects
Wood windows: Pozzi Window Co. Doors: Morgan Doors. Locksets: Corbin. Hinges: Hager. Closers: LCN. Tile: American Olean. Lighting: Poulsen Lighting Co. Paints: Pratt & Lambert. Weathervane and steel railings: fabricated by Bill Boardman and Dave Sullivan, Firehouse Construction.

Pages 84-89
Metropolitan Toronto Police Headquarters
Shore Tilbe Henschel Irwin Peters/Mathers & Haldenby Joint-Venture Architects
Granite: Ingemar (Balmoral Red). Glazing: Ford Motor Co., Glass Division. Glass block: Pittsburgh Corning Corp. Custom entrance: Emery Glass & Aluminum. Rolling grilles: Kinnear. Recessed and surface-mounted cylindrical lighting: Lightolier, Inc. Sconces: Raak Lighting, Inc.

Pages 90-93
Caribbean Marketplace
Charles Harrison Pawley, Architect
Built-up roofing: Owens-Corning, Inc. Corrugated-metal roofing: Phoenix Metals. Sectional doors: Overhead Door Corp.

Pages 94-95
Julian Main Post Office
Keniston & Mosher, Architects
Galvanized metal roof: ASC Pacific, Inc. Wood windows: Marvin. Entrances and wood doors: Champion. Mortise locks: Schlage Lock Co. Door seals: Pemko. Pulls: Baldwin Hardware Mfg. Laminate surfaces: Formica Corp. Stains: Olympic Homecare. Vinyl flooring: Armstrong World Industries. Exterior lighting: McGraw-Edison; Tri-Lux; General Electric. Parabolic downlighting: Columbia Lighting.

Pages 96-101
Aurora Municipal Justice Center
Skidmore, Owings & Merrill, Architects
Precast concrete: Rocky Mountain Prestress. Metal roofing: Overly Mfg. Co. Elastomeric roofing: Hydrotech. Window grilles: Steven T. and Richard A. Baird, Architectural Ornamentation, Inc. Storefront and fixed windows; glazing: PPG Industries. Locksets: Schlage Lock Co. Acoustic ceiling: USG Interiors. Laminate surfaces: Formica Corp. Cast aluminum exterior luminaires: Spring City Electrical Mfg. Co.

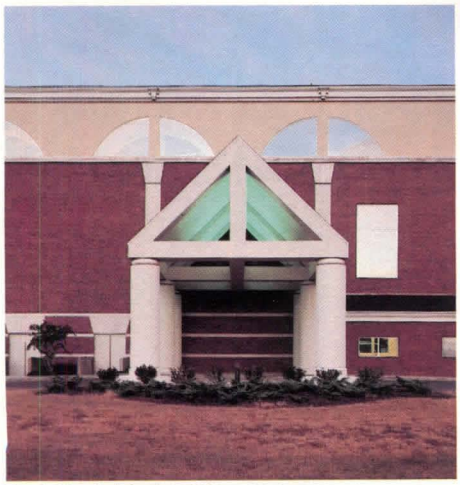


Circle 47 on inquiry card

BP America Building, Cleveland, Ohio
Architect: Hellmuth, Obata & Kassabaum, Inc.
Photo: Bill Schuemann

Imperatore Library, Englewood, New Jersey
Architect: Bohlin Powell Larkin Cywinski
Photo: Christopher Barone

The Humana Building, Louisville, Kentucky
Architect: Michael Graves
Photo: Pashall/Taylor



Frank Moody Music Building, University of Alabama, Tuscaloosa, Alabama
Architect: Fitts & White
Photo: Balthazar Korab Ltd.

Unity of Dayton Church, Huber Heights, Ohio
Architect: Woolpert Consultants

Building Officials & Code Administrators International, Inc., Flossmoor, Illinois
Architect: Linden Group, Inc.
Photo: Linden Group, Inc.

Masonry Cement Holds Buildings Together

BEAUTIFULLY

The buildings shown above owe some of their good looks to the important detail of mortar made with masonry cement.

Masonry cements are made with a special combination of ingredients: portland cement for high-early strength; plasticizers for workability; air-entraining additives for workability and durability.

You get the same cement mix every time so you are assured of uniform mortar during construction because the manufacturer makes each bag of cement the same way.

Masons get the time-saving convenience of a premixed cement consistent from bag to bag. Just add water and sand to the mix.

You'll want uniformity of color when you specify colored mortars. Pigmented masonry cements also are available. Standard colors complement most brick or block colors. Manufacturers will blend special colors for special projects.

Write or call for more information about masonry cement.

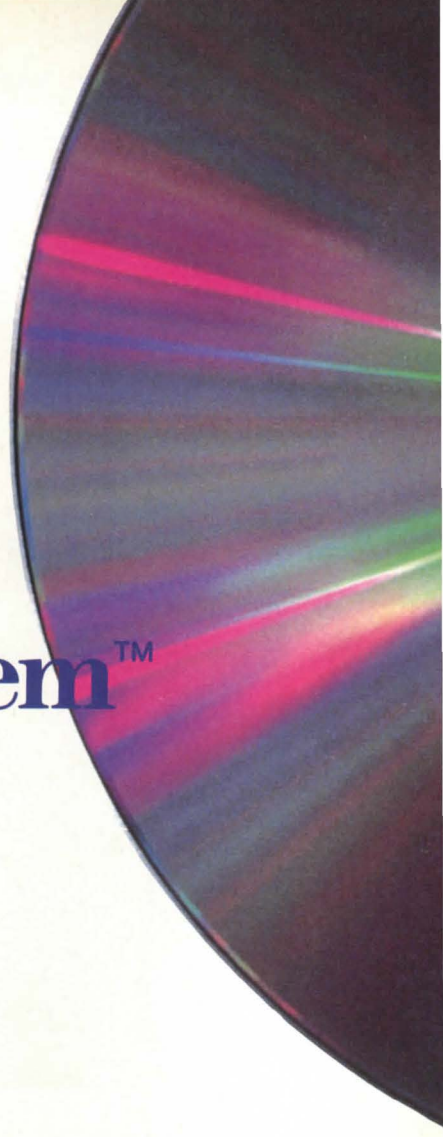
PORTLAND CEMENT pca ASSOCIATION

An organization of cement manufacturers to improve and extend the uses of portland cement and concrete through market development, engineering, research, education, and public affairs work.

5420 Old Orchard Road, Skokie, Illinois 60077-1083 (708) 966-6200

Circle 44 on inquiry card

How can you improve your specifications... and produce them faster... at the lowest possible cost?



Announcing...

SPECSystem™

an electronic, "expert" system for producing construction specifications... independent of a host computer; no modem connection is ever required... updated *MONTHLY.*

Using SPECSystem is like talking to an experienced specification writer about your project requirements and getting an edited, project-specific and up-to-date specification *IMMEDIATELY.* SPECSystem currently includes 398 sections covering CSI Divisions 1-16, and it offers preliminary and short form options for those sections most frequently specified. Two sophisticated electronic section writing aids, for product categories not yet in the database, are included at no additional charge. Another time saver is a text editor which automatically reformats a section after you make any changes desired.

SPECSystem has been created and will be maintained by the same team of professionals that developed SweetSpec for McGraw-Hill. Because SPECSystem is self-contained, however, it's even simpler and faster to use. The only equipment you'll need is an IBM or IBM-compatible PC with 512k of RAM, a hard disk, a CD-ROM reader, and a printer. Monthly updates to the entire database are delivered on floppy disks or on a replacement CD-ROM, with automatic installation. You don't even have to worry about replacing obsolete hard copy, because all the latest changes are delivered electronically.

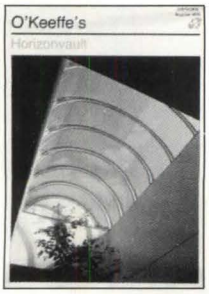
SPECSystem is also highly cost-effective: for only **$2395*** per year, you have *UNLIMITED* use of the service and receive monthly updates. Compare this value to the price of any conventional master specification! A LAN version and discounts for multiple copies are also available.

For more information or to request a free demonstration package, please call 1-800-942-SPEC. Or write to SPECSystem; 999 Peachtree Street, NE; Atlanta, GA 30367-5401.

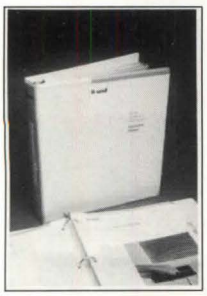
Circle 48 on inquiry card

*Effective 10/1/90. Prices Subject to Change Without Notice.

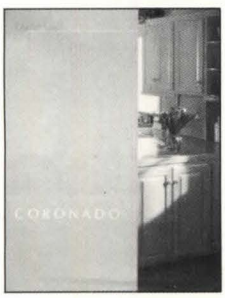
For more information, circle item numbers on Reader Service Cards



Barrel-vaulted skylight
The Horizonvault, a patented assembly of aluminum sills, caps, and neoprene gaskets, is designed for simple, economical installation with no exposed fasteners. A design brochure includes glazing details and span data. O'Keeffe's, Inc., San Francisco. *Circle 400*

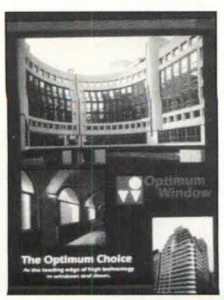


Exterior insulation design
An R-wall information manual contains complete technical data on an exterior insulation and finish system now offered by Sto, including close-up photos of all finish textures and colors, details of approved installations, and code data. Sto Industries, Inc., Atlanta. *Circle 401*

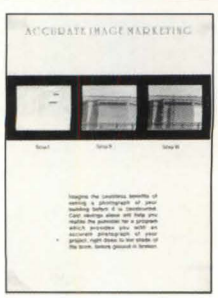


Kitchen cabinetry
The Coronado cabinet line is said to offer customized sizing, frame styles, and storage accessories at a less-than-custom price. A color catalog illustrates traditional and contemporary doors and finishes. Quaker Maid, Leesport, Pa. *Circle 402*

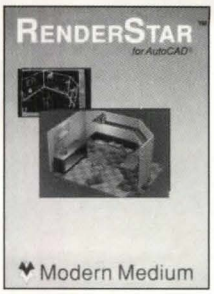
Roofing tile
Mission-style, S-shape, and shingle-type clay tiles are shown in a range of colorations from Standard Red to Coffee. Installation and application guidelines are included in a 4-page catalog. United States Tile Co., Corona, Calif. *Circle 403*



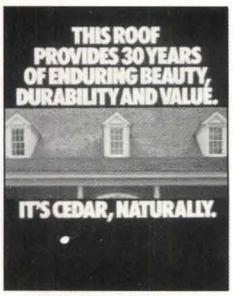
Steel windows
Prepainted, corrosion-resistant windows of roll-formed steel, stainless steel, and bronze come in projected, pivot, and sliding versions, and a fire-rated double-hung style that meets code lot-line requirements. Optimum Window Mfg. Co., Bronx, N. Y. *Circle 404*



Project presentation
A brochure and video explain how a photographic-quality image of a project in the design stage can be created from a photograph of the site, an elevation drawing, and material-color samples, at an economical cost. Accurate Image Marketing, Alexandria, Va. *Circle 405*

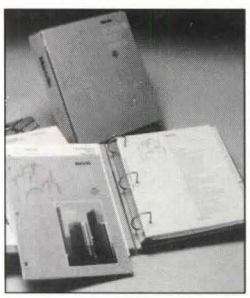


Rendering software
A brochure explains how RenderStar software generates realistic images from 3-D AutoCAD 10 models. Rendering techniques include material textures, up to 50 light sources, sun shadow, and depth shading. Cost: $1,495. Modern Medium, Inc., Portland, Ore. *Circle 406*



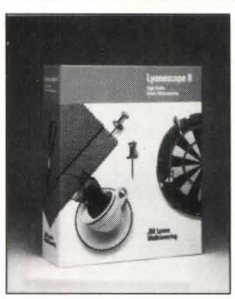
Cedar shingles
Certi-Last shakes and shingles have been pressure-treated to resist mold, decay, and weather even in excessively wet and humid climates. A 30-year warranty program is explained in a color folder. Cedar Shake & Shingle Bureau, Bellevue, Wash. *Circle 407*

Parquet flooring
A 20-page color catalog illustrates all Hartco wood flooring patterns, and describes the appearance and wear distinctions among the acrylic, urethane, sealed and waxed, and color-washed finishes available. Tibbals Flooring Co., Oneida, Tenn. *Circle 408*

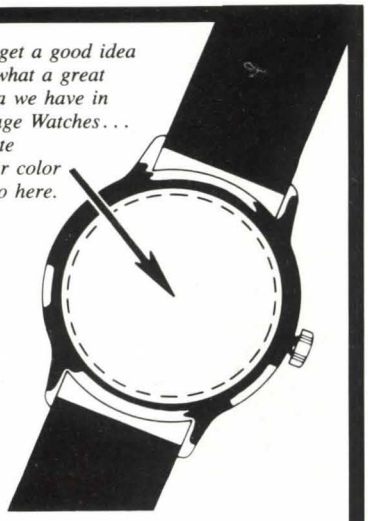


Building insulation
A new architectural binder provides fully cross-referenced technical, design, installation, and performance information on the thermal and acoustic insulation of commercial buildings. Manville Corp., Denver. *Circle 409*

Fast-response fire sprinklers
A question-and-answer-format pamphlet explains the performance and testing criteria associated with newer types of fire sprinkler systems, including equipment meeting the most recent NFPA-13R standard. National Fire Sprinkler Assn., Patterson, N. Y. *Circle 410*



Linen-look wallcoverings
Sample book contains fabric swatches of Lynnescape II wallcoverings for high-traffic areas, made of durable polyolefin woven to achieve the appearance, hand, and coloration of Belgian linen. J. M. Lynne Co., Inc., Smithtown, N. Y. *Circle 411*



OR EVEN BETTER

Send us your color logo

(Any size letterhead, photo, brochure, artwork)

along with U.S. $16.50 ea. (Tax, Shipping included) and we'll rush you a personalized working *quartz* watch sample as our convincer!

Your company logo in full color is the dial of a handsome wristwatch. Gold plated case, genuine leather band, battery powered quartz movement with 1 year limited warranty. Men's and women's sizes. Remarkably inexpensive even in **small quantities.**

A timely idea for –
- **Incentive**
- **Premium**
- **Dealer/Loader**
- **Business Gift**
- **Convention or Meeting Giveaway**

Catalog sheet and details on request.

Limit: 2 samples per company @ $16.50 each

IMAGE™ WATCHES, INC.
227 E. Pomona Blvd.
Monterey Park, CA 91754
Attn: Mr. Montague
(213) 726-8050

9am–5pm Mon.–Fri., Pacific Coast Time

Logo Watch Leader for over 10 Years

©Image™ Watches, Inc. all rights reserved

Unconditional Money Back Guarantee

Circle 49 on inquiry card

BRIEFS . . .

Continued from page 15

- **Five new principals** have been named at Esherick Homsey Dodge & Davis: Joram Altman, John Haag, Jim Hastings, Edward Rubin, and G. James Scroggin. All are long-time members of the firm, which is expected to be lead architect for the $100-million New England Aquarium.
- **Frederick Gutheim** has received the Crowninshield Award from the National Trust for Historic Preservation, the highest honor in that field. Gutheim, a writer who has devoted his life to the preservation movement, worked to ensure passage of the National Preservation Act of 1966, and has continued to write on important environmental and preservation issues.
- **First place in** "Bridging the Gaps," a design competition co-sponsored by Columbia University School of Architecture and Building Arts Forum/New York to improve pedestrian access to key areas of lower Manhattan, went to Weiss/Manfredi and Leo J. Blackman, both of New York, and Ken Smith, partner at Swartz Smith Meyer, San Francisco landscape architects.
- **The Dulwich Picture Gallery,** a John Soane design built between 1811 and 1813, was the focus of a competition held this summer for the design of a new pavilion, to house a shop, tea room, and other commercial spaces. The winning design is the joint work of three young architects, Christopher Grasby, Brendan O'Neill, and Tom Zetek. Their design calls for a single-story steel and glass building enclosed by two parallel garden walls. All 377 entries are on view through November at the 9M Gallery on Cramer Street, London.
- **An international jury** has awarded five prizes in a competition to design Montreal's Place Jacques-Cartier. The winners: Jacques Rousseau and Andre Fortin of Montreal; Kelbaugh, Calthorpe and Associates of Seattle; Katsuhiro Kobayashi of Tokyo; Patrick T. Y. Chan, Dan Teh, Howard Rideout, and Jack Dougan of Toronto; J. A. Griffiths (of Griffiths Rankin Cook) and Peter A.G. Roper of Ottawa.
- **Following nearly 20 years** of abandonment, poor planning, lawsuits, and intermittent restoration attempts, Cincinnati's extravagant Art Deco Union Terminal is on track to rehabilitation, this time as a site for the city's Historical Society and Natural History museums. The first phase of architects Glaser Associates' two-year, $55-million renovation opens to the public on November 10 in the terminal's 106-foot-high rotunda and main concourse. (Converting the vast underground track level to exhibition space will take another year.) The rotunda will remain as a circulation center free of exhibits, but an Omnimax theater and a so-called Children's Discovery Center will be open. A recent agreement with Amtrak should lead to limited passenger-train service early next year. □

Just $39.50, it holds everything but board meetings!

Honestly, our Original Lands' End Attache has a capacity for paper work even workaholics can't exhaust.

Made of sturdy, yet flexible cotton canvas, this is the thinking manager's attache—with interior pockets that hold all the makings of a working plane trip, or a night at your desk at home.

Consider, an interior space that's 17⅝ by 13¾ by 3¾"—and you can see yourself stuffing it with more than it was ever meant to hold. It can take it, and it will. GUARANTEED. PERIOD.*

So, take a moment right now to fill in the coupon. Or, order by phone. The toll-free number is **1-800-356-4444,** and an order in today is on its way to you tomorrow. While you're at it, have us send you our latest catalog. You'll find it crammed with Lands' End values in clothing, shoes, accessories, and other soft luggage—because neither man nor woman can manage to live on work alone! You deserve to look good doing it, too!

LANDS' END
DIRECT MERCHANTS

Please send free catalog.
Lands' End Dept. RE-63
Dodgeville, WI 53595

Name _____

Address _____

City _____

State _____ Zip _____

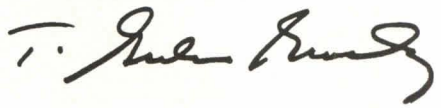
☐ Please send information about your new international service.

Write or call toll-free:
1-800-356-4444

Circle 50 on inquiry card

"Joe is very availa

T. Graham Bradley is a principal of Bradley Likins Dillow Drayton, AIA, a 60-year-old firm located in Decatur, Illinois. He is a Fellow of the AIA and a past director of the national AIA. He is also past president of both the Central Illinois Chapter of the AIA and the Illinois Council of the AIA.



Joe Murphy is president of Insurance Designers, an independent insurance agency based in Petersburg, Illinois. He is a member of the Professional Liability Agents Network (PLAN), a nationwide group that specializes in serving the risk management needs of design professionals.

There's no typical day for Joe Murphy, but at least a couple of days a week you'll find him driving 250 or so miles in several different directions to: spend two hours discussing loss prevention with an architect and helping him fill out a DPIC application, two hours talking about a structural engineer's changing practice and completing a renewal application, another hour talking about project insurance with another architect, and more time with another renewal application. He met Graham on a trip like that about eight years ago. Graham had a problem on his professional liability policy and Joe helped straighten it out.

Joe says, "I don't think you have to come on strong—I think it's just being there when they need you. You finally get to the place where, when they think they have a problem, they call you—they just plain can't think of anyone else to call."

Joe's spent over 20 years in the insurance business, and nearly ten representing DPIC. Today he can hardly remember the days before he knew about professional liability for design professionals: almost 100% of his time is spent with architects and engineers. Because of his expertise and his proximity to the state capitol, he works with Graham and other design professionals to provide input to policymakers, working with government bodies like the state Capital Development Board, which handles all renovations and new buildings for the state. He's a "reference point" for them—their sounding board on what the insurance industry thinks about contractual clauses under discussion with the AIA, ACEC and others. If you're a design professional in central Illinois, you'll see Joe Murphy.

Professional Liability Insurance for Design Professionals

DPIC COMPANIES

The Professional Liability Specialist of the Orion Capital Companies

Design Professionals Insurance Company • Security Insurance Company of Hartford • The Connecticut Indemnity Company • Guaranty National Insurance Company • Landmark American Insurance Company

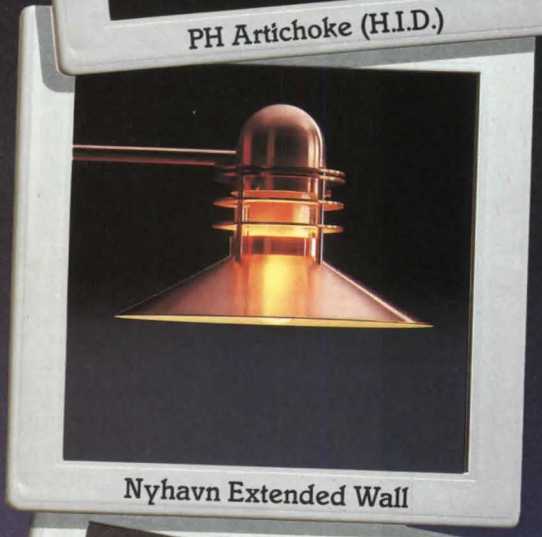
Available through an exclusive network of independent agents. Please call 1 (800) 227-4284 or 1 (800) 682-3400 (in California) for the agent serving your area.

DPIC Companies, Inc.
2959 Monterey-Salinas Highway
Monterey, California 93940

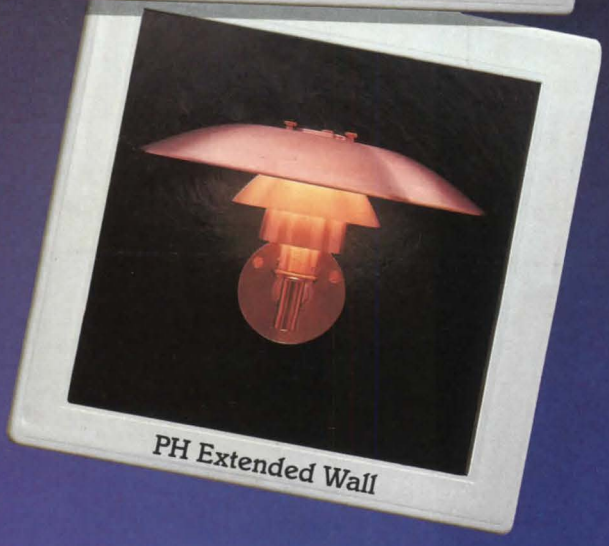
Light and Design


PH Artichoke (H.I.D.)


PH Artichoke (H.I.D.)


Nyhavn Extended Wall


PH 6 (H.I.D.)


PH Extended Wall


PH Louvre (H.I.D.)

UL/CSA
Listed

louis poulsen

Poulsen Lighting, Inc.
5407 N.W. 163 Street
Miami, Florida 33014-6130
Telephone - 305-625-1009
Telefax - 305-625-1213
Call Toll Free - 800-342-2310

Circle 77 on inquiry card

Tenting to Light

Fabric lanterns constructed from material used for stadium domes create drama in Ellerbe Becket's new Kansas City office.

The Minneapolis Metrodome, the Syracuse University Carrier Dome, and the Pontiac (Michigan) Silverdome are all stadiums capped with roofs of tensile fabric. But how does that relate to lighting? Ellerbe Becket's Kansas City office, including architects who had been involved in designing those three stadiums, developed a new interior-lighting application. They took the tensile fabric that is typically associated with their stadium dome and retractable-roof designs and created fabric lanterns for their office.

The Kansas City office is one of five in a national architecture firm and is known for its expertise in stadium, arena, and convention-facility design. "We wanted to relate our practice in some physical way to the sports facilities we design," says Ron Turner, a partner in Ellerbe Becket's Kansas City office. "It's significant that the firm used translucent tensile fabric, composed of glass fibers coated with Teflon, in interior design." While the firm regularly uses the material for stadium domes, the interior-lighting application is new. Much of what the firm learned by creating the fabric lanterns may be applied to their commissions, says project designer Jim Miller.

Tensile fabric, exposed concrete columns, and frosted bulbs are the main components of the fabric lanterns, also known as tents. This new lighting application marks the "heart of the office"—the drafting area, Turner says. The tensile fabric and lights are attached to exposed concrete columns and add a dramatic flair to the office. The ceiling in the studio space is an exposed-concrete flat slab that is used to reflect light from the lanterns.

"We exploited the translucent and reflective qualities of the material to create a dramatic, uplit space for the drafting studio," says William Johnson, project designer and design principal at the Kansas City office. The fabric lanterns, lit by incandescent lights, provide a sculptural decorative element in addition to their functional purpose. The lanterns resemble a stylized column capital and are an abstraction of Frank Lloyd Wright's mushroom columns at the Johnson Wax Building in Racine, Wisconsin. Also, Ellerbe Becket architects sought to capture the glow-through effect of a domed stadium at night.

This type of lighting application may be the first of its kind in an interior space, says Marco Scofidio, project manager at Birdair, Buffalo, New York. Although some offices use fabric lanterns as a decorative element, Scofidio says he has yet to see a fabric lantern with lights incorporated into it. Birdair specializes in making permanent architectural membrane structures, such as the fabric used to construct domes and retractable roofs for sports facilities.

"We used simple and inexpensive materials, we think, in a dynamic way," Turner explains. And there are numerous advantages to using the fabric lanterns. The architects selected Teflon-coated fiberglass for the Kansas City office because of its ability to absorb noise. In a room full of hard surfaces, such as concrete walls, the ability to minimize noise is a definite plus. Also, the material has a Class A fire rating, which is important because light bulbs are mounted behind the nine fabric lanterns. In addition, the material is designed to be largely maintenance free.

Ellerbe Becket built its new offices within an existing classical office building. It gutted the space and sandblasted columns to expose concrete. The firm designed the lanterns, composed of a junction box and a socket. Porcelain receptacles accept one light bulb; four bulbs comprise one lantern. Frosted light bulbs are used in the lanterns to diffuse light and minimize hot spots. "In lighting terms, it was a pretty simple approach," says project designer Jim Miller.

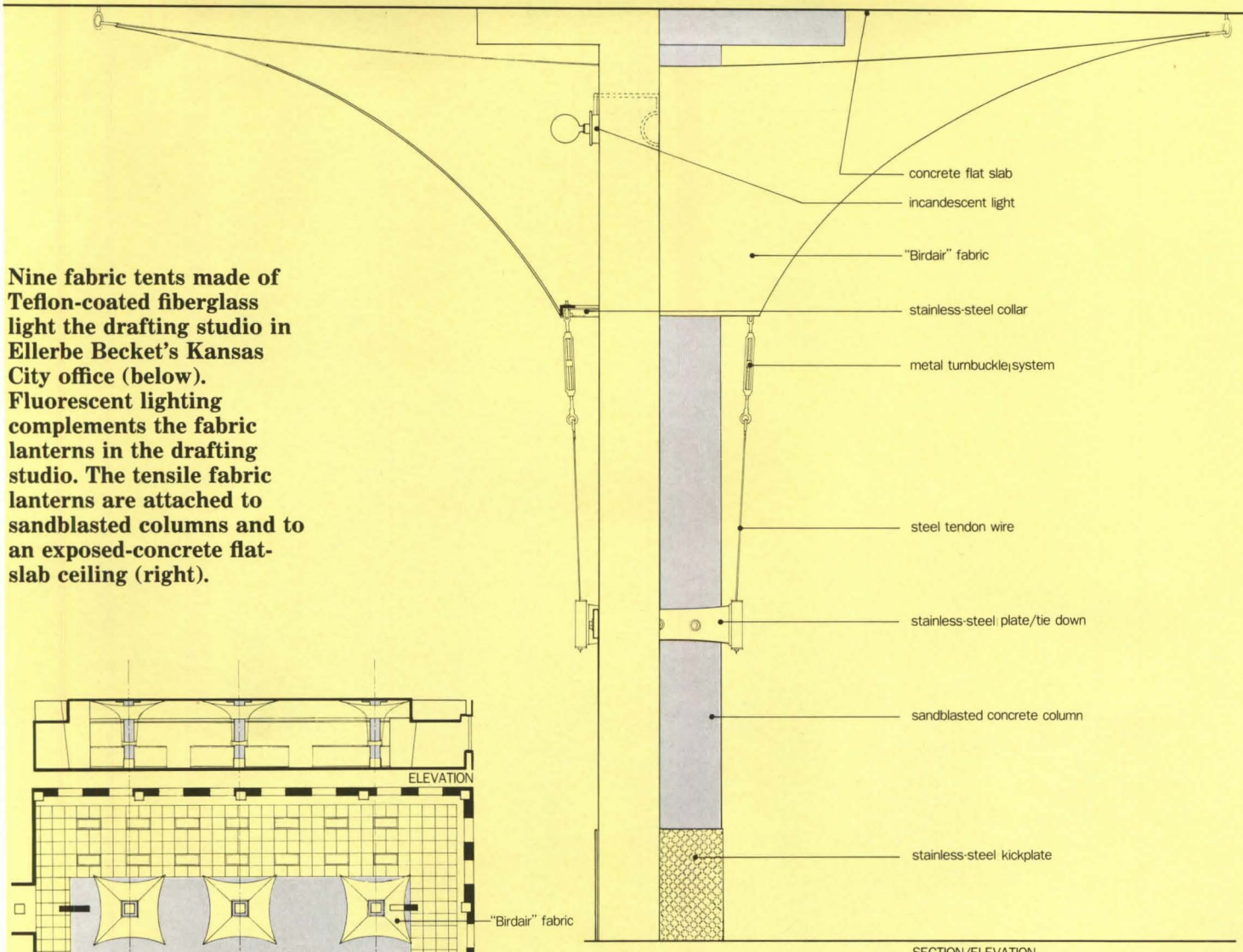
Ellerbe Becket hired Birdair to manufacture and assemble the lanterns by hand. Two Birdair employees installed them in four days. The Teflon-coated fiberglass material was cut and sewn in Buffalo and then stretched into place at Ellerbe Becket's office. A field seam that had been left open was sewn together on site.

Translucent tensile fabric is anchored by cable to the ceilings and bases of exposed concrete columns. The cable is attached to

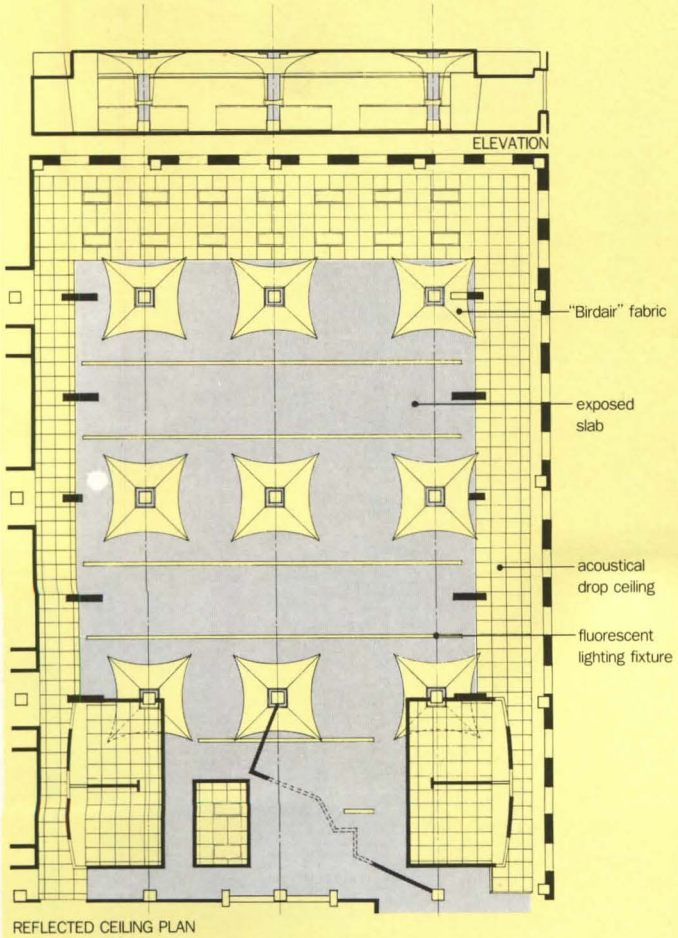
© MIKE SINCLAIR/SINCLAIR-REINSCH PHOTOS

Halogen lights highlight the tables at the gallery (above) while the drafting studio (right) is lit by translucent tensile fabric lanterns. Light glowing from the lanterns is diffused by frosted glass light bulbs. The lanterns are made of the same fabric used for sports facility domes.

Nine fabric tents made of Teflon-coated fiberglass light the drafting studio in Ellerbe Becket's Kansas City office (below). Fluorescent lighting complements the fabric lanterns in the drafting studio. The tensile fabric lanterns are attached to sandblasted columns and to an exposed-concrete flat-slab ceiling (right).



SECTION/ELEVATION



REFLECTED CEILING PLAN

A combination of natural and incandescent lighting, and a halogen desklamp illuminate this private office.

A view down the corridor shows drafting tables underneath a dropped ceiling with incandescent lighting (left). Halogen bulbs illuminate the hall leading to the anteroom that is in front of the red wall and opposite the main conference room (right). The anteroom is enclosed by a yellow wall that is a sculptural element winding through Ellerbe Becket's office space.

steel tubes anchored to the column strap and is also fastened to turnbuckles that maintain even tension on the fabric. The turnbuckles can be adjusted to keep the material taut when temperature changes occur in the office. Light emanating from the lanterns washes the base of the sandblasted columns, enhancing their rough texture. The lanterns only touch the column where the cables attach to the ceiling. "It's a floating component in and of itself," Turner says.

This lighting application is a simple procedure, Scofidio says. Even so, before installing the lanterns in Kansas City, he says his firm created a full-scale mockup to assure the procedure would work.

The Teflon-coated fiberglass material is woven more tightly for outdoor use, rendering it less porous than when used indoors. Used outdoors, the fabric is coated to form a barrier against the elements.

A variety of lighting is used throughout Ellerbe Becket's office. Halogen lights highlight special areas, including gallery space and the anteroom opposite the main conference room. In addition to the fabric lanterns, fluorescent strips light the main drafting studio. Task lighting illuminates individual drafting areas and secretarial space. Incandescent backlighting is used at computer terminals to minimize glare from overhead lights.

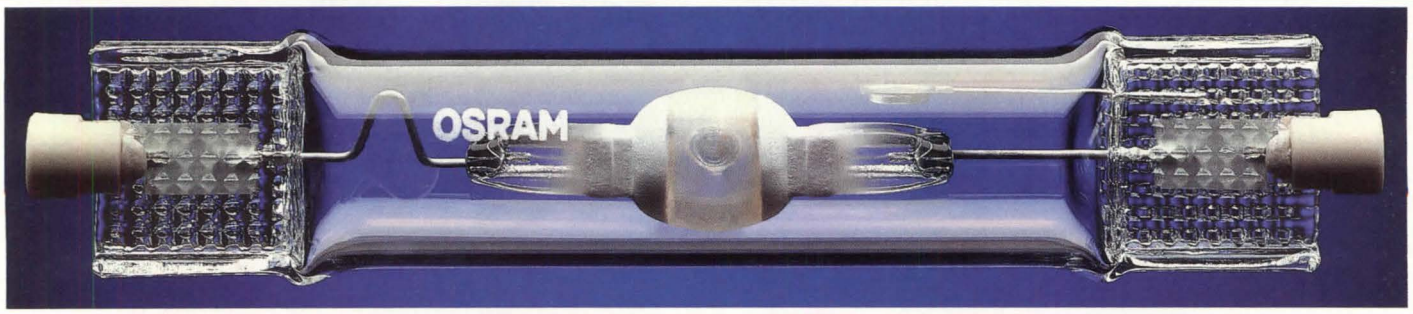
Johnson designed the studio with lighting in mind. Calling it "the heart of the business," he says he intentionally set out to "celebrate the studio with lighting."

Susan R. Bleznick

Offices of Ellerbe Becket, Kansas City, Missouri

Architects and Lighting Designers: *Ellerbe Becket, Inc.—Ron Turner, Mike Hallmark, partners-in-charge; Teri Price, project manager; Steve Hotujac, project architect; Bill Johnson, Jim Miller, Frank Scicchitano, Lori Larson, project designers.*

THE OSRAM HQI®-DE LAMP PUTS UNION STATION ON THE FAST TRACK TO BIG SAVINGS.



With the OSRAM HQI®-DE lamp, Washington D.C.'s Union Station now has energy cost savings that would make any President proud.

After its non-Congressionally funded, $160 million restoration and renovation, Union Station has a lot more going for it than a facelift. It has a future.

And to ensure the brightest future possible, the designers of the new Union Station specified the OSRAM HQI-DE lamp.

Better performance. With bigger savings.

The OSRAM HQI-DE metal halide lamp far outshines all other PAR incandescents and metal halides. It provides extraordinary color rendition and luminous efficacy for accent and display lighting. And when used together with the new OSRAM POWERTRONIC electronic ballast, the already energy efficient HQI-DE lamp delivers even greater performance, a 20% longer life and increased savings.

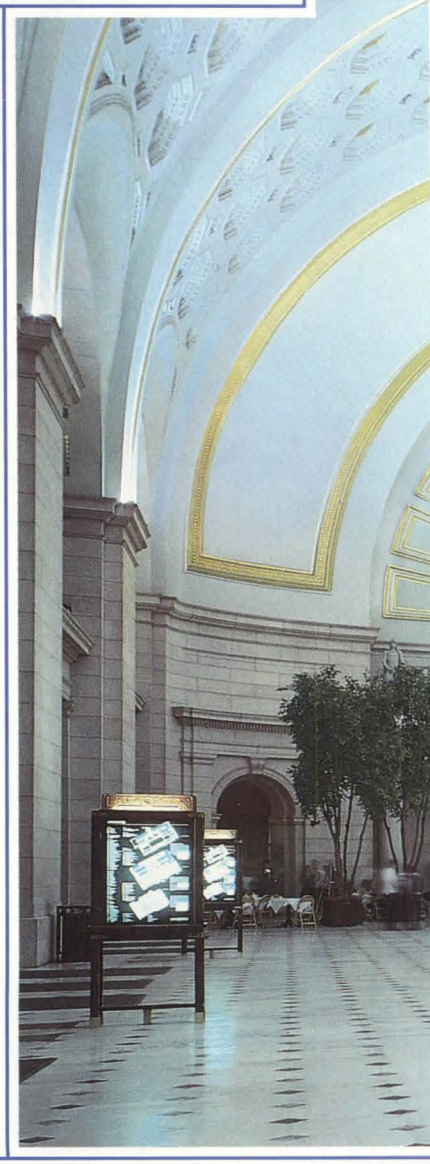
Producing more light than PAR lamps while using less wattage and emitting less heat, the new OSRAM HQI-DE lamp offers a service life that is five times that of PAR incandescents. This means big reductions on energy and maintenance—and a fast return on your investment—usually within the first year of use.

A clear favorite.

Compact and versatile, the OSRAM HQI-DE lamp is available in 70 and 150 watt sizes and in two color temperatures. So no matter who or what you're spotlighting, the OSRAM HQI-DE is the bright choice.

How long can you afford to stay in the dark about the OSRAM HQI-DE lamp and the new POWERTRONIC electronic ballast?

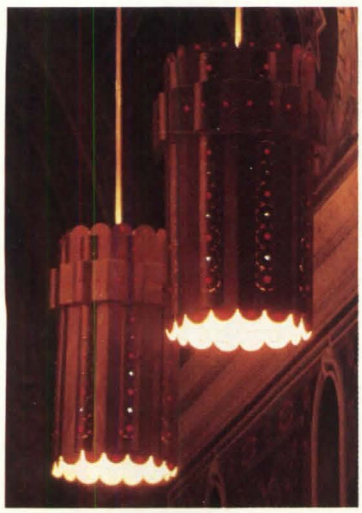
For more information call **1-800-338-2542.**



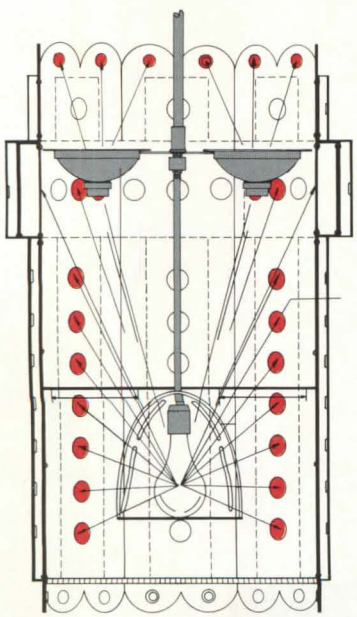
TECHNOLOGY BROUGHT TO LIGHT

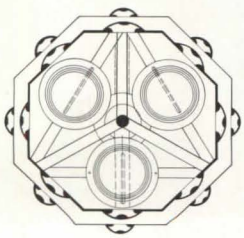
OSRAM

Out of Darkness



Architects revamped St. Clement's lighting and created bronze chandeliers run by a dimming system (above). Fixtures (below) contain three uplights and one downlight, 500 watts each. Light diffuses through the egg-crate bottom.





It's theater," architect Walker C. Johnson says about the new lighting design in Chicago's St. Clement's Church. Dramatic lighting effects can be created with the push of one button. Lights controlled by an electronic dimming system gradually dim and brighten during services. At the same time Holabird & Root, a Chicago architecture firm, revived the interior and exterior with new lights, it restored and rehabilitated the church.

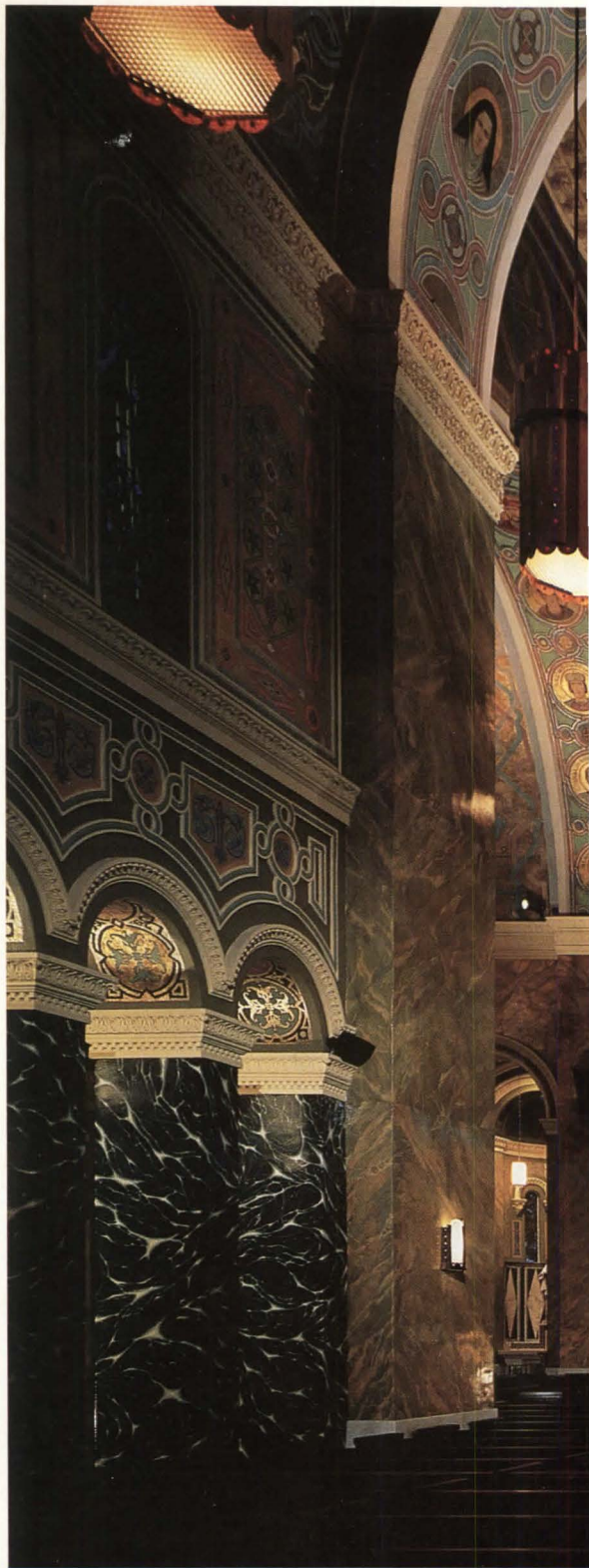
Before the changes, light levels in the 73-year-old Byzantine-style church had been too low. "It was extremely difficult to read in the church before the lights were redone. Now you can easily read a hymnal," says Walker C. Johnson, Holabird & Root's director of rehabilitation and restoration. Parishioners barely could see the ceiling and dome, or the vibrantly colored paintings and stencil work.

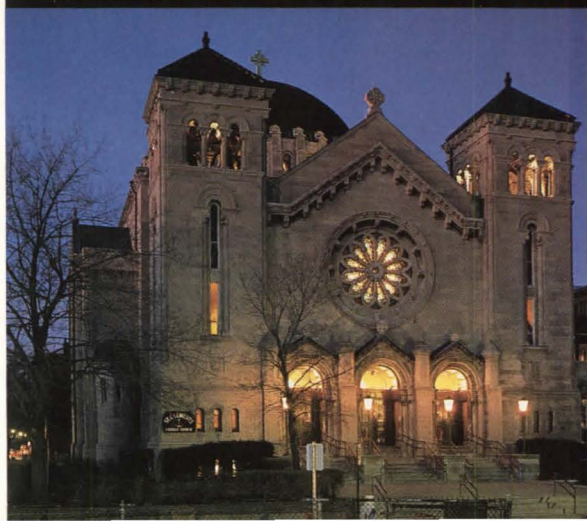
Johnson's solution? Create a new lighting system controlled by an electronic dimming system that brightens the church interior yet at the same time eliminates blinding glare. "We've given the church lighting a great deal of flexibility and I think that's the key to the new lighting," explains Johnson. Light levels are preset for services; an electronic dimmer board controls the lights and determines various lighting configurations. In addition, task lights—a mix of floodlights and spotlights—operated by a dimmer board are strategically placed to illuminate specific areas.

The bulbs in the custom-designed bronze chandeliers are concealed to prevent a blinding effect when looking upward. In fact, the entire fixture is meant to be camouflaged. The chandeliers are octagonal, eliminating large reflections from any one plane. Also, because each of the chandelier's eight surfaces contains a half tube perforated with red and blue jewels made of cut glass, a multifaceted reflection is created that is the same color as the general coloration of the interior. "Your eyes are drawn to the painting rather than the fixture, which is exactly what we wanted to achieve," Johnson says. Although he chuckles and admits one drawback: "I do catch little boys looking at those jewels during the homily."

While Holabird & Root revamped the church's lighting design, it also repaired the leaking roof and obsolete mechanical, electrical, and ventilation systems. What's more, it lit up the previously unlit Rose Window to make the church glow inside and out. **Susan R. Bleznick**

Architect: *Holabird & Root—Walker C. Johnson, lighting designer and project architect; Skies Takaesu, project architect*
Electrical Engineer: *Robert Schuster*





DON DUBROFF SADIN PHOTO GROUP

Holabird & Root overhauled Chicago's St. Clement's Church inside and out to shine new light on its stained glass Rose Window and an interior rich with decorative painting and Byzantine architectural details.

A LIGHTING MAESTRO LOOKS BACK–AND FORWARD

Abe Feder has lighted it all, from *My Fair Lady* to Rockefeller Center. Now he's eyeing the 21st century. By David Masello

Abe Feder flicks off the overhead fluorescent lights and the scattered table lamps just outside the small conference room in his suite of offices, and raises the venetian blind to reveal a picture-postcard view of Times Square. Several blocks away at 42nd Street, the colorful sign that marks the center of the great faded White Way is animated with its ever-changing image. With a pair of high-power binoculars, the 81-year-old Feder has me look at the sign from this rear window. From this elevated highly focused position, the cartoon graphics on it have a definition and clarity one cannot discern from the street. Feder is mesmerized by the bulbs that comprise the sign. Though the colors look rich, Feder insists that the blue is dull. Soon, he says, a new mirror reflector bulb will replace them, giving the sign a new vibrancy and richness. For a man who has been involved in lighting since the early 1930s, the Times Square setting has a special poignancy. Given the many bulbs he has invented, the theater productions he has lit, and the many monuments and buildings he has illuminated around the world, it starts to seem that the blaze of lights lining Seventh Avenue and Broadway lead not to the sign at 42nd Street, but to Feder's office at the northern end of the square.This arena of light could very well be thought of as his kingdom.

BO PARKER PHOTO COURTESY OF ABE FEDER

Feder fantasies of light: the RCA (now GE) Building in Rockefeller Center; series of bridges in Pittsburgh.

'Still in bottles'

Despite the brilliancy and variety of light just beyond the windows, Feder firmly believes that "we're really in the infancy of lighting. We're in the Model-T days. What's shocking is what electronics has done with miniaturization, yet light is still in bottles; it's a story still in transition. When I came into all of this in the '30s, an incandescent bulb was a lot of light. And in those days lighting had no identity."

The scope of Abe Feder's career is great not only because of his age but because of the many capacities in which he has worked and continues to—as an inventor of light bulbs, a theatrical and lighting designer, as well as a teacher of lighting and, less formally, as a philosopher of lumens, watts, and footcandles. Among the many significant projects in which he has been involved are the United Nations General Assembly Building, Kennedy Airport, the Pan Am Building lobby, the Israel Museum, Rockefeller Center, and legendary Broadway shows such as *Camelot* and *My Fair Lady.* Currently, Feder is working on the lighting of Rockefeller Center's murals, and of the sidewalks west of Sixth Avenue. Other projects include the lighting of a series of bridges in Pittsburgh, and the exterior and interior atrium lighting of an office building, One Cambridge Court, in Falls Church, Virginia.

Feder likes to ramble about his varied career, frequently going off on tangents about some of the great figures he has known and worked with—Walter Gropius, Isamu Noguchi, Henry Moore, Max Abramovitz, Buckminster Fuller. But it is always his work with the theater that Feder uses as a reference point for his life with lights. "The theater has been a fabulous place to learn," he says almost wistfully. "The theater, in terms of presenting something on stage that is bigger than life, that grabs you emotionally, is part of my world. The bulk of architects and students of lighting design don't understand that magic. The thrust for me was the Federal Theater Project, in which I was involved from 1935 to 1939. I ran a shop with $2 million worth of equipment and so I learned the limitations of our time—technologically and financially."

Magic of the theater

Feder's first success in the theater was his lighting of the 1937 production of Orson Welles' *Dr. Faustus.* Using no props, Feder had to create a sense of three-dimensionality on stage. It was through Feder's lighting that characters appeared and disappeared, as if magically. As a kind of much repeated aphorism, Feder is careful to point out, though, that "there is no such thing as creating with light. Light is in the nature of its revealment. In terms of the revealment of something, the talent comes out not in the search for an effect, but in how you reveal it." Indeed, Feder has long been disturbed by the pronounced emphasis on lighting design as a wholly technical discipline. For him, lighting transcends a mere calculation of footcandles, wattages, degrees of refraction, and so on. "The great confusion is that lighting is not engineering."

Among Feder's most conspicuous project is his 1985 lighting scheme for the GE Building (then the RCA Building). Though long regarded as one of New York's principal architectural landmarks, at night the

70-story skyscraper virtually vanished in the skyline. After convincing General Electric to custom-make lamps for the project—stipulating everything from how heavy each could be to the thickness of the glass required—Feder personally positioned all 342 lamps situated on nine roofs. The building's facade is now illuminated by 50 million lumens and, despite the numerous setbacks on the building, no shadows are cast.

When Rockefeller Center expanded west of Sixth Avenue in the 1960s and early '70s with the Time/Life, McGraw-Hill, Exxon, and *Celanese buildings*, Feder was hired to illuminate the sidewalks. He recalls how the principal architect, Wallace K. Harrison, was adamant about not breaking the verticality of the buildings by applying anything to their walls. To adhere to the stipulation, Feder erected three-pronged 30-foot-high poles. At the time, he used the most powerful lights available, high-pressure sodium vapors with reflectors.

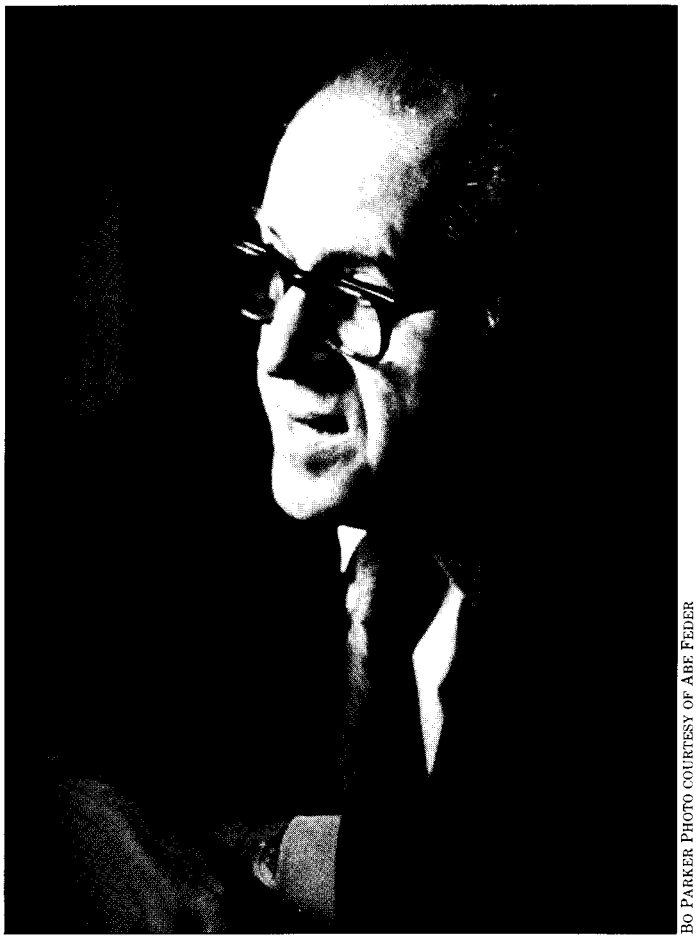
Today, as a result of increased security concerns, Rockefeller Center wants more light shed on surrounding sidewalks, in part to erase the deep shadows cast by the setbacks of the buildings. Using a state-of-the-art bulb with built-in reflector capabilities—the first of its kind and its first commercial application—Feder is doubling the brilliance within the existing poles even though the wattage remains the same.

Twelve bridges to cross

Last October Feder was invited by the city of Pittsburgh to explore the idea of illuminating the 12 bridges that reach across the Allegheny and Monongahela rivers to its dense downtown. Before an audience of several hundred guests, as a test Feder lit half of two bridges, the Fort Duquesne Bridge, shaped like a covered wagon, and the Sixth Street Bridge, marked by its suspension cables. "When I hit the switch people were flabbergasted," Feder remarks. Feder configured lights so that the bridges were illuminated from within and from below. Light came up under the bridges, hit their upper framework and refracted on the black water below. "The bridges suddenly were seen as structures, giving them a dimension never seen before." Mired in city and state agency bureaucracy, Feder is confident, nonetheless, that all 12 bridges will eventually be lit.

Feder fondly recalls his work on Buckminster (or "Bucky" as he calls him) Fuller's historic geodesic dome for the Union Tank Car Company in Baton Rouge. Despite his engineering genius, Fuller hadn't seriously considered how to light the 120-foot high igloo-like structure. Using an old theatrical technique, Feder attached pipes to the wall which came out 40 feet, and suspended them with ordinary cable wire. "We hung on them a new type of reflector lamp called an R-60 reflector, the first one of its kind with a mercury vapor. The trouble was that the color it cast was blue-green. Combined with the white ceiling, people inside the dome looked like death warmed over." Though it seemed an unlikely solution at the time, Feder had the ceiling painted peach, thus casting everyone in a soft white hue.

In 1955, when it was Feder's idea to illuminate a 160-acre oval of parking lots and terminals at the then-called Idlewild International Airport (Kennedy) using 75-foot-high pole/towers, "everybody thought I was going to God." He surprised everyone further by configuring the 43 poles 320 feet apart from each other—a distance thought too great by skeptics who were concerned that the light would disperse and be useless. Feder fitted each pole, made up of three separate arms, with from five to 12 luminaires for a total of 338 luminaires; both lamp and fixture had been developed by GE using Feder's specifications. Each mercury-vapor lamp—the brightest floodlight of its time—was powered by 1,500 watts (the 338 luminaires were able to create light equal to the intensity of 1,000 floodlights). The success of the scheme resulted in Feder's lighting of a four-acre section of downtown Columbia, South Carolina, in 1977 using towers 150 feet high.



BO PARKER PHOTO COURTESY OF ABE FEDER

Abe Feder: "We're really in the infancy of lighting."

Setting students straight

While light, by definition, is ephemeral, Feder has made it a mission to make aspiring lighting designers, as well as architects and engineers, aware of the history and very ethos of light. Indicative of Feder's impatience for the common shortsighted vision of lighting and what it can accomplish, he describes how he approached some seminars he led at his alma mater, Carnegie-Mellon (he attended it when it was called Carnegie Tech). When first invited to conduct them, Feder resisted "because you can't talk about light; you can look at it." In anticipation of the seminars, he met with various university departments to set them straight on his ideas about lighting. "I told the engineers that you think of light in the mechanical sense, how you measure it, how you organize the electronics of it, but you haven't the foggiest notion of the nature of the light source that exists at this moment against what we don't know about it in the future," Feder recalls with a kind of gentle fury. "You in architecture are so prone to creating an effect of a building, a form, and a shape that you sometimes ignore the fact that humans are going to be in it. And you as a painter paint as if its always outdoors with northern light and that artificial light doesn't have any relevance."

Also, in seeking to give lighting design a greater definition and accessibility, Feder helped create the Glesca Marshall Library for the Visual Arts, housed in the Springer Opera House (another Feder Lighting project) in Columbus, Georgia. Feder alone has donated 350 pieces relating to the history of theater.

The firm, Lighting by Feder, is located in one of Times Square's less fashionable workhorse buildings whose lobby is so poorly lit that visitors cannot see their image in a large wall mirror. Within his office, seemingly caught in a 1950s time warp with period furniture, decorations, and lamps, Feder has light bulbs laid out like an archeological display; together they sum up the evolution of lighting. Among the pieces are 1930s-era Fresnel lenses, fluorescent tubes, small sodium-vapor

Continues on page 41

A Water Oasis

© DOUG SALIN PHOTOS

Plaza Park is at the very core of San Jose's ambitious downtown renewal effort, with its prominent placement in front of the new Fairmont Hotel. One end faces the art museum, the other the convention center. It is here that the San Francisco lighting design firm of Luminae Souter created lighting for a breathtaking water sculpture composed of granite paving and criss-crossing glass-block runnels. At their intersections water "columns" rise 5 to 7 feet to programmed rhythms.

The park's winding paths and seating areas are lined with old metal lighting standards preserved from the streets of San Jose. The standards have acorn refractor tops containing two lamps each of 4100 K compact metal halide, echoing the fountain's visual coolness and providing strong contrast to the high-pressure sodium street lighting on all sides. The metal-halide lighting is concentrated at the park's center and tapers off to make an easy transition to the street lighting edging the park.

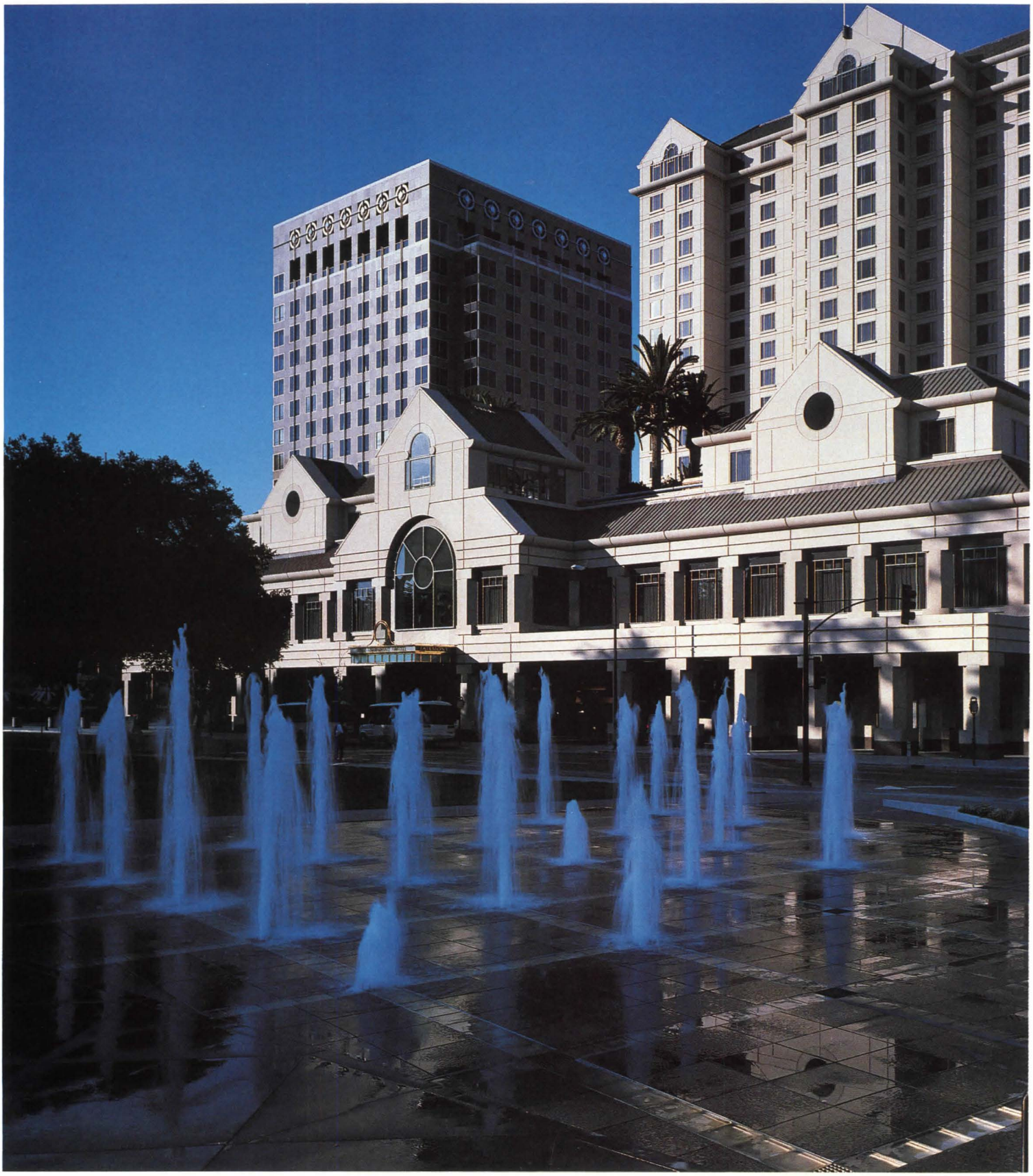
Tungsten-halogen sources were used for the water columns and glass-block runnels of the fountain. Uplighting fixtures are located in an 8-inch slot under the fountain jets and runnels. At each intersection, four specially lensed and oriented 100W tungsten halogen fountain lights illuminate the runnels. The "fan" of light created by the lenses and point source lamps light the columns to their full height while spreading an even glow sideways across the runnels.

The rhythmic layout of poles and post tops throughout the park gives a three-dimensional quality to the light. Asymmetric heavy-duty uplights in lawn areas illuminate the canopies of trees.

San Jose Plaza is a success as an urban refuge if it's measured by the numbers of young and old park-goers who stroll through its precincts, pausing to enjoy its bright, constantly changing walk-through fountain. **DONALD J. CANTY**

OWNER: *The Redevelopment Agency of San Jose, California*
LIGHTING DESIGNER: *Ross DeAlessi, Luminae Souter Lighting Design*
LANDSCAPE ARCHITECT: *Hargreaves Associates*

Luminae Souter not only devised a dramatically lit fountain, it also created a sense of security throughout San Jose's Plaza Park by sensitively lighting its paths and landscaped areas.



Why being thin to a Sylvania

We invented the Octron® system—the next generation of fluorescent lamps.

Several years ago a challenge went out to lamp manufacturers. Designers asked, "Can you push lighting even further and give us something that saves still more energy without losing light output?"

First to heed their call were Sylvania engineers who invented the Octron lamp—which is not only one-third thinner than standard fluorescents, but is also more versatile, delivers full light output and saves energy. It opens up a whole new world of options for lighting designers and users.

You can never be too thin or too rich.

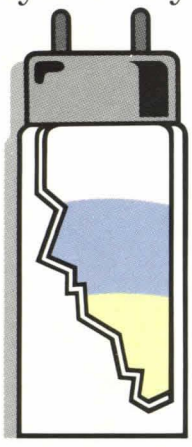
Even though the Octron lamp is one-third thinner than a standard fluorescent, it produces light more efficiently and with better color quality. The secret isn't a secret. An Octron fluorescent uses enriched rare-earth phosphors to pump out more lumens per watt and achieve good color balance.

Lots of companies have seen the wisdom of specifying Octron lighting. From a prestigious financial company located in downtown Manhattan to a prestigious package goods company located in downtown Cincinnati to dynamic retailers located all across America. Why did all these people go with Sylvania Octron lamps?

Reason #1: Since lighting can constitute up to 40% of a company's electric bill,

is so important engineer.

using one of the world's most efficient fluorescent lamps makes sense. And that's just what Octron is. Its output efficiency is among the highest of any general lighting fluorescent system. So you can significantly reduce energy consumption with no loss of light.

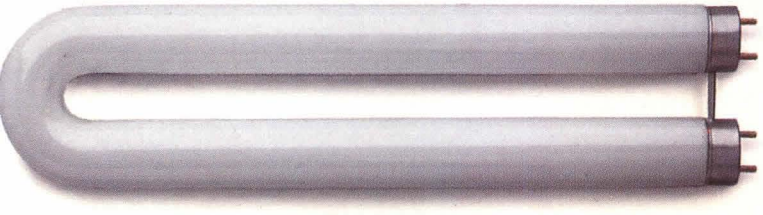


Rare-earth phosphor technology produces great color rendering and important energy savings.

Let's put this in real terms. In Philadelphia, where electricity costs between 8-10¢ per kilowatt hour, Octron lamps replaced standard 40 watt fluorescents in a high-rise office building and produced energy savings of $6.00 per hour over the life of the lamps.

Reason #2: People simply like the quality of Octron lighting better. A major university switched to Octron lamps and found their faculty and students used the facility more often and felt more relaxed than before. This says a lot about the comfort quality of Octron lighting and the way it accents subtle differences in colors and textures so important to successful interior designs of all kinds.

Only Sylvania offers you Octron Curvalume—big lighting in small spaces.



New Curvalume lamps give you all the benefits of Octron performance plus they fit perfectly into today's smaller, more efficient 12″ and 24″ square lighting modules.

How Blue Cross and Blue Shield of Missouri improved their financial health with Sylvania.

Blue Cross and Blue Shield of Missouri needed to improve their air-conditioning without increasing their electrical capacity. The answer was Octron lighting, which cut their lighting bill by $45,000 annually, decreased their air-conditioning load and gives them a 33% return on their Octron investment each year over the life of the lamps.

We offer more energy-saving lamps and best of all they're made right here.

Sylvania makes more energy-saving lighting than any other company any place in the world. Octron is just one example.

So if you want to help make your business run leaner, give us a call at 1-800-LIGHTBULB. Or contact your nearest Independent Electrical Distributor. Our obsession with lighting may be the right diet for you.

SYLVANIA GTE

WHERE THE BEST COMES TO LIGHT.®

Circle 78 on inquiry card

New Direction for CAD

Lawrence Berkeley Laboratory scientists are developing new design software for the design/specification process. By Nicholas Basta

Here is a vision of the near future as outlined at Lawrence Berkeley Laboratory (LBL): An architect or lighting designer being handed an assignment—say, for a conference center—will do a preliminary design with conventional CAD tools.

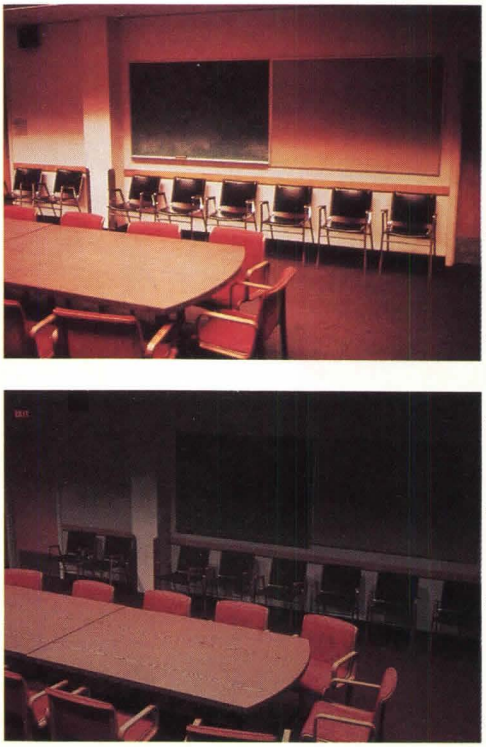
Another program provides menus that allow the designer to select light fixtures and fenestration details (types of glasses and sealants). Then, by extracting the relevant data, a third program, based on artificial-intelligence principles, will run complete energy analysis (heating, cooling, and illumination), providing operating-cost information. Take the result to the clients and, if they don't like it, seat them at the terminal and call up stored images of existing conference centers around the world. Lighting, window treatments, and energy analysis of those buildings could be done as easily as for the yet-to-be-built one.

"Our thrust has been understanding electronic media and artificial-intelligence programming, and trying to figure out how they can be used to meet the needs of the design community," says Stephen Selkowitz, group leader for the Windows & Daylighting Program at LBL. LBL, run by the University of California for the U. S. Department of Energy, conducts wide-ranging basic and applied research, much of it having to do with energy production, consumption, and conservation. Selkowitz's group, part of the Building Sciences Division of LBL, was formed in 1976, originally to examine energy-conservation measures in building design. Over time, that scope has broadened to developing methods and technologies that building designers and constructors use.

A key aspect of the integrated, multipurpose computer program outlined above is that it is nonlinear—that is, one necessarily wouldn't go from Step 1 to Step 4 sequentially. Maybe one wants to compare other designs to an envisioned design first. Maybe one wants to determine energy consumption and lighting levels first, and then build a structure that meets those criteria. Such nonlinear practices call for a nonlinear programming: specifically, a hypertext tool such as Hypercard from Apple Computer Corp. Hypertext, a term coined in the early 1970s, refers to a database or "book" that can be accessed at any point, or that can jump from any one point to any other related one. In essence, it represents the ability to read a book's pages in any order, rather than being forced mechanically to start at page one.

A second key aspect is that the integrated program is multimedia—it uses computerized data, stored video images (on a video-disk player), and information that would normally be read in the pages of a design manual or product catalog. "Daylighting—the use of daylight as a factor in building design and energy use—is something of a lost architectural art," says Selkowitz. "There are manuals, rules of thumb, and extensive calculations to be done—but few people have the time."

Selkowitz is quick to point out that this integrated approach is not cost-effective given today's state of the art in computer technology (some of the lighting-simulation programs, for example, have been run on a Cray supercomputer, which can be a very expensive proposition). But with ever-decreasing microelectronics prices, and ever-rising performance factors, the time when this system could be purchased at an affordable price is not far off—perhaps in a limited version in three years, and a full-blown integrated system with proper user interfaces in five years.



© University of California Lawrence Berkeley Laboratory Photos

To calculate reflected light, the Radiance lighting program uses ray tracing combined with light diffusion for realistic renditions of rooms. At bottom is the computer-generated model of the actual office (top).

Information kiosk

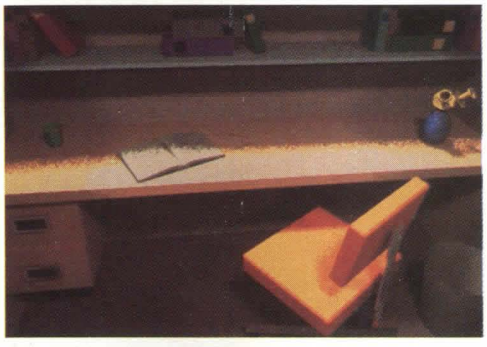
A prototype of the integrated, hypertext-like approach was completed recently by the Windows and Daylighting Group at the behest of Southern California Edison, one of the private-industry supporters of the Group.

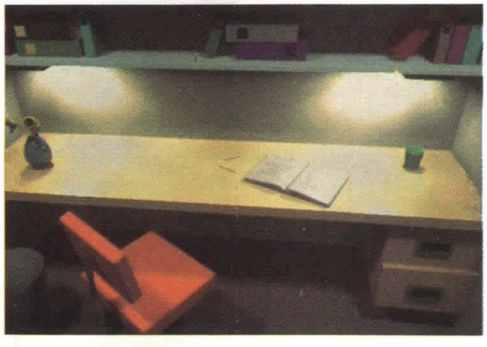
The kiosk, driven by a personal computer, contains two color monitors, an optical-disk player, audio output, and a printer. Users, typically building owners, operations staff, designers, and students or utility customers, guide the session with a touch-screen monitor. After an introductory screen explains the scope of the presentation, the user makes his or her own choices on topics, ranging from utility concerns such as rate structures or demand forecasting, to energy systems for homes or commercial buildings. These topics are supported by databases that detail the "who, what, why and how" of the topic, in terms of economics, costs, technical details, or case studies.

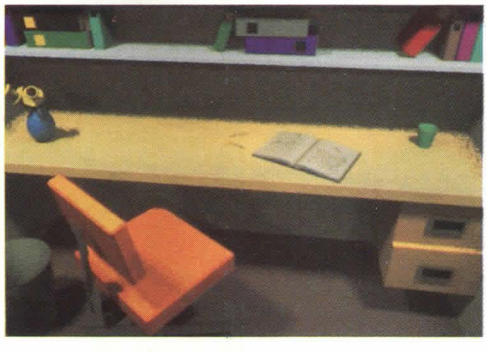
A lighting designer's or architect's information system would have similar ease-of-use features, according to Selkowitz, but with a higher technical content, and more-detailed case studies. "I'm not so concerned with the 5 to 10 percent of the architecture and design community that use computers regularly, as I am with the 90 to 95 percent who do not," he says.

By making lighting- and window-design information more accessible, Selkowitz believes, better, more-efficient designs will be produced. And this potential saving is what gets LBL's sponsoring agencies, such as the Department of Energy, excited. Previous LBL studies have shown that through careful consideration of the types and placement of lighting fixtures, lighting bills may be cut by 20 to 40 percent. By using some of the advanced lighting tech-

Computer-generated lighting variations help identify the best arrangements—overhead (top), task (center), or a combination of overhead and daylighting (bottom). Radiance can show the results of a sunny day versus a cloudy day inside an office, allowing the designer to decide how much lighting is necessary on the basis of the computer program. Measurements may also be taken of lighting and heating conditions to calculate energy consumption.







niques, and sophisticated daylighting procedures, reductions as high as 75 percent can be achieved. Overall, LBL estimates, 30 percent of the energy used in buildings is attributable to windows and lighting, costing the utility customers some $50 billion annually.

Powerful tools

To achieve at least some of those savings, Selkowitz and other scientists in the Windows & Lighting Program have created an impressive list of tools—some of which are already available in the commercial arena. One such commercialized example is a software-based window component selector. This program, Window 3.1, is handed out by window-component manufacturers; to date, 2,000 copies have been distributed, says Selkowitz. An updated version, Window 4.0, will be available next year.

A second computerized tool is a program called Superlite, used to predict the effects of sunlight and artificial light inside buildings. By automating the procedure of analyzing light conditions on cloudy days, or by taking into account the different positions of the sun during the day and during the year, a more accurate assessment of the building's future performance can be made. The Windows & Daylighting Program is working with the International Energy Agency, based in Europe, on enhancements of this program; a new version should be available before the end of this year.

Finally, and perhaps most significantly, a new, powerful program for calculating reflected light has been developed, called Radiance. Radiance uses powerful mathematical techniques to calculate the effects of light being reflected from one surface onto another (specifically, a technique called ray tracing, combined with light diffusion). Many programs illustrate the effect of a lighting element—say, a fluorescent tube—shining on a desk. But only Radiance shows the reflection off that desk, and onto nearby surfaces.

One result of this program is startlingly realistic renditions of CAD designs. Rooms "painted" with conventional CAD programs can be shaded, to a certain degree, to show depth. But Radiance shows a much more realistic level of detail (see photos). Radiance can show the results of a sunny day versus a cloudy day inside an office, with the degree of reflection off the windows taken into account.

Another result of this program's power is that actual light-intensity measurements may be derived, anywhere in the CAD "space." Or, conversely, measurements made in a room (or off a photograph of a room) may be put into the program files, allowing for a very precise rendition of that room.

The powers of the combination of these programs are obvious: the Window and Superlite programs provide details on how much light enters a room through its windows and skylights; and Radiance shows how that light, combined with artificial lighting, will illuminate interior space. Measurements may be taken of lighting and heating conditions, and calculations made of energy consumption. And the client will "see" a photorealistic rendition of the designed space. Changes are made by tapping at the keyboard.

More programming

That's the vision, anyway. Selkowitz says that Superlite is difficult for the conventional computer user to run, because user interfaces haven't been written. And the Radiance program, while capable of running on computers at the level of engineering workstations (it has been run on Cray supercomputers and high-powered minicomputers), takes hours to days to do a rendition, hardly the timeframe for dealing interactively with a computer, let alone with a client.

But rapidly advancing computer technology, particularly in the area of engineering workstations, should take care of much of that problem, says Selkowitz. Optical-disk technology, which allows the storage and rapid retrieval of data (including images) is coming along nicely.

In a more fundamental sense, though, the integrated window-design program that the LBL scientists are developing represents a subtle change in how architecture and lighting design are to be done in the future. For one thing, it will use computers (as today), but much more in a graphical environment, using pictures of designs, pictures of data, and pictures on running the programs. And, even as the technical content (as opposed to purely design-related issues) of the program goes up, the ease of use will also increase. There will be an expectation created not only for beautiful, well-planned designs, but for ones that are accurate to the final detail, and that have all the economics of construction and operating costs carefully worked out.

"Design should be a visual, interactive process," concludes Selkowitz. "And all the tools needed for that design should be at the fingertips of the designer."

Nicholas Basta is a business and technology journalist in New York City. □

Portland, Oregon, has certain features in common with Florence, Italy—if one doesn't include history and climate. Both are small-scale cities surrounded by hills and cut through by a beautiful river crossed by a number of bridges. The bridges across Portland's Willamette River, while not approaching the elegance of the Ponte Vecchio, are among the city's most imposing structures.

Until recently that rhythm has been visible mainly by day. But a unique nonprofit group has taken upon itself the task of seeing that the bridges are also spectacular at night. Called the Willamette Light Brigade, the volunteer organization has an advisory group of 40 prominent citizens presided over by architect Paddy Tillett of the Zimmer Gunsul Frasca Partnership.

The organization's objective is to light all 10 bridges that cross the river in the Portland area. They all differ from one another, and so will the lighting designs.

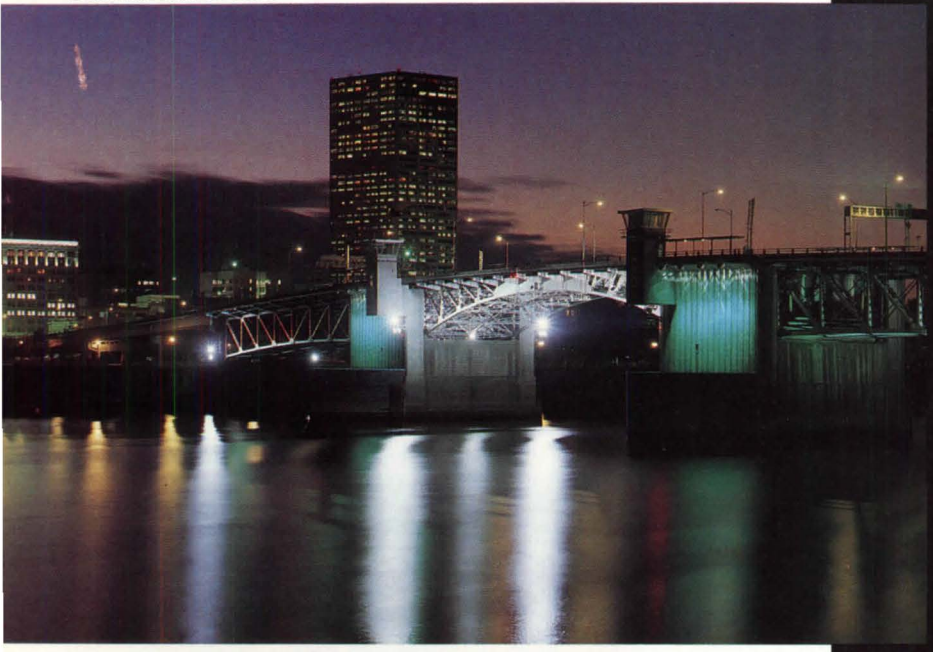
Local governments applaud the idea, but the money will come from private donors. Substantial donations have come from the National Electrical Contractors Association and the International Brotherhood of Electrical Workers, and Portland General Electric funded the lighting of one of the two bridges finished so far. The Light Brigade's goal is to do one a year.

The first to be lighted was the Morrison, workhorse of Portland's bridges; it carries a heavy load of traffic between Interstate 5 and the city. There was no superstructure on which to hang a sparkling necklace, so the design approach was to play spotlights with changing colored gels on the heavy steel structure and massive concrete piers. When test lights were installed, the intense vibration of the steel structure snapped the lamps out of their sockets, according to Craig Marquardt of PAE Consulting Engineers, project designer for the bridge lighting. So the luminaires were placed on the piers.

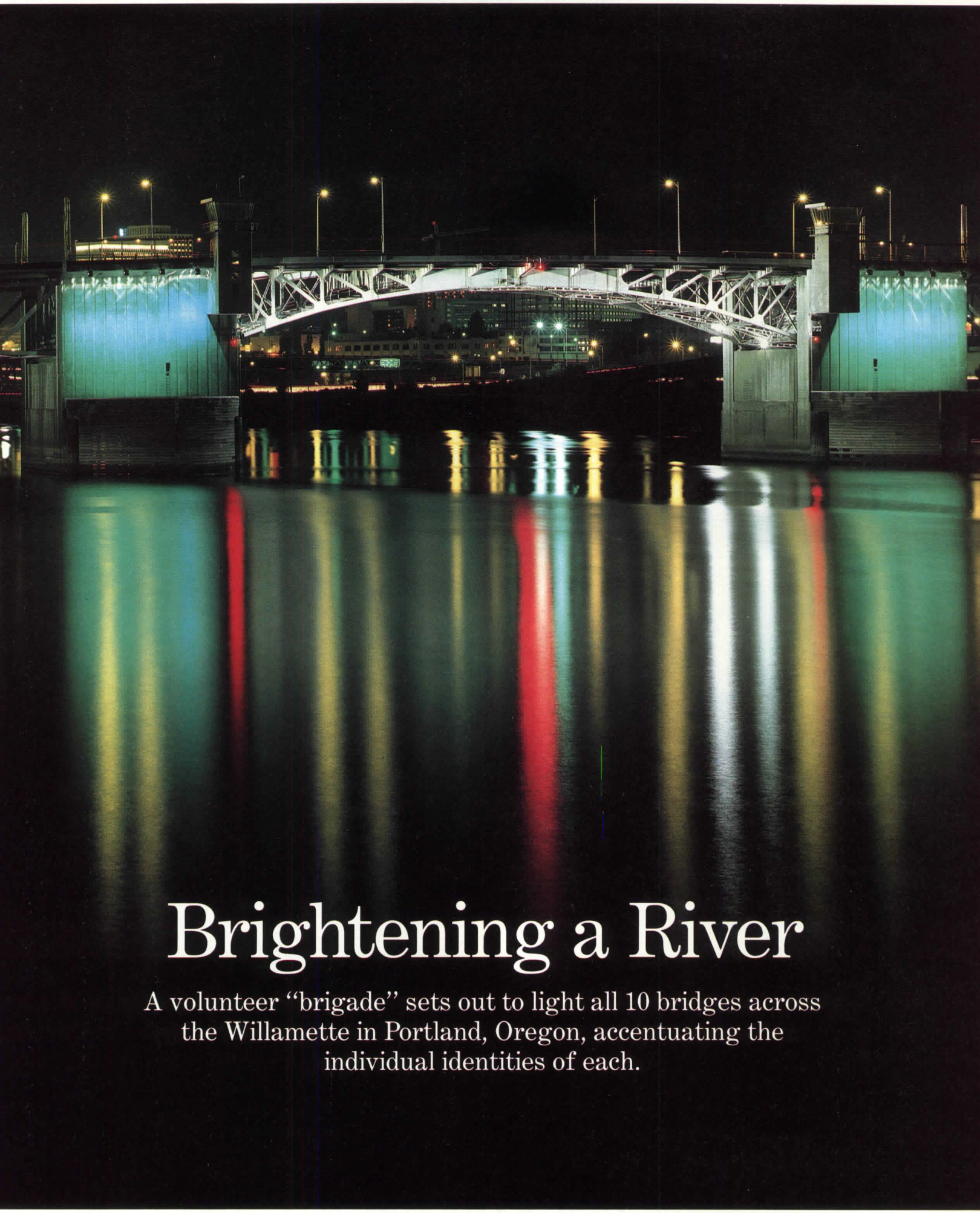
Another challenge was to prevent the plastic colored gels from melting. The gels were placed a few inches from the 1,000-watt luminaires, and vented louvers induced cooling natural ventilation. Since the lights were first turned on, their color has been changed eight times.

The handsome and historic Hawthorne Bridge, built in 1910, was the second to be lighted, its graceful steel superstructure outlined by some 8,000 miniature incandescent lights. Actually, it was a relighting. The bridge was first lighted in a similar way by Portland Electric in 1912, but high maintenance costs

© Richard Strode Photos

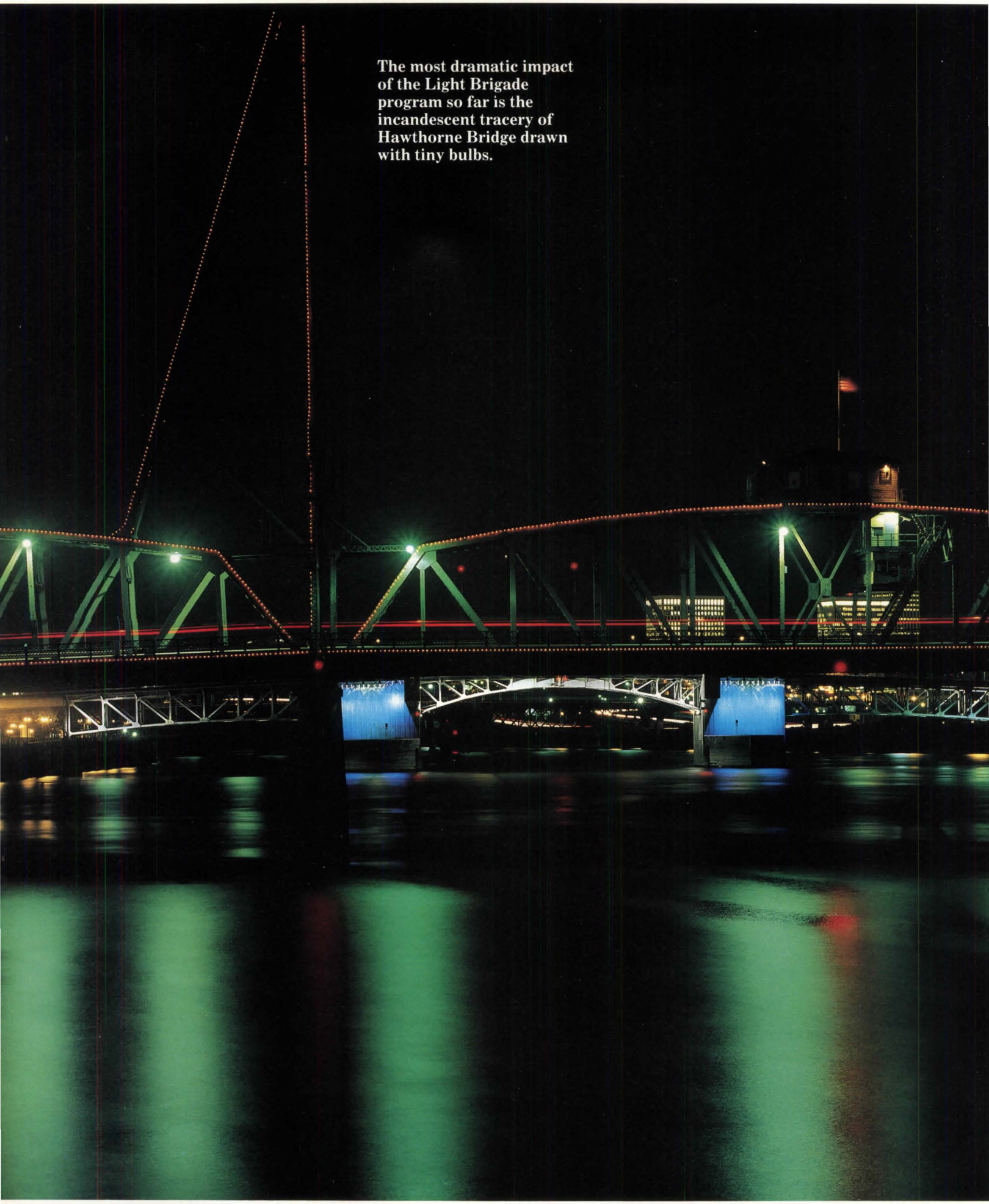


Four floodlights mounted on the piers play on the rugged structure of the *Morrison Bridge*. Color comes from plastic gels on the luminaires, which are changed periodically.



Brightening a River

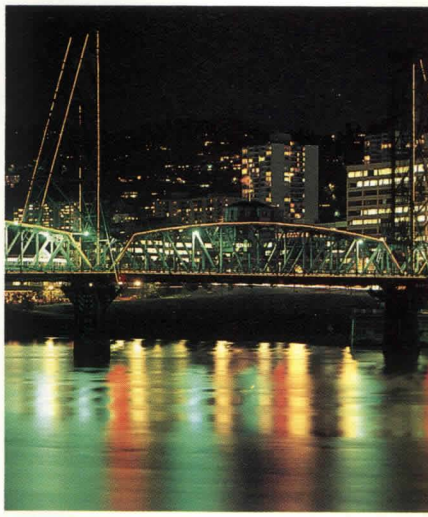
A volunteer "brigade" sets out to light all 10 bridges across the Willamette in Portland, Oregon, accentuating the individual identities of each.



The most dramatic impact of the Light Brigade program so far is the incandescent tracery of Hawthorne Bridge drawn with tiny bulbs.

caused the lights to be turned off in 1920. The original lighting used 15-watt incandescent 120-volt lamps. The new lighting, which was completed in 1989 and was also a project of Portland General Electric with the Light Brigade, uses 1.65-watt tungsten-halogen lamps inside half-inch-diameter clear polycarbonate tubes filled with silicon gel. The gel keeps the lamps at a constant temperature and also keeps them from vibrating. The new lamps reduce 100 kilowatts of overall load from the original lighting installation.

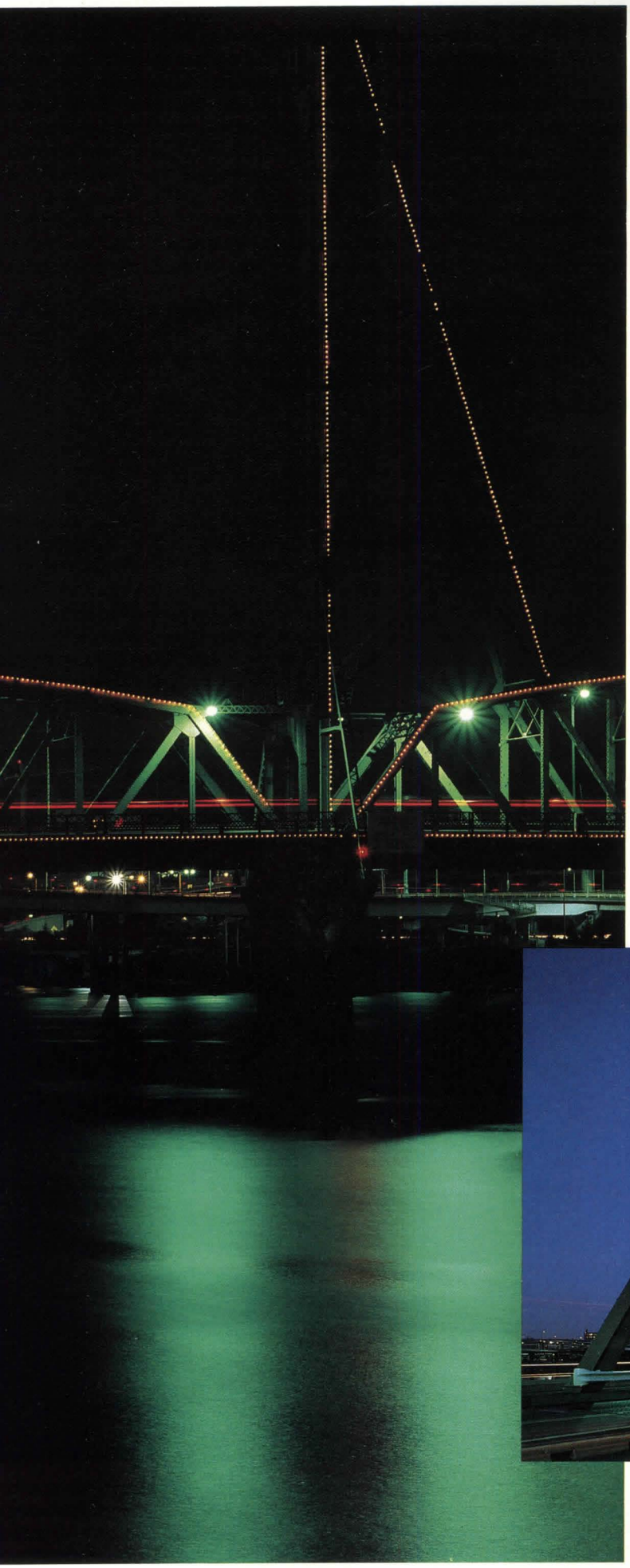
The configuration of the bridge, with a 1,383-foot span and 200-foot towers, made installation itself a challenge. Hardware for the luminaires was kept light enough for one person to carry up the towers. Beam clamps and U. V.-stabilized plastic ties were used to attach the luminaires without having to drill or weld the existing structure.

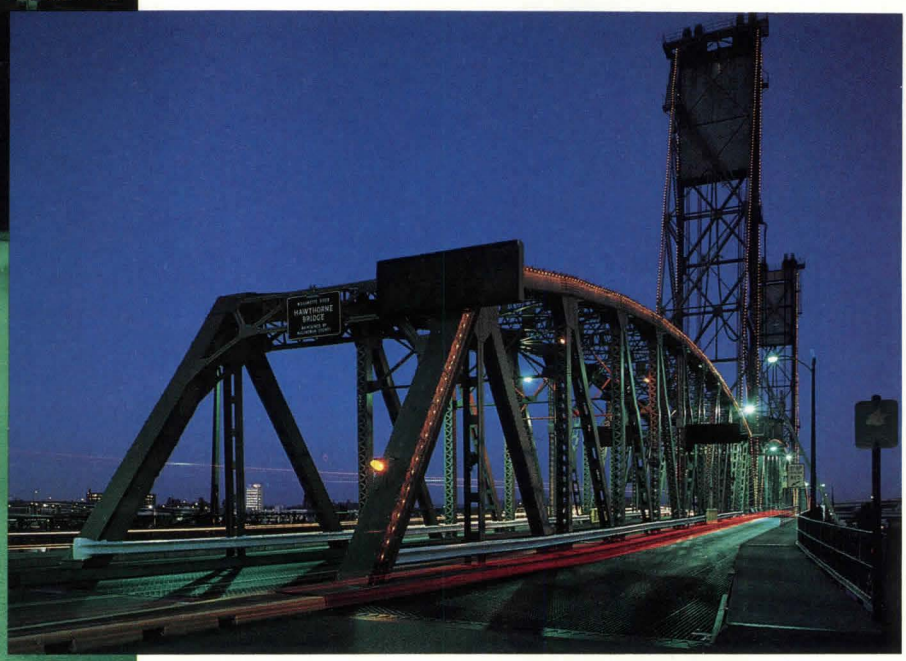


The next target of the Light Brigade is to light the Steel Bridge, a local landmark that carries heavy and light rail as well as cars. A final design will await the finding of a major sponsor, but a preliminary concept is to use fiber-optics technology for an animated design in which the lighting would change with the movement of light rail trains across the bridge.

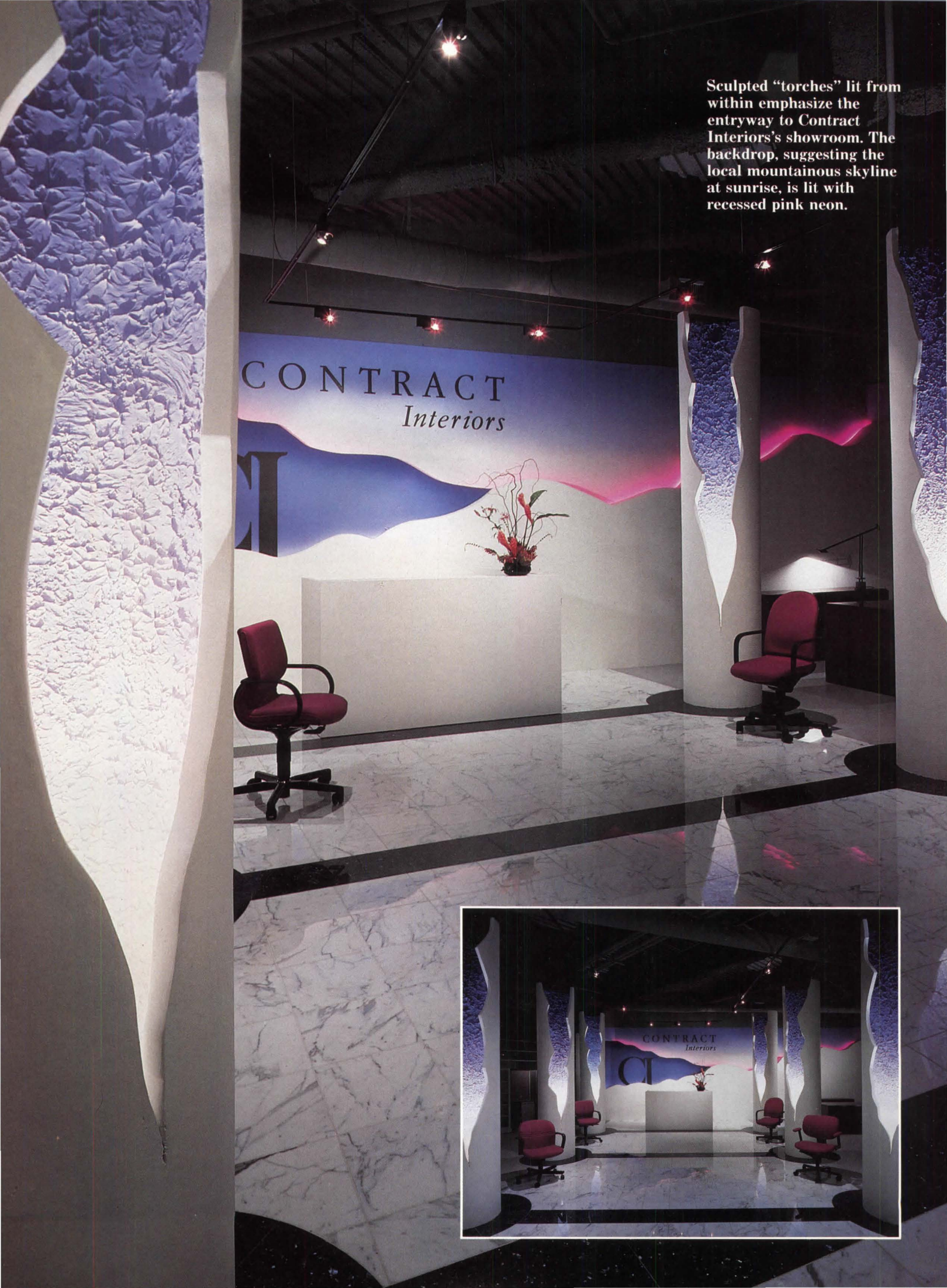
Tillett feels that the Steel Bridge is especially important because it links the city's new convention center and the multipurpose Lloyd's Center with downtown. This underscores an important goal: not just to decorate the river, but to underemphasize linkages between the downtown core on the west side and the less developed east side. **DONALD C. CANTY**

Two Bridges, Portland, Oregon
LIGHTING: *PAE Consulting Engineers—Craig Marquardt*





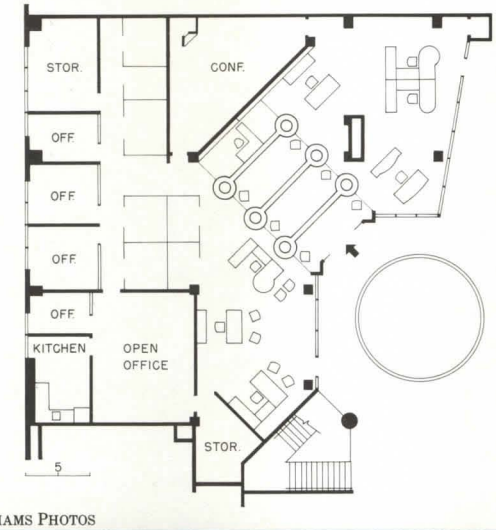
Hawthorne Bridge lighting (above) has almost the look of an antique necklace. The luminaires were attached without penetrating or welding the structure.
Morrison Bridge is visible beneath Hawthorne Bridge (photo opposite).



Sculpted "torches" lit from within emphasize the entryway to Contract Interiors's showroom. The backdrop, suggesting the local mountainous skyline at sunrise, is lit with recessed pink neon.

Torch Song

An intriguing sculptural setting for Contract Interiors showroom was created with simple materials and low-voltage lighting. By Gareth Fenley



© SANDRA WILLIAMS PHOTOS

This furniture showroom's mainstay, an office landscape system (above at left), is encountered only after walking past dramatic sculptured "torches."

Contrary to expectations, this showroom does not put its featured product right up front.

Instead, the entryway creates a mood that draws attention and invites discovery. Says interior designer Bartev Topdjian, "You walk in there and wonder, 'Where am I?'" Contract Interiors, a small furniture wholesaler, relies heavily on sales of a modular office system. The owners budgeted $28 per square foot for their very first showroom, a 5,800-square-foot space in the San Diego Design Center. Topdjian's imagination made the most of both budget and space. He emphasized the entryway, the only upgraded area, with sculptured "torches" lit from within. A drywall backdrop reminiscent of the local mountainous skyline is lit with recessed pink neon.

Only MR16 lamps would do to light the entryway, says Topdjian. From tiny fixtures on a slender track, the 75-watt lamps beam their crisp quartz light down. The starlike, exposed low-voltage lamps provide the entry's only ambient light. Reflections from the floor and painted vertical surfaces soften the directional downlighting, preventing sharp shadows on the features of people.

Elsewhere in the showroom, a line-voltage track fixture with a halogen PAR lamp is used because it is part of Contract Interiors' product line. The support areas in back are lit with standard fluorescent fixtures.

The freestanding torches are the showroom's key visual element. Topdjian worked personally with the contractors to sculpt the torches from monotubes, wire mesh, and plaster. Mounted on a platform 18 inches above floor level, a single MR16 narrow-beam lamp is aimed straight up from dead center of each torch. The gradated interior texture and paint capture a core light at eye level and below. That, says Topdjian, "does the marvelous things that you see." With economy and elegance, the design draws in new customers and gets them looking around.

When presenting the completed showroom to the owners, Topdjian dramatically switched on the torch lights at the last minute. "Once you put those lights on—like candles on a birthday cake—the whole thing takes life," he says. "You don't get the full effect until you put that light source in." Oddly cut plaster columns become fanciful smoldering torches. Lighting makes the humble materials sing.

Contract Interiors
San Diego, California
OWNERS: *Roberta Anderson and David Kruse*
INTERIOR DESIGN: *Bartev Topdjian, The Austin Hansen Group*

Gareth Fenley, a former associate editor of Architectural Lighting, *is a freelance writer based in Atlanta.*

Light without glare, expanded.

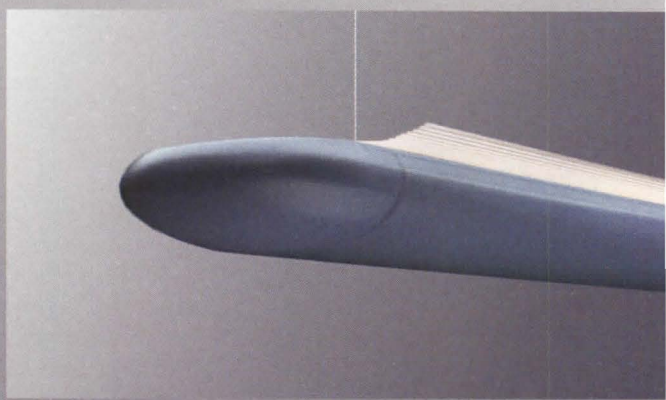
Meet the new 9½" x 3" Rounded system. It may be our most impressive achievement yet.

Unless you saw it right next to our 7" x 3" Rounded, you'd be hard pressed to tell them apart. But when we made the system a little wider, we opened up a whole new world of possibilities. What began as an excellent system is now even more versatile.

You get all the best of Peerless lensed indirect technology. Open office fixtures whose lenses give a continuous, low-brightness line of light. Small office fixtures with an unparalleled ability to light an enclosed space. Versions that give out more high-quality light than any office fixture ever gave before.

Both systems have the same sleek profile. The look comes from carefully-engineered aluminum extrusions, architecturally sculptured end caps and unique flared lenses. There's even a companion wall mounted system.

This is Peerless. Soft, even, glare-free office lighting, from shapes as beautiful as the light.



PEERLESS®

PEERLESS LIGHTING, BOX 2556, BERKELEY CA 94702-0552. (415) 845-2760. FAX (415) 845-2776

"PEERLESS" IS A REGISTERED TRADEMARK OF PEERLESS LIGHTING CORPORATION. ©1990, PEERLESS LIGHTING CORPORATION

Circle 79 on inquiry card

Modeling Daylight

For ease of predicting daylight in a space, no simulation works better than old-fashioned cardboard models. By B. J. Novitski

Architects have always been fascinated with the way daylight dramatizes space. But whenever political events bring energy issues to the fore, design for daylighting takes on additional importance.

Replacing or supplementing electric light with daylight, as long as it doesn't introduce unwanted solar-heat gains, can greatly reduce the power consumption in many building types. But understanding how to manipulate reflected and diffuse light is not easy, especially for complex forms. Computer models can simulate simple geometries, but for a thorough understanding of how light plays—and works—in a space, there is nothing like a physical model.

Besides informing the designer, photographs of the model are invaluable in generating client excitement about the design.

Three levels of modeling

According to Robert Osten, a principal of Lam Partners Inc, Cambridge, Massachusetts, a lighting consulting firm, you can think of models at three levels of sophistication, corresponding to three kinds of information you can extract from them.

At the first level, even a crude cardboard model is useful for studying the penetration of sunlight through openings. You can see the effects of direct sunlight in the space and observe how shadows are created by fenestration, furnishings, and architectural elements. By observing where the sun strikes within the space, you can identify potential glare and overheating problems. You can test screens and shading devices which block the unwanted direct sunlight much more simply than with drawings or calculations. But these crude models may not accurately represent the behavior of indirect daylight in the space.

At the second level, you can simulate the rendering of diffuse and reflected light by paying careful attention to fenestration details and to the colors and reflectances of materials. That's what daylighting is all about, says Virginia Cartwright, a daylighting consultant and professor at the University of Oregon. "It's taking exterior light and manipulating it through various reflections, so it illuminates tasks. This is a much more difficult thing to model than simple sun penetration." Well-crafted level-two models are qualitatively accurate, and photographs of their interiors give a realistic sense of the space, especially if they are furnished and peopled.

© Virginia Cartwright Models

A relatively simple model (top) predicts light in the final building. Light shelves, paper blinds, and accurate surface colors distribute the light realistically. A mirrored side wall of a single bay represents the larger space.

At the third level, using level two models and sophisticated measuring devices, you can add to the qualitative sense of realism a confident prediction of the quantity of light. With help from a computer, you can adjust the measurements to compensate for any climatic differences between the site where you're testing and the future site of the building.

Examples in this article fall in levels two and three.

As with any physical model, how you build a daylighting model depends on the questions you want anwered. At first, you want to build in flexibility, so that parts of the model may be taken apart and reconstructed in the field.

For example, if you want to examine the depth of a structural bay, make the walls movable. If you want to try different reflectances of light shelves, take along several versions to tape onto the window wall in turn. On the other hand, you also want the model to be stable so it doesn't vibrate when it's outside in the wind. Therefore, you may want to create several subassembly options in advance, such as an entire roof for each skylight configuration. Then you can install them sequentially in the overall model as you test it in the field.

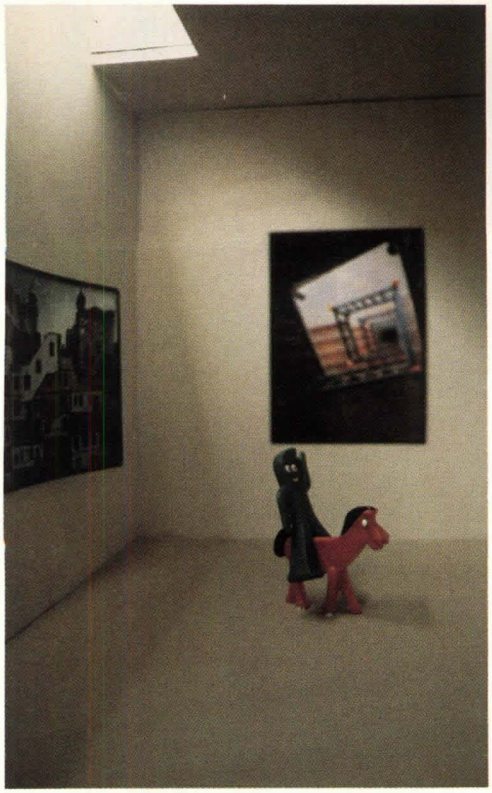
Daylighting models should be larger than typical architectural models because of the light sensors and cameras that you'll want to fit inside. Larger models are also more convenient to *modify for* study. Cartwright prefers a scale of 1/2 inches = 1 foot as a minimum, up to 1 inch = 1 foot, if possible.

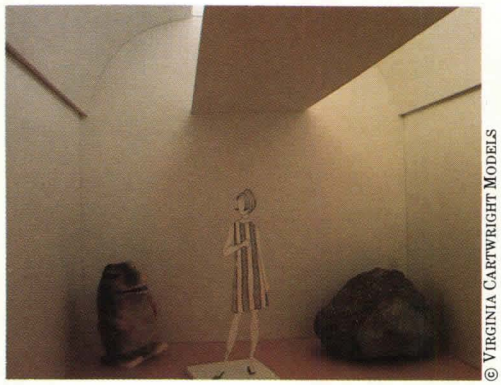
She recommends that you choose materials on the basis of how realistically they represent the final building materials. For both qualitative and quantitative evaluations, it's important that the materials have the right reflectance, specularity, and transmission characteristics.

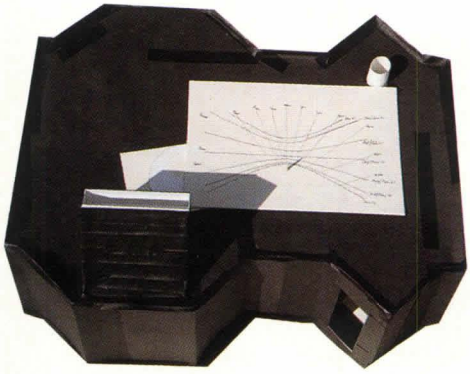
You don't have to be at an advanced stage of design to do this. Even if you don't know what the final materials will be, you can use rules of thumb. Typically, ceilings have a reflectance of 70-80 percent, floors 30 percent, and walls 50 percent. You can find the reflectance of common materials in a variety of reference books.

For a subjective appraisal, the model materials should be realistic in color because that will affect the color of the light and of other objects in the room. For some building types and climates, you might want to manipulate the color of light. Warm colors can be soothing in a cool climate and vice versa. In museums, you usually want neutral colors and a full visible spectrum of white light. One or two bounces off ordinary white paint will remove most of the ultraviolet light, which is harmful to some artwork.

Furnishings are useful objects to place







Gallery models demonstrate the manipulation of light by changing the fenestration and the color of reflective surfaces. From outside, a daylighting model (below) is black, opaque, and taped against light leaks. The sun peg chart shows how to tilt the model to simulate any latitude, date, and time.

© Virginia Cartwright Models

in models. For one thing, they provide scale and realism to photographs. In addition, they improve the simulation because they tend to obstruct and absorb light. A model without furniture may resemble a building without furniture, but it's in the building with furniture where future tenants will confront their visual tasks. Office landscape partitions have a strong influence on the light level in the space.

Although model materials should match the real materials in reflectance, they need not be the same. Any highly textured material such as wood or carpet will look unrealistic when blown up on a projection screen, and surface irregularities may even distort the shadows and reflections within the room.

Except for glazing, materials should be opaque. Foam-core board, a popular model-making material, is translucent and should be either avoided or covered with black paper. Black electrician's tape is useful for sealing the joints to further prevent light leaks. Don't be alarmed if these models look unsightly from the outside. Remember, these are interior, spatial models, not exterior, formal ones. However you should be aware that some exterior surfaces might be important light reflectors for the interior, like a roof adjacent to a clerestory. These surfaces should have accurate reflectances.

Photographing the model

For a viewport for your camera, cut a hole no larger than the lens to prevent light from leaking through. When you're ready to take photographs, put a black cloth over your head like the old-time photographers to keep out extraneous light. Be sure that you use fast film and a wide-angle lens with the center of the lens at the model's eye levels.

If you plan to photograph several similar configurations, place a small label for each one inconspicuously in the room so that later on you can identify which photos were taken under which conditions.

Design objectives for the quantity and distribution of light vary depending on the way the space will be used. In an office, for example, the goal is usually to maximize daylight in the room's interior while preventing glare at the window wall. But in a museum, the goal may be an even, low level of light, perhaps with hot spots at particular locations. Sometimes the goal may be balanced light throughout the space; in other cases it may be balanced light throughout the day.

> Taking exterior light and manipulating it through reflections is what daylighting is all about.

What you can simulate

By manipulating relatively simple models, you can create an unlimited variety of lighting effects. You can have horizontal skylights, vertical clerestories, sidelights, shades, screens, horizontal overhangs, vertical fins, light shelves, diffusers, tracking mirrors, blinds, or baffles. Any of these elements can also lend their color to alter the resulting light.

The illustrations above show ways in which University of Oregon students experimented with a simple room in an art gallery. They experimented with ways to make toplighting and sidelighting either focused or diffused. Then they modified those conditions with a range of colors from warm to cool.

In the model on the far left, toplighting through a shielded horizontal skylight focuses direct light on various parts of the wall, depending on the sun's position, providing a dynamic quality to the space. Under overcast skies, the light is diffuse and more evenly distributed.

In the upper right model, high and low horizontal light shelves reflect an orange light and alter the color of the room. Yet the color is all on surfaces not directly visible from the space; it is on the top of the upper light shelf and on the exterior ground surface. The bottom light shelf has vertical fins to control sun coming in from certain angles, to shield the space from glare.

The lower right model makes top-lighting diffuse, with little added color. Light comes through a narrow slit in the ceiling, down to a concave curve in the top surface of the suspended baffle. From there, the light bounces up to the coves and back down into the room.

Testing conditions

If you want realistic results, where you test a model is as important as what you

test. The best place to test is on the future building's real site. If that is not practical, then it's important to approximate the surroundings as much as possible. Adjacent buildings, hills, or bodies of water can have a tremendous influence on the availability and character of light.

To measure sun penetration through the openings in your building, you'll need a sun peg chart. Like a sun dial, a short peg mounted on this chart casts a shadow along the sun's path. This shows how to tilt the model to simulate the precise sun angles for various times of the day and year for the desired latitude.

If you have to tilt the model a lot, beware of misleading reflections from the ground. Real windows receive light from the clear sky, even when they don't "see" any direct sunlight. Substituting relatively dark ground for that bright sky can distort your readings considerably.

To minimize glare and heat gain while maximizing usable light, you may want to screen and reflect that sunlight. While the model is tilted, try adjusting the openings, their orientations, their shading devices, and light shelves until the direct sun is tamed and directed into the space.

For overcast sky studies, the incoming light is reflected from the sky and from the other surroundings. Keep the model horizontal so you don't get a distorted effect from the ground reflections. If an obstruction on the site will play prominently in the window's "visual field," then the model should be oriented properly relative to that obstruction.

Beware of shadows and reflections from vehicles, other buildings, trees and bushes, or even yourself as you do the testing.

Measuring daylight

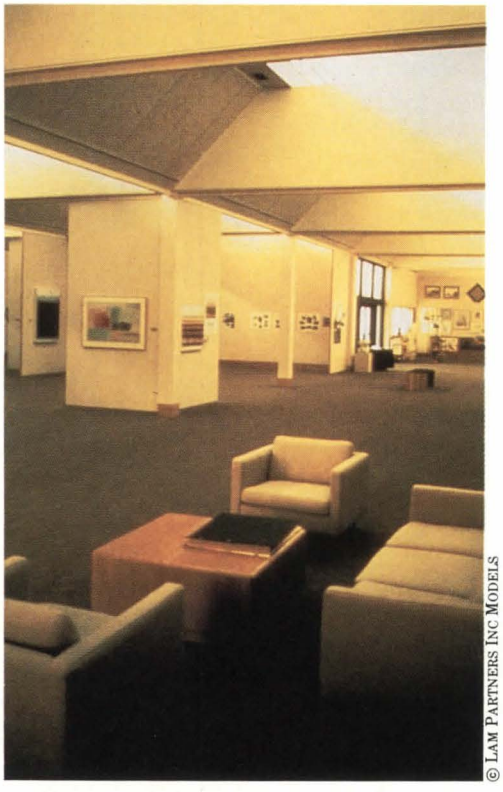
People who study daylighting say one of the first things they learn is that ambient daylight is constantly changing. If you take a light meter outside, you'll see wild variations as clouds move and change. As a result, simply placing a light meter in a model is unlikely to give you a reliable basis for comparison between several sequential design alternatives. You get a more accurate basis of comparison by measuring the exterior ambient light and the light inside the model at the same instant. The simplest way to take this measurement is with two sensors, each with its own remote light meter. Place one in the model at a location you want to study, such as a desk location or mounted on a wall, as in an art gallery. Place the other outside, horizontally, where it "sees" fully the available light. Then read the two meters at the same time. For overcast sky studies, the ratio of light measured from these two meters is known as the daylight factor. Design standards for daylight factors are given in a variety of reference books, including the Illuminating Engineering Society handbooks. Keep in mind that the daylight factor changes with weather conditions, so it's only an approximation.

> The real advantage of the computer is that the speed of feedback makes a qualitative difference in the process and lets you play with the design.

Computer-assisted measurements

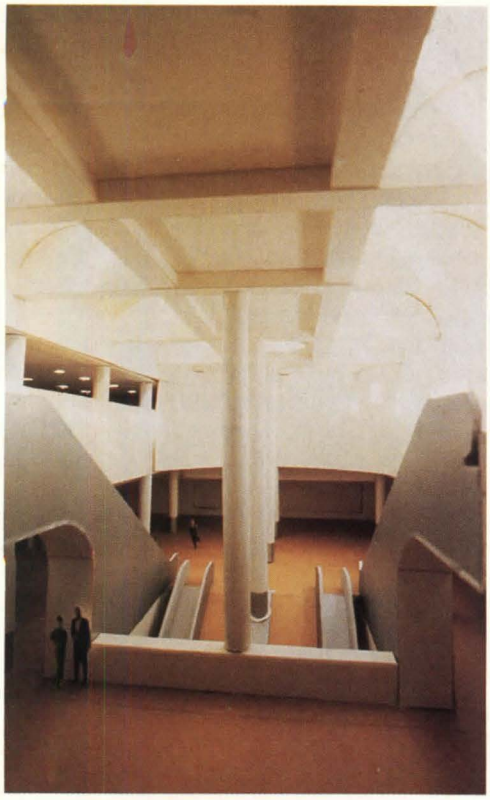
To improve on this approximation, William Lam and Robert Osten have developed a portable computer system that reads and manipulates the data from the light sensors. The result is a powerful design tool which they take into the field when they test models. The operator types in an atmospheric clearness factor and other information about the date, time, and latitude under consideration. Eight sensors are connected to the computer. One is outside the model and gives a reference reading; the other seven are inside the model.

Because the computer can scan the sensors nearly simultaneously, it can overcome the problem of constantly changing light conditions. It can take multiple readings and average out minor fluctuations, thereby improving the accuracy of the results. The computer then calculates adjustments so that readings taken at the test site accurately reflect the daylight conditions for a building anywhere in the world. The seven interior sensors are usually placed in a row perpendicular to the window. Thus, a graph of these seven read-



© LAM PARTNERS INC MODELS

Daylighting models can inform both client and designer. The preliminary study model (below left), for the Tarble Art Gallery (above left) done by Lam Partners Inc, shows a remarkable realism because of its attention to scale-giving detail. The comparison with the final building (near left), shows that the indirect toplighting was accurately modeled and predicted.



A simple study model shows a relatively complex space in the new Miami Airport. For the photograph, the model was tilted so the sun was positioned at its midday angle, symmetrically illuminating the vertical transportation hall.

Sensors on the floor of the model measure the incoming light. In the background, an unobtrusive note labels the photograph so the designer can later compare conditions for a variety of times of the day and the year.

© LAM PARTNERS INC MODELS

An elaborate presentation model of an atrium by Zeidler/Roberts shows more detail than most daylighting models . Though not intended for daylighting studies, it can simulate sun penetration, including the effects of a tracking roof-top mirror.

ings is a picture of the distribution of light from the window wall to the interior of the space. The computer calculates a smooth curve to fit the data points. Each curve can then be plotted on the screen with any three other curves, so the testers can compare design configurations. Each operation takes about five seconds, so testers can try multiple configurations very rapidly.

So while they're still in the field, the testers can see the distribution of daylight as a result of the physical model configuration. They can immediately modify the model and test again, making the computer an effective, fine-tuning design tool. When they used to perform these calculations by hand, the design feedback would come hours or days after the testing. The real advantage of the computer, says Osten, is not the work you save but the speed of the feedback. The speed makes a qualitative difference in the process, and lets you play around with the design as you're testing it.

After they return from the field, they can use the data stored by the field computer to produce additional analyses and graphical displays on their office computer.

In addition to testing models for buildings under design development, Osten's software has helped his firm understand daylighting by analyzing a series of generic models. They compare, for example, the relative effects of a simple horizontal skylight compared to a shaded south-facing clerestory. The latter performs better in a number of ways. The high, unwanted summer sun is excluded from the space. The low, desirable winter sun is admitted, but only after being reflected so it doesn't come in as glare. And the distribution over the course of the year is more even, so year-round electric light levels can be reliably reduced.

Another configuration they have studied consists of a combination of east- and west-facing clerestories at the edges of the space. Although this introduces potential heat-gain problems, there are several interesting advantages. More than a south-facing clerestory, these provide light over a longer course of the day, from early morning to late afternoon. This might be useful in accommodating work schedules in industrial buildings. In addition, the east/west configuration provides a greater uniformity between winter and summer than the horizontal skylight does.

Osten says these studies have also helped him understand electric lighting better.

"Now I'm more sensitive to light-reflecting surfaces, understanding exactly what the real light sources are. When you study light in a real model, you have to figure out what causes the surprising variations you observe."

Old-fashioned knowhow

Why, you may ask, are architects still using physical models in the "Information Age" when computers seem to have replaced a lot of our old technologies? Although photorealistic computer modeling software has made tremendous advances in recent years, it is still not as good a predictor of what a space will look like as old-fashioned models. To simplify their calculations, these programs frequently make broad assumptions about the building's configuration or the exterior conditions.

The best rendering programs today are expensive, slow, and limited in the geometries they can handle. A single realistic image can take several hours to calculate, about the same amount of time it would take to build a model. Perhaps in five years this situation will change, but for now architects can't beat the design information they can learn from simple cardboard models.

B.J. Novitski is an architectural technology writer living in Eugene, Oregon.

LOW VOLTAGE

BLOK
by REGGIANI

REGGIANI

ORIGINE DI LUCE

Designed by Luigi Manzone for Reggiani, the Specular Spotlight Series is a fully adjustable, high-tech spotlight for track use with electronic power supply built directly into the fixture. An unusual specular reflector re-directs the backlight of the lamp, creating a soft halo effect which lowers perceived brightness.

The units are constructed of die-cast aluminum and are fitted to accommodate the low voltage MR-16/50 watt lamps. The fixture is fully adjustable, with 358° rotation and 90° angulation.

Shown is model 3787–track mounted. Also available as canopy or monopoint mounting. The Specular Spotlight Series is available in white or graphite and is UL Listed.

REGGIANI USA HEADQUARTERS: 65 RIVER ROAD, NEW WINDSOR, NY 12553. PHONE: 914/565-8500. FAX: 914/562-3082.
REGGIANI LIGHT GALLERY: 800-A FIFTH AVENUE, NEW YORK, NY 10021. PHONE: 212/421-0400. FAX: 212/838-8517.

Circle 80 on inquiry card

LEGISLATIVE ALERT

IALD warns lighting designers of pending legislation in New York State that could have national implications; IESNA lists its recently published literature on lighting design and application.

Designers be warned: a dangerously faulty approach to energy conservation is close to being implemented in New York State. Proposed amendments to the Energy Code that are scheduled to go into effect by December 31, 1990, establish state-mandated efficiency standards for individual lighting components (fixtures and lamps), coupled with a prescriptive table of maximum allowed watts per square foot. This alarming new approach would, in effect, force designers to select components on an individual basis without regard to application or performance as a system. The theory, apparently, is that energy-efficient components mean energy-efficient systems.

The International Association of Lighting Designers (IALD) fully supports the development of effective energy-conservation standards. At the same time, the IALD believes that the state's approach is seriously flawed.

Prescriptive methods are less effective in achieving energy efficiency than system-performance approaches such as those incorporated in ASHRAE/IES Standard 90.1. In addition, the efficiency of a component is only part of the equation in designing an energy-efficient building. It is the application of components as part of a system that determines overall energy usage.

Helen Diemer, David A. Mintz, Inc., President of IALD.

A standard based on component efficiency will stymie the efforts of designers to develop systems that respond to user needs, functional objectives, and esthetic criteria in addition to energy goals. We support a performance-based standard because it will give designers the freedom to select the components that will best accomplish all objectives—including energy efficiency.

In proposing component standards, New York State is setting a precedent that will have national ramifications. Among industry groups that have expressed concern are Con Edison, the New York sections of IES, New York State Lighting Manufacturers Association, the ASID, the New York State AIA chapter, and the National Electrical Manufacturers Association. However, despite the objections raised, the state has been unresponsive. Only a public outcry will prevent implementation of the amendments. We urge all designers to write their professional associations at once, with a copy to the IALD at 18 East 16th St., New York, NY 10003. *Circle 307*

The availability of new lighting technology combined with the new requirements for lighting energy management underscores the need for current information on lighting design and application.

The Illuminating Engineering Society of North America (IESNA) plays an important role in the dissemination of lighting standards and recommended practices which are developed by its technical committees. This material is updated periodically to ensure that our documents reflect current technology.

We appreciate the opportunity that RECORD LIGHTING is providing us to inform you of recently published IES literature.

The new literature includes:

The IES Recommended Practices for Lighting Offices Containing Computer Visual Display Terminals (VDT's)—(list price $35; IESNA member price $20.)

Recommended Practices for Sports Lighting (recommendations and examples for properly illuminating indoor and outdoor sports facilities)—(list price $40; IESNA member price $25.)

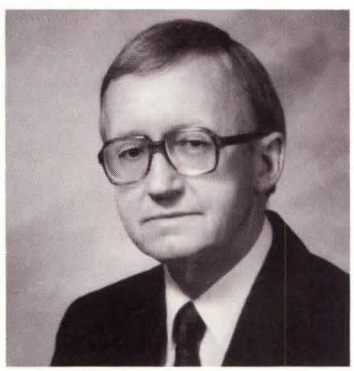
A few other IES recommended practices are:

IES Lighting Ready Reference, a source of selected material from the Handbook—(list price $50; IESNA member price $30.)

Lumen Method of Daylight Calculations—(list price $25; IESNA member price $15.)

Educational Facilities Lighting—(list price $35; IESNA member price $20.)

Choosing Light Sources for General Lighting—(list price $25; IESNA member price $15.)



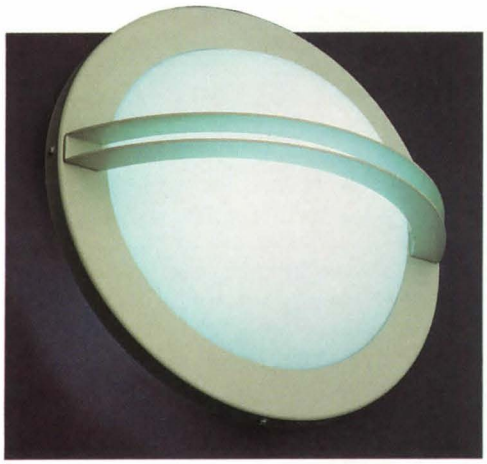
Donald C. Thomas President IESNA

Also, *The IES Lighting Handbook,* the acknowledged authoritative reference on lighting research, theory, and application, is available as a two-volume set of application and reference volumes (list price $350; IESNA member price $140.)

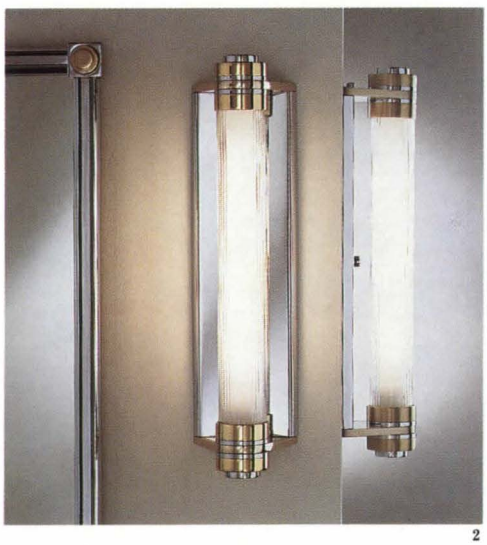
Please write or call for the *IES Publication Catalog,* which lists additional information on these and other standards. Our address is:
Illuminating Engineering Society
345 East 47th Street
New York, New York 10017.
Phone (212) 705-7926. *Circle 308*

AMBIENT LIGHTS

New fixtures designed to fill a space with diffused light



1



2

1. Wall light
This porthole-like sconce has a generous scale that makes it suitable for larger spaces where it can be installed above eye level. The fixture originated as a custom design for Land's End corporate headquarters in Dodgeville, Wisconsin, by architects Martinson and Associates and lighting consultant Gary Steffy, where it is used both as a corridor light, and, in a satin-copper version, in the entrance lobby. As pictured, AL 480 is 18 in. in diameter, with two horizontal enameled-metal trim bars in front of a projecting acrylic lens. Lamping is two PL-13s. Appleton Lamplighter, Appleton, Wis. *Circle 309*

2. Linear bracket
While the fluted-glass, brass, and chrome Baton light was originally designed by Doyle Crosby for bathroom illumination,

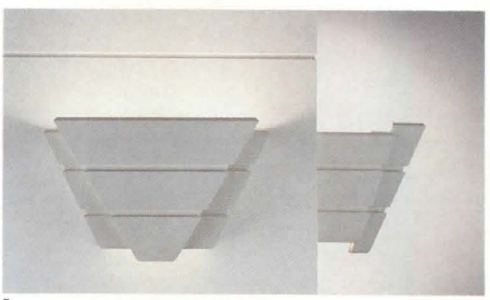
3

its shallow (3-3/8 in.) profile also makes it suitable for corridors, lobbies, or other areas where limited projection is desired. Light from either incandescent or fluorescent tubes is diffused through a white spun-glass filter. The fixture comes in heights of 13-, 18-, or 24-in. Boyd Lighting Co., San Francisco. *Circle 310*

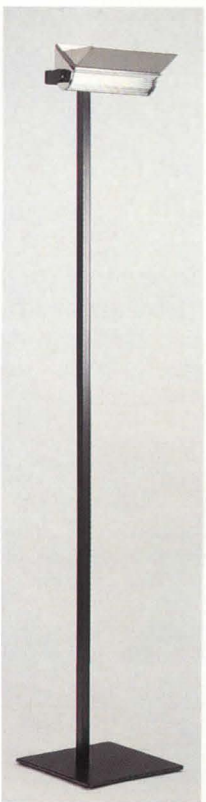
3-5. Variations on a (classic) theme
Boyd Lighting offers several wall lights made of a material new to the firm, a stark white gypsum cement they call faux stone. The material is hand-cast to incorporate crisply detailed decoration. The Titan sconce (**3**) only seems massive: the wall light measures a compact 6 in. high by 14 in. wide. The fixture's cornice effect is heightened by a sand-cast egg-and-dart banding in brass, bronze, or aluminum, which in turn comes in a number of finish options such as verde, highlighted brass, and weathered bronze. Argo (**4**) is all-white stone, with a dentil molding that catches light and casts its own shadow. Argo and Titan were designed by Kevin von Kluck, and can be wired for either incandescent bulbs, or one or two PL13 fluorescents. Roman rather than Greek in feeling, the stepped-forward Keystone sconce (**5**) was designed by Gary Cross. Boyd Lighting Co., San Francisco. *Circle 311*

6, 7. Portable uplights
A cross between a standing lamp and a torchère, new easy-to-move lights provide the full-color spectrum and dimming capabilities of tungsten halogen bulbs. Different shade styles offer asymmetric light distribution; the flat base slips under a sofa or desk. Metal surfaces come in black, white, and other colors. Elliptipar, Inc., West Haven, Conn. *Circle 312*

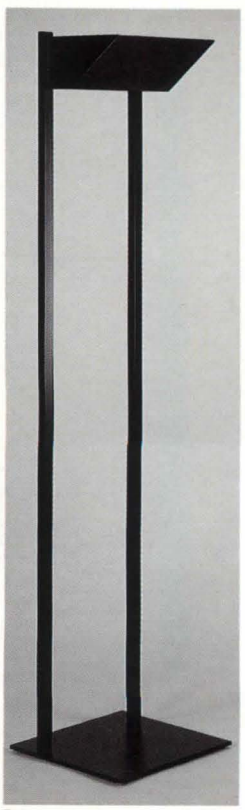
4



5



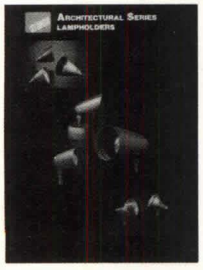
6



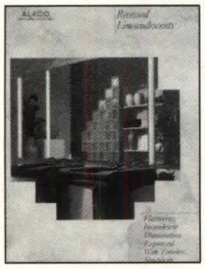
7

For more information, circle item numbers on Reader Service Cards

Mini track lamps
A pamphlet describes features of Con-Tech's Micro/Lyte, a diminutive yet powerful MR-11 lamp. The lamp is used with a voltage converter. Graphics show details about illumination and dimensions. Con-Tech Lighting, Deerfield, Ill. *Circle 418*



Facade illumination
All of Stonco's architectural 900, 6,000, and contemporary series lampholders and accessories are described in this color pamphlet. The various shapes of incandescent and HID units are pictured and finishes are detailed. Stonco Lighting, Union N.J. *Circle 419*



Decorative mirror lights
A color brochure and technical data sheet describe Recessed Lincandescents by Alkco. The new recessed version of its linear incandescent decorative lighting series is designed to create a fixtureless look. Alkco, Franklin Park, Ill. *Circle 420*

Fluorescent fixtures
A full line of fluorescent lighting fixtures for commercial, industrial, and institutional markets is illustrated in KLP's catalog. A two-page spread on each product with photographs explains features. KLP, Wilmington, Mass. *Circle 421*

Lighting-control systems
Lutron Electronics introduces a design guide featuring product information and various design applications for its architectural lighting-control systems. Several systems, and diagrams are shown in color brochure. Lutron, Coopersburg, Pa. *Circle 422*

Specialty exterior lighting
Site-specific fixtures and systems are shown in color brochure. Custom-design projects; bridge- and lobby-lighting fixtures for Carlson Center in Minnesota and plaza torchieres in Denver. Sterner Lighting Systems, Winsted, Minn. *Circle 423*

NeoLux.©. . . LIGHTENS THE LOAD

DIRECT/INDIRECT LIGHTING FOR LOW CEILINGS

NeoLux can be used very effectively mounted on ceilings as low as 8'6" overall. It is ideal for office, classrooms and open space areas. The light distribution is wide spread and the ceiling luminance ratio is well below the IES recommended levels. **NeoLux** is ideal for use in offices utilizing VDT's.

NeoLux has an efficiency rating of 83% and is available for one, two or three lamps, T8 or T12.

Fax for Free Information FAST
718/456-5492

neoray
NATURALLY

537 Johnson Avenue, Brooklyn, NY 11237
Tel: 718/456-7400

PAT. PEND.

Circle 81 on inquiry card

this publication is available in microform

Please send me additional information.

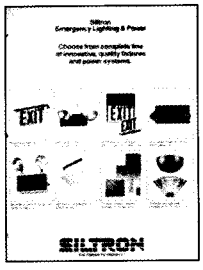
University Microfilms International

300 North Zeeb Road
Dept. P.R.
Ann Arbor, MI 48106
U.S.A.

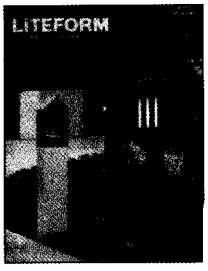
18 Bedford Row
Dept. P.R.
London, WC1R 4EJ
England

Name _____
Institution _____
Street _____
City _____
State _____ Zip _____

Landscape fixtures
A 56-page catalog illustrates Hadco's full line of landscape-lighting fixtures and accessories. Technical data, diagrams and specifications, are given. A special section features accent lighting. Hadco, Littlestown, Pa. *Circle 424*

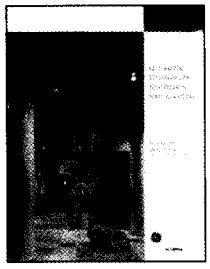


Emergency lighting
Siltron Illumination's 75-page catalog includes detailed technical information and photos of emergency lighting and power systems. Features and specifications are described. Siltron Illumination, Cucamonga, Ca. *Circle 425*

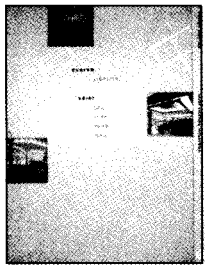


Wood outdoor lighting
A pamphlet shows designs for commercial and residential outdoor lighting. Made of wood, metal, or clay, styles range from rustic bollards to Postmodern structures. Liteform Designs, Portland, Ore. *Circle 426*

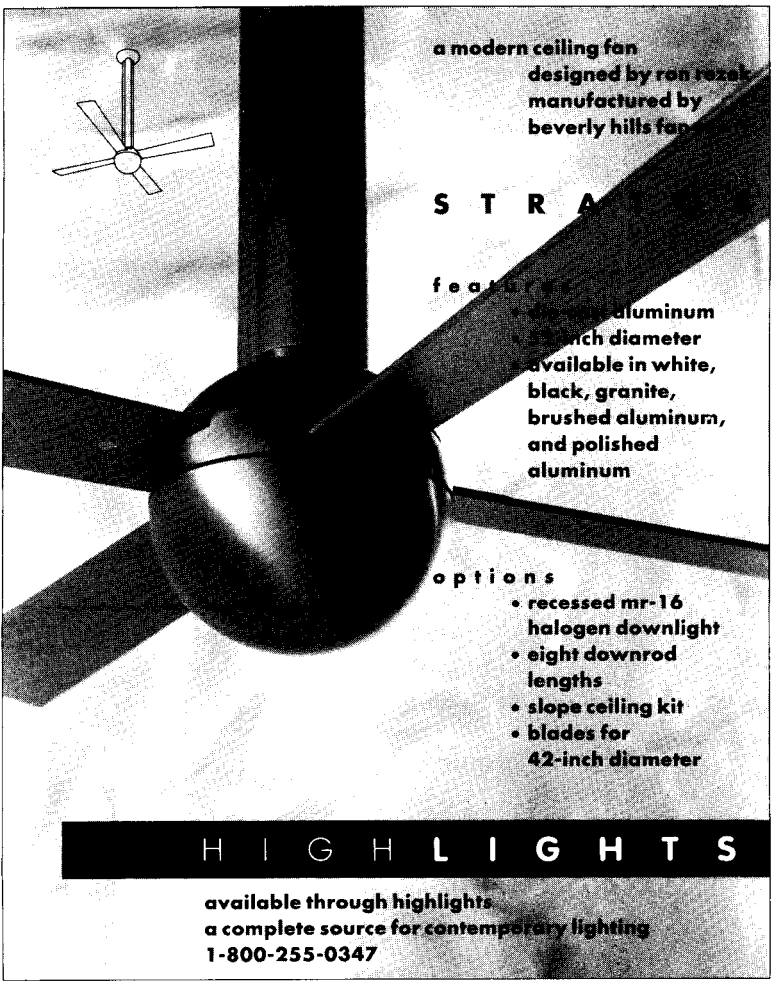
Fluorescent luminaire
A brochure describes a fluorescent luminaire designed for lighting office areas with moderate to high video-display-terminal usage. Design features, diagrams, and technical information are provided. Columbia Lighting, Spokane, Wa. *Circle 427*



High-pressure-sodium lamp
A pamphlet shows a new high-pressure-sodium lamp for retail display lighting. The energy-efficient source emits white light without blue or green shades to provide attractive merchandise illumination. General Electric Lighting, Cleveland. *Circle 428*



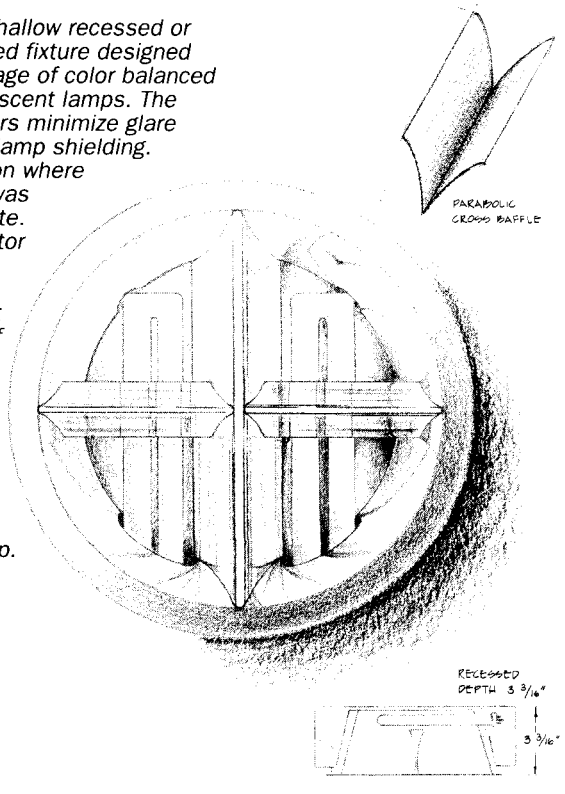
Custom lighting
A color pamphlet illustrates applications of its custom-made lighting. Design solutions to lighting problems are described for several projects, including a shopping mall and library media center. Voight Lighting Industries Inc., Leonia, N.J. *Circle 429*



Circle 82 on inquiry card

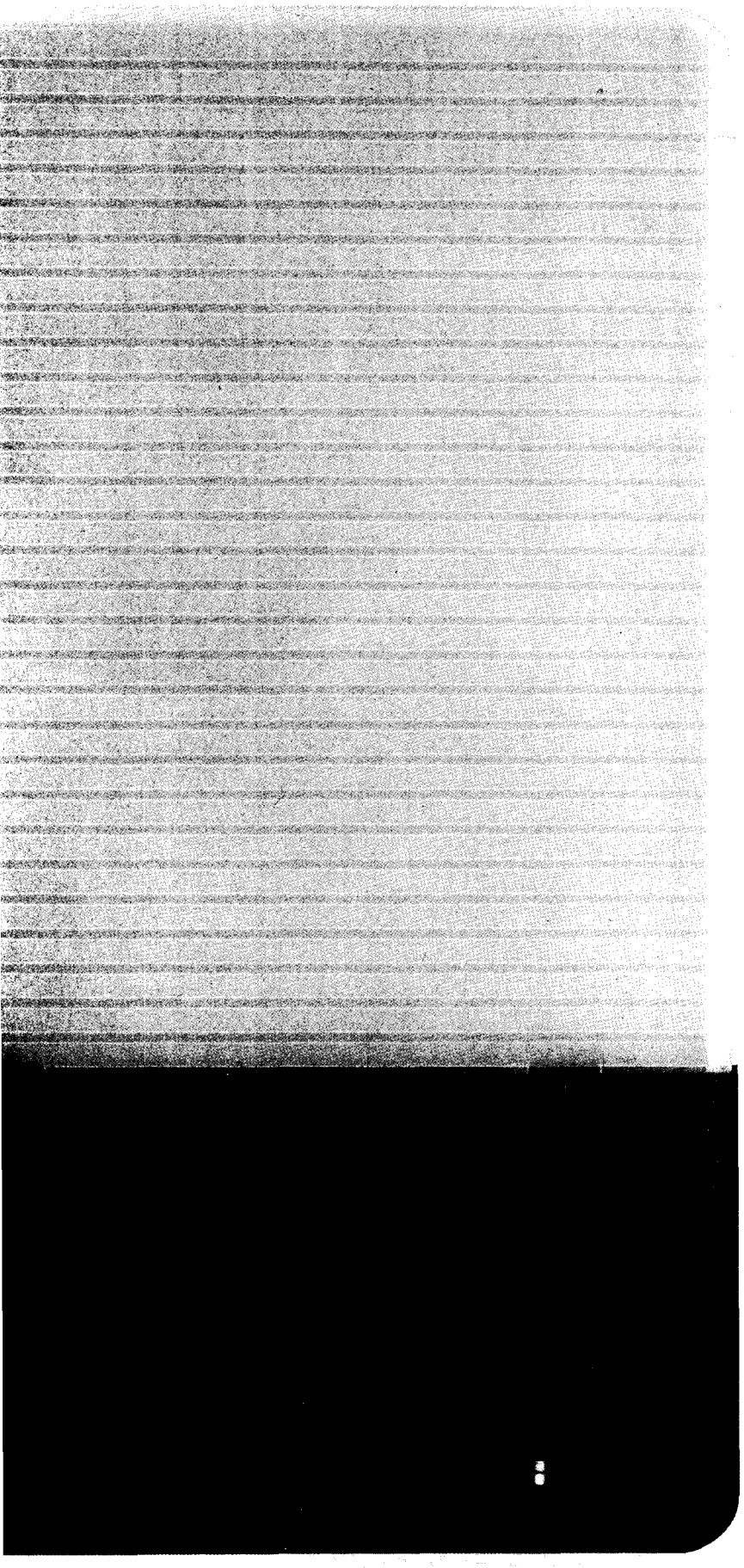
BAFLUX™

An extremely shallow recessed or surface mounted fixture designed to take advantage of color balanced compact fluorescent lamps. The parabolic louvers minimize glare by maximizing lamp shielding. For any situation where incandescent was once appropriate. High power factor ballast; 120 or 277 volt. The energy efficient Baflux is one of our readily available ***Standards****. Write or call Dept. G for further information and the name of your local rep.*



EDISON PRICE LIGHTING
ARCHITECTURAL LIGHTING AT ITS BEST
Edison Price Inc., 409 East 60 St., NY, NY 10022 Tel: 212-838-5212 Fax: 212-888-7981

Circle 83 on inquiry card



PRATICA INSIDE

BELLA OUTSIDE

Beghelli, the Italian leader in emergency lighting products, has now created a totally new kind of lamp: PRATICA BELLA, Practical and Beautiful. Practical because it is easy to install and maintain. Beautiful because it is a creation of Italian design, which adds a pleasant and elegant look to emergency lighting.
A very special style that is capable of integration and provides the finishing touch to your important projects.
PRATICA BELLA, available in black, white, and burgundy colors, is part of a complete line of lighting/emergency lighting products manufactured by Beghelli. These products, along with a commitment to quality/assistance and service, are now available in the United States.
So, when you are thinking of an emergency lamp to complete your project, think of Beghelli, think of PRATICA BELLA.

Beghelli

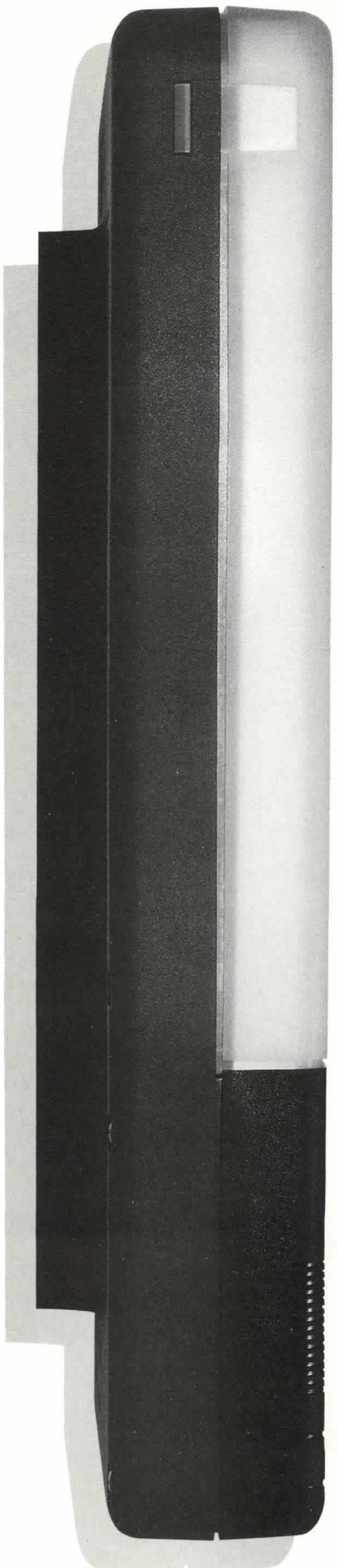
in the darkness, a light.

Beghelli Inc. - P.O. Box 8053 - Jacksonville FL 32216 - Phone (904) 6464416

Design: Eros Bollani

Circle 84 on inquiry card

2 17/32

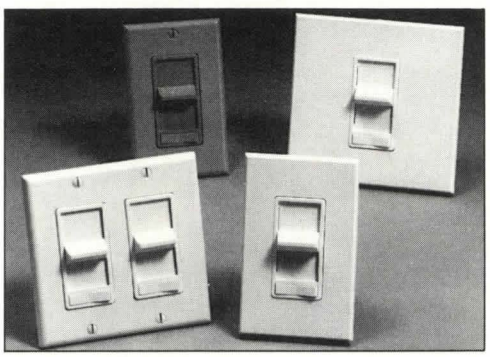


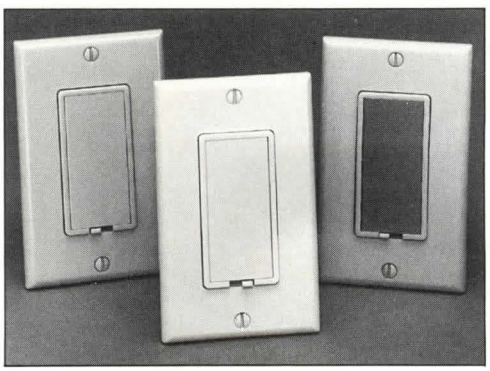
LIGHTING MAESTRO...
Continued from page 15

lamps, and high-power MR-16 and MR-11 spotlights, all of which Feder eagerly illuminates with a transformer. "I lived through this whole evolution." In a rare acknowledgement of the purely technical side of lighting, Feder says, that "the future of lighting is how many lumens per watt you get. And the key is always projection."

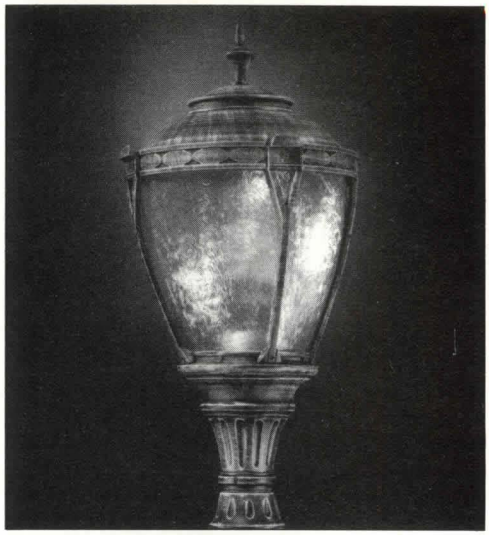
As he lights up each of the distinctive bulbs, Feder becomes increasingly animated as if light is as nourishing and vital to him as water and food. "I talk about light as if I came on earth just to play with it. The challenge and excitement of light to come, which we don't know yet, which we haven't revealed yet, is a fortunate development for anyone living into the 21st century. We'll be involved with light in ways we've never seen. My passion for light has never abated because there is an unknown to it."

NEW PRODUCTS...
Continued from page 35





Decorative controls
The Decora line of architectural dimmers has been expanded to include a slide dimmer for fluorescent lighting, top, and the Decora Touch Dimmer, bottom. The touch dimmer has no moving parts—simply press with a finger to turn the light on and to reach the desired level of brightness. Plates and frames can match exactly, or have contrasting silver- or gold-finished plates. Leviton Mfg. Co., Inc., Little Neck, N. Y. *Circle 315*



Vintage luminaire
A new large-scale fixture in turn-of-the-century style, the integrally ballasted 1130A luminaire is made of cast aluminum with a vandal-resistant, reduced-glare polycarbonate globe. Sternberg Lanterns, Inc., Chicago. *Circle 316*

Manufacturer sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD *has asked the architects to identify the products specified*

Pages 6-9
Offices for Ellerbe Becket, Inc.
Ellerbe Becket, Architects
Hall downlights: Omega. Linear pendants: Prudential. Task lights: Luxo. Hall pendant: Solzi Luce (The Victoria).

Pages 12-13
St. Clement's Church
Holabird & Root, Architect
Chandeliers, sconces, and outdoor light posts: Winona Studio of Lighting. Dimming boards: ALM Dimming Co.

Pages 16-17
San Jose Plaza
Hargreaves Associates, Architect
Fountain lights: Hydrel. Tree uplights: Imperial Bronzelight.

Pages 22-25
Portland Bridges
Zimmer Gunsul Frasca Partnership, Architect
Morrison Bridge lights: Sterner. Hawthorne Bridge lights: Tivoli.

Pages 26-27
Contract Interiors
Bartev Topdjian, Architect
MR16 and halogen PAR lamps: General Electric. Low-voltage track fixtures: Lightolier. Line-voltage track fixtures and task lamps: Artemide.

Sales offices

Main Office

McGraw-Hill, Inc.
1221 Avenue of the Americas
New York, New York 10020

Publisher
Roscoe C. Smith III (212) 512-2841

Administrative Assistant
Anne Mullen (212) 512-4686

Director of Business and Production
Joseph R. Wunk (212) 512-2793
Fax: (212) 512-4256

Assistant Publisher/ Director of Marketing
Elizabeth Hayman (212) 512-2814

Classified Advertising
(212) 512-2422

District Offices

Atlanta
4170 Ashford-Dunwoody Road
Atlanta, Georgia 30319
Gregory Bowerman (404) 843-4781
Fax: (404) 252-4056

Boston
575 Boylston St.
Boston, Massachusetts 02116
Louis F. Kutscher (203) 326-3051
Fax: (203) 323-4655

Chicago
2 Prudential Plaza
180 N. Stetson Ave.
Chicago, Illinois 60601
Anthony Arnone, (312) 616-3339
Thomas P. Kavooras, Jr., (312) 616-3338
Fax: (312) 616-3323

Cleveland
225 High Ridge Road, Suite 170
Stamford, Connecticut 06905
Frank Rose (203) 326-3052
Fax: (203) 323-4655

Denver
John J. Hernan (415) 954-9704
Fax: (415) 954-9786

Dallas/Houston
2 Prudential Plaza
180 N. Stetson Ave.
Chicago, Illinois 60601
Thomas P. Kavooras, Jr.
(312) 616-3338
Fax: (312) 616-3323

Los Angeles
Media Sales Associates
23232 Peralta Drive, Suite 218
Laguna Hills, Calif. 92653
William W. Hague (714) 859-4448
Richard Ayer
Fax: (714) 859-3979

New York
1221 Avenue of the Americas
New York, New York 10020
Laura Viscusi (212) 512-3603
Fax: (212) 512-4256

Philadelphia
225 High Ridge Road, Suite 170
Stamford, Connecticut 06905
Frank Rose (203) 326-3052
Fax: (203) 323-4655

Pittsburgh
225 High Ridge Road, Suite 170
Stamford, Connecticut 06905
Frank Rose (203) 326-3052
Fax: (203) 323-4655

San Francisco/Seattle
Media Sales Associates
9017 Peacock Hill
Gig Harbor, WA 98335
William W. Hague (415) 345-0522
(206) 858-7575
Fax: (206) 858-7576

Stamford
225 High Ridge Road, Suite 170
Stamford, Connecticut 06905
Louis F. Kutscher, (203) 326-3051
Fax: (203) 323-4655

The Marketplace
Lou Ruvane
Lisette Martinez
1-800-544-7929
Fax: (212) 512-4256

Architectural Record Review Series
Publisher
Camille Padula
(212) 512-2858
Fax: (212) 512-4256

Overseas Offices

Frankfurt/Main
LiebigstraBe 19
Frankfurt/Main, Germany

Sheffield
146 West St.
Sheffield S14ES, England

Milan
Via Baracchini No. 1
Milan, Italy

Paris
128, Faubourg St-Honoré
75008 Paris, France

Tokyo
2-5, 3-chrome
Kasumigaseki, Chiyoda-ku
Tokyo, Japan

South America
Empresa Internacional de Comunicacoes Ltda.
Rua da Consolacao, 222
Conjunto 103
01302 Sao Paulo, S.P. Brasil

Advertising index

For detailed data, prefiled catalogs of the manufacturers listed below are available in your 1990 Sweet's Catalog File as follows:

Bold face—page number
Italics—Reader Service number

(G) General Building & Renovation
(E) Engineering & Retrofit
(I) Industrial Construction & Renovation
(L) Homebuilding & Remodeling
(D) Contract Interiors

Wings of Light. Zumtobel.

Spheros™ ...Harmony of indirect and direct light. Providing optimum performance without intrusion on interior design. A wide array of options in light distribution, louvers and accessories affords flexibility in the final composition.

Spheros by Zumtobel. Innovative lighting solutions. Uncompromising quality and performance. State-of-the-art manufacturing facilities. A worldwide commitment to excellence in lighting.

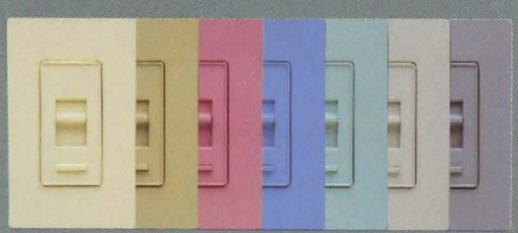
ZUMTOBEL

The Spheros™ Luminaire Series by Zumtobel. For further information and the name of your local Zumtobel Sales Representative, please contact us at: Zumtobel Lighting, 141 Lanza Ave, Bldg. 16D, Garfield, NJ 07026. 201 340-8900. Fax 201 340-9898.

LUMÉA™

Distinctive Lighting Controls and Accessories

14 colorful choices..



7 Pastel Colors

7 Primary Colors

Decorate your home with Luméa – a complete family of:

- Slide Dimmers
- Receptacles
- Switches
- Phone and Cable TV Jacks

Luméa...the finishing touch

Call toll-free for your authorized Luméa Showroom or Distributor
(800) 523-9466, Ext 429 (USA)
(800) 222-4509, Ext 429 (PA)

Or write:
Lutron Customer Service
205 Suter Road
Coopersburg, PA 18036

LUTRON®

Circle 86 on inquiry card