

“The innovations you expect...”

NEW ULTIMA™ RH90°:

Smoother, quieter... even a more durable surface!

- 500% more durable than other popular fine-textured ceilings
- Especially good for areas requiring frequent plenum access... quiet... high-humidity resistance



The solutions you need”SM

Armstrong

CEILING AND WALL SYSTEMS

HERE'S PROOF...



PRODUCTIVE SPACES

Acoustical ceiling systems and walls to reduce noise distractions
... *Ultima RH90 offers .70 NRC!*



DURABILITY

Many products offer impact, corrosion, chemical resistance
... *Ultima RH90 has exceptional resistance to scratching, scrubbing... even high humidity!*



DESIGN VERSATILITY

Over 4000 choices for any design or budget
... *Ultima RH90 gives you a smoother texture!*



SAVES MONEY

Light reflectance, thermal insulation cut energy costs
... *Ultima RH90's durability slashes replacement expense!*



SAFETY

UL fire-resistive and seismic-rated systems
... *Ultima RH90 is Class A and designed for Armstrong's seismic-rated grid!*

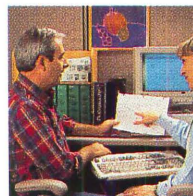


CONVENIENCE

Local source ceilings/grid through trained reps, approved distributors
... *Call your Armstrong representative, local distributor or 1 800 448-1405 about NEW Ultima RH90!*

No HASSLES

Questions? Need a solution from someone who understands the problems? Want test data on new Ultima RH90? You can trust our TechLine experts ...



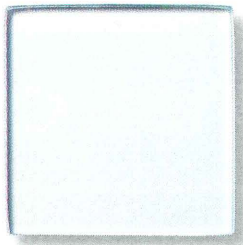
- FREE acoustical analysis
- Technical help – fire-rated assemblies
- CAD assistance, performance data

1 800 448-1405 (option 3)

“We're standing by... so you can keep moving”SM

Circle 1 on inquiry card

WHATEVER YOUR WEATHER CLEARLY SUPERIOR PERFORMANCE



*Energy Advantage
Low-E Glass*

+



*Clear
Float Glass*

The Sun Management
Glass System® featuring
Energy Advantage®
Low-E Glass from LOF.

Now there's a glazing technology that
can improve the performance of *any*
solar control glass.



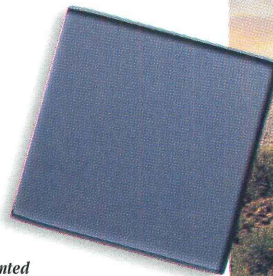
*B.C. Hydro Edmonds Centre; Vancouver, B.C.:
EverGreen Glass outboard and Energy Advantage
Low-E Glass inboard; new construction project.*

A system that gives architects and
designers the freedom to create
buildings with the aesthetic they want . . .
and actually helps building owners
reduce energy bills.

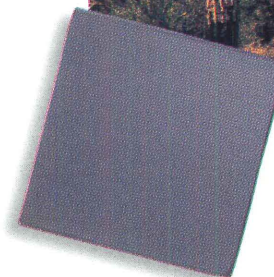
It builds on the synergy of award-
winning* Energy Advantage Low-E Glass
combined with LOF's other architectural
glass products . . . and pays off with
enhanced thermal performance
everywhere you use it – north and south,
summer and winter, day and night.



*Clear
(Silver)
ECLIPSE®
Reflective
Glass*



*Grey Tinted
Float Glass*



*Grey ECLIPSE
Reflective Glass*



*Gold ECLIPSE
Reflective
Glass*



Build in the
optimal advantage.

Synergistic glazing technology that
optimizes the thermal performance of
insulating glass (I.G.) units, the LOF
Sun Management Glass System unites
an inboard lite of high-performance,
pyrolytically coated Energy Advantage

Low-E Glass with an outboard lite
of one of LOF's advanced solar
control glass products.

One of the most color-neutral
Low-E glass products available,
Energy Advantage Low-E Glass

THE FORECAST CALLS FOR AND OUTSTANDING SOLAR CONTROL.



Enhanced energy efficiency... anytime, anywhere.

Originally created to reduce winter heat loss, Low-E glass has a proven track record in cooler, northern climates. Less recognized, however, is how it inhibits solar radiant heat transfer into building interiors – it keeps buildings cooler in summer.

In fact, evidence shows that

Low-E glass can keep any building in any location – north, south, east or west – warmer in winter and cooler in summer, by night and by day.

gives I.G.s improved thermal performance – but no color shift to the outboard lite.

The result is an I.G. unit that decreases both heating and cooling costs.

And that can mean substantial energy savings over the lifetime of the building – whether it's new

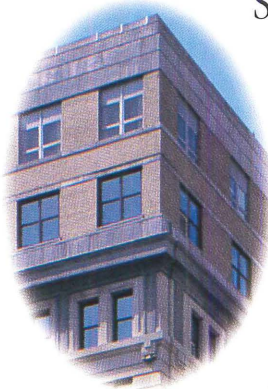
construction or retrofit, and no matter where it's located.

See for yourself, then decide.

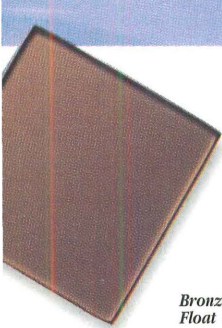
Now experience the Sun Management Glass System for yourself. Take a look at our new

glass sample portfolio. For information on how to schedule a presentation,

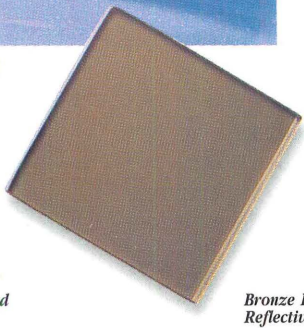
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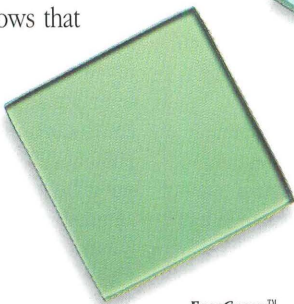
Hotel du Pont; Wilmington, DE: Clear Float Glass outboard and Energy Advantage Low-E Glass inboard; renovation project.



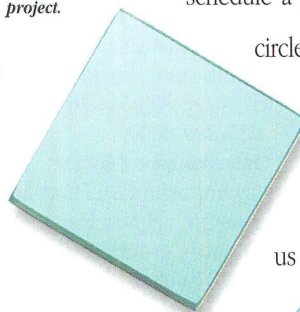
Bronze Tinted Float Glass



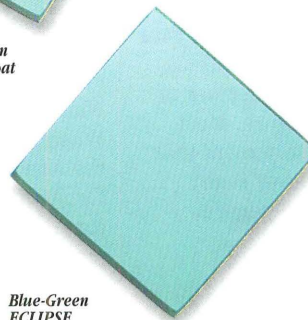
Bronze ECLIPSE Reflective Glass



EverGreen™ High-Performance Tinted Float Glass



Blue-Green Tinted Float Glass



Blue-Green ECLIPSE Reflective Glass



A member of the Pilkington Group

Building Products

light years ahead

*Popular Mechanics 1991 Design & Engineering Award; R&D Magazine 1991 R&D 100 Award

Actual glass colors may vary from photo. Please see glass samples from LOF before making final color selection.

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Circle 2 on inquiry card

Funding for NEA

I was surprised and dismayed to read your editorial on funding for the NEA [RECORD, August 1995, page 9]. Although full of qualifiers, the piece, read hastily, can only give comfort to those who are busy dismantling decades of much that is good in our federal programs.

Democratic values must encompass those of the elite as well as those of the general public. And it takes leadership from an enlightened elite to raise the standards of the rest of the country. What is going on right now is the reverse, with American culture heading toward the least of common denominators.

Tough editors should certainly look and question, but we expect them to lead. With leadership such as yours, our democracy is capable of great artistic achievement. Without it, there is naught but TV sitcoms.

*Robert F. Gatje
Architect
New York City*

It was disappointing to read your limp and unenthusiastic discussion of the arts and the place of the NEA in our culture. Most galling was your statement that "the arts... have never really been an activity the general public wants..."

Most communities with art programs appreciate them and work for them in the face of resistance and budget- and cost-driven managers who are rewarded for keeping things "leaner and meaner." Even in the "flinty-eyed '90s" quality of life is something the public values and pays for.

*Mark Spitzer
Architect
Seattle*

November 9-March, 1996

Buckminster Fuller exhibition features selected work from his architectural firm, commemorating the 100th anniversary of his birth. Among the projects on view: Fuller's work on the 4D House; the Ford Dome; the Dymaxion Car for Henry Kaiser; the Octet Truss Patent; Preparatory Studies for the Geodesic Dome. The exhibition first will be at the Cathedral of St. John the Divine, New York City, then move to Pratt Institute Manhattan in January and Schafner Gallery in March. 718/636-3746.

November 10

Lecture by Ricardo Legorreta, "Mysterious Mexico," New York School of Interior Design, 170 East 70th St., New York City; 212/472-1500, fax 212/472-3800.

November 14-16

Build Boston convention and exhibition, World Trade Center, Boston; 800/544-1898; fax 617/329-8090.

November 16-19

"Symposium on Healthcare Design," Hyatt Regency, San Diego. Center for Design Health, 510/370-0345, fax 510/228-4018.

November 17

"Designing Building Security," symposium on security issues, National Building Museum, Washington, D.C. Sponsored by the AIA and The McGraw-Hill Companies; 8:30-5:30 p.m.; \$195 for AIA members and government employees; \$250 for others. 202/626-7453, fax 202/626-7518. Also on exhibit at the museum, "World War II and the American Dream: How Wartime Building Changed a Nation" (through December 31); and "We Will Be Back: Oklahoma City Rebuilds" (through March 17).

November 20-26

American Institute of Architecture Students annual meeting, Portland, Ore. Call AIAS office at 202/626-7414 for meeting location and other details.

Through November 28

"Art by Architects" exhibition at the Collector Art Gallery in the Dupont Plaza Hotel, Washington, D.C. For details, call Washington Chapter/AIA at 202/667-1798.

Through January 14

"Claes Oldenbergh: An Anthology," a showing of 200 drawings, collages, and sculptures at the Guggenheim, New York City.

Through January 14

"Architects of Image: Photography in the Heroic Age of Construction;" Canadian Center for Architecture, Montreal; 514/939-7000; fax 514/939-7020. Boston; fax 617/951-0845.

Competitions

- Architecture Awards Program sponsored by the U.S. Institute for Theater Technology for design of large and small projects for old and new theaters; entries due November 6; call Tim Hartung, Architecture Commissioner, 212/807-7171 for details.
- Key West AIDS Memorial competition, November 25 deadline; 305/292-7722; fax 305/292-2162.
- Gabriel Prize competition founded to encourage personal investigation and critical studies of architectural compositions completed in France between 1630 and 1830. The candidate must be a U.S. citizen and request application forms in writing by December 1. Write The Western European Architectural Foundation, c/o The Boston Society of Architects, 52 Broad St., Boston, MA 02109-4301.
- Entries to the Benedictus Award competition for architectural projects using laminated glass are due March 1, 1996. Call 202/393-5247 for information.
- Entries for the Hugh Ferriss memorial prize must be received by January 12. Call American Society of Architectural Perspectives at 617/951-1433 ext. 225 for entry form. ■



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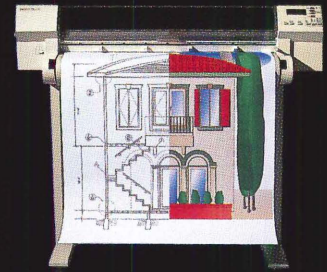
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Furniture For Your Wall.



What did your plotter keep you from today?

*U.S. list prices. E-size (shown) lists at \$7,495. Plot designed by Miriello Grafico, Inc. 11in Canada, call 1-800-387-3867, Ext. 9456. Contact us on the World Wide Web at <http://www.hp.com/info/9908> © 1995 Hewlett-Packard Company PE12575

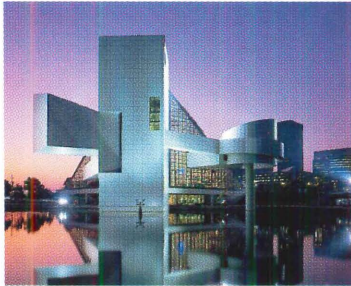


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I.M. Pei's Rock and Roll Hall of Fame and Museum (page 82).

Next month
 1996 Desktop Directory of
 Building Product Manufacturers

Also in December
 • Listing of product information
 in CAD format
 • Annual Editorial Index

Cover: The John E. Anderson Graduate School of Management at UCLA, Pei Cobb Freed & Partners, Architect Leidenfrost/Horowitz & Associates, Executive Architect ©Eric Schiller photo

Introduction 71

**Chikatsu-Asuka Historical Museum
 Osaka Prefecture, Japan 72** *Tadao Ando and Associates, Architect*

**National Corvette Museum
 Bowling Green, Kentucky 78** *Kenneth Neumann/Joel Smith & Associates, Architect*

**Rock and Roll Hall of Fame and Museum
 Cleveland, Ohio 82** *Pei Cobb Freed & Partners, Architect
 Robert P. Madison International,
 Associate Architect
 The Burdick Group, Exhibition Planning
 and Design*

**The John E. Anderson Graduate School of
 Management at UCLA
 Los Angeles, California 88** *Pei Cobb Freed & Partners, Architect
 Leidenfrost/Horowitz & Associates, Executive
 Architect*

**Building Types Study 732/Healthcare Facilities
 "Are Big Hospitals Dinosaurs?" 98** *Essay by Clifford Pearson*

**Columbus Regional Hospital
 Columbus, Indiana 100** *Robert A.M. Stern, Architects
 The Falick/Klein Partnership,
 Associate Architect*

**Pacific Medical Center Tower
 Seattle, Washington 104
 Shiprock Comprehensive Care Facility
 Shiprock, New Mexico 106** *Zimmer Gunsul Frasca Partnership, Architects
 ADP Fluor Daniel, Architects*

THE PROFESSION

Indicators 29
1996 Outlook 30 Material costs; Building Cost Index
 Dodge Construction Volume Outlook; financial,
 federal-government building, retail, and office
 building outlooks

Acoustics 36 Renovation projects by Gerald Allen & Jeffrey
 Harbinson; Belmont Freeman Architects

Software Reviews 40 ARCHI for AutoCAD; Cheap Bytes; Sure Trak
New Products/Briefs 42 Products for Healthcare

From The Publisher 9 Strategic Alliance to Serve Design and
 Construction Industry

Letters/Calendar 4
Design News 15
Books 21
Product Literature 110
Manufacturer's Sources 120

Statement of Ownership 126
Advertising Index 127
Classified Advertising 130
Reader Service Card 131

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Music Changed The Generation

The Generation Changed The World



1963 Fender Stratocaster

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As the readers of this magazine know well, it is a tremendous feeling when a project works in every respect...when there's a wonderful union of form and function...when a project is a win for all parties. That's why I'm so pleased to announce the formation of a strategic alliance between the American Institute of Architects and The McGraw-Hill Companies' Construction Information Group, parent of ARCHITECTURAL RECORD. This strategic alliance is a natural result of more than 100 years of shared commitment to the architectural community.

This new partnership will benefit the design and construction industry at large, as well as AIA members. It further mobilizes the resources of The McGraw-Hill Companies' Construction Information Group and the AIA—bringing together the world's leading provider of information services in the construction industry and the organization that represents the intellectual equity of a profession.

The new relationship includes numerous elements. Beginning in 1997, ARCHITECTURAL RECORD will be the members' magazine of the AIA. But it won't stop there. We will continue to serve as a communications link for the industry and will continue to have an audience that includes AIA members, as well as non-member architects and other design professionals. You'll see an exciting, authoritative, stimulating, relevant magazine...a forum for ideas and news...a magazine essential to your work and growth.

In addition to the magazine, you'll see awards programs that include public education; information gathering and sharing initiatives that will add value to AIA members and the industry; continuing education programs; publishing projects; and support of new and existing industry programs.

This is also good news for advertisers in ARCHITECTURAL RECORD. You have an unprecedented opportunity to communicate with the professionals vital to your business with broader reach than ever before. You can benefit from new programs and services *right now*. We're moving forward and we want you on board.

Speaking for the Institute, AIA President Chester A. Widom, FAIA, said: "This agreement will strengthen the AIA's mission to improve the competitive edge and professional competence of AIA members through a rich array of information products and services."

Stephen B. Bonner, President of the Construction Information Group, underscored the importance of the alliance: "Combining both organizations' knowledge, history, and direction will yield unsurpassed benefits to members of AIA, our valued subscribers, and the entire construction industry."

Stay tuned for great things!

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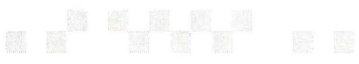


Elaine Shusterman

Elaine Shusterman



*Kenneth Walker,
FAIA, designer
of retail space.
Pioneer of inter-
active marketing.
Innovator. And
specifier of
carpet made of
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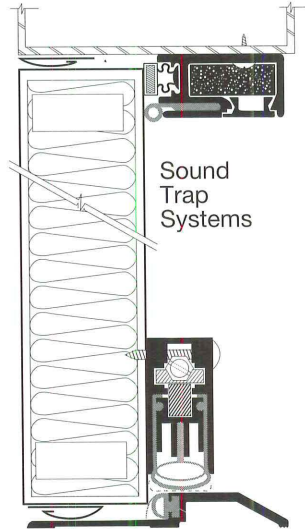
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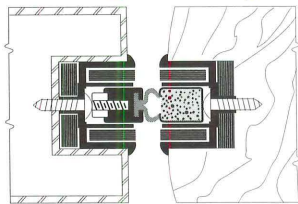
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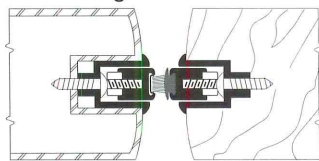


Traction Tread Saddles



Adjustable Head & Jamb Seals

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- Air Stop Systems
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- Smoke Stop Systems
- Sound Control Systems
- Weather Block Systems
- Handicap Accessible Systems
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INTUMESCENT

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- Pourable Material

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- Continuous Hinges
- Continuous Knuckle Hinges
- Cam Lift Hinges

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- Rabbeted
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- Sound
- Thermal Break
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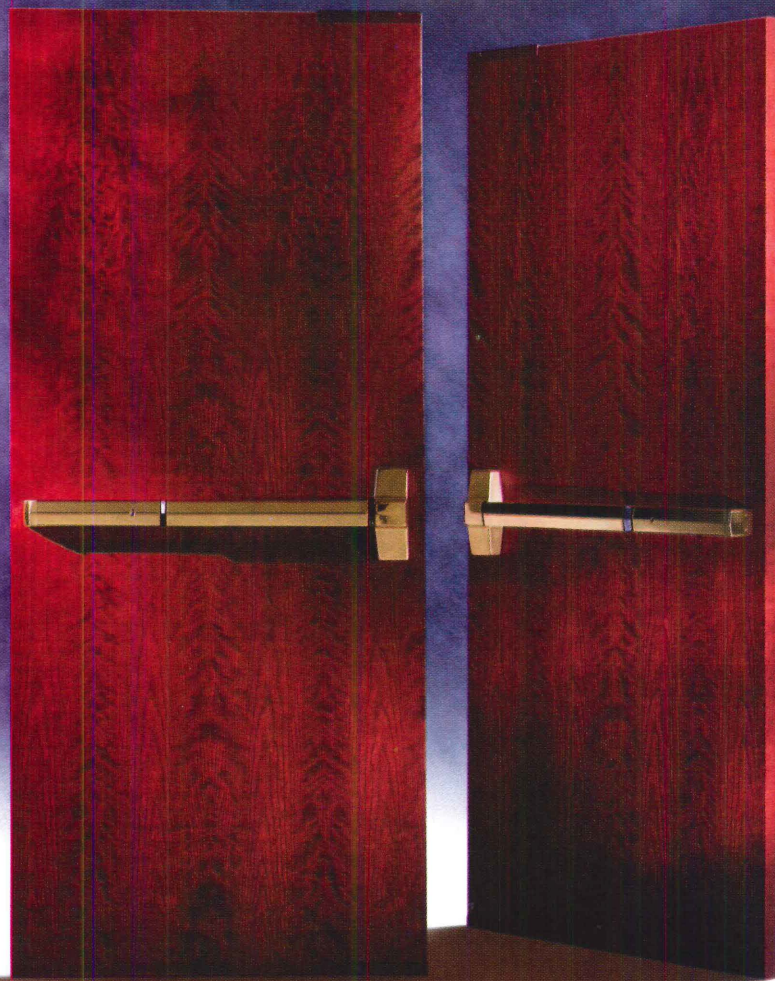


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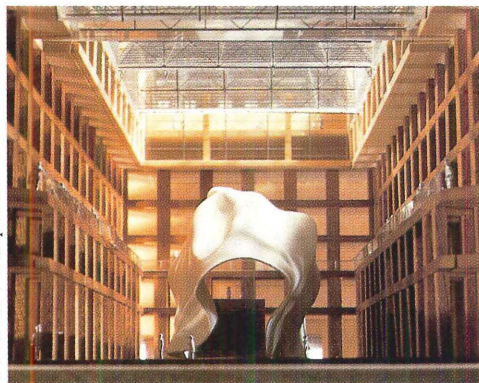
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Berlin

Frank Gehry's Berlin Stories Unfold. And It Looks Like A Happy Ending



© Joshua White photo

After a disappointing loss in a 1993 competition to add to the Berlin State Museums, Frank Gehry has won his first project in the German city: a commission to design a seven-story office tower on the Pariserplatz, near the Brandenburg Gate. Gehry's building conforms to the city's tight site restrictions: a cornice line is maintained around the square, and the straightforward facade is sheathed in a limestone that nearly matches the Brandenburg Gate. The structure rises to 10 stories in back, where 40 apartments are located. The building's more dramatic

moments are found inside (photo), where a vast atrium contains a sculptural 100-seat auditorium that connects to an underground convention center, a glass dome, and a new oak tree. The dome tops a subterranean banking floor. Other major projects planned for the square include the United States Embassy, the French Embassy, and a variety of office buildings for what will become the heart of Berlin's new diplomatic zone. The city has already completed the reconstruction of the square's paving and gardens. *Nicolai Ourousoff*

Florida

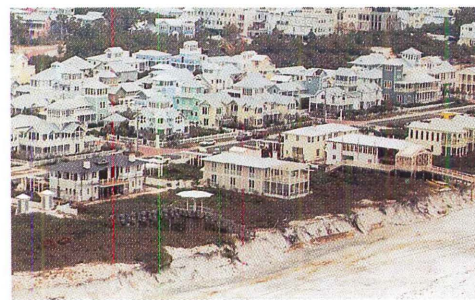
Seaside Stands Firm as Hurricane Opal Wipes Out Stretches of Florida's Panhandle

"You see piles of rubble," says Donna M. Dannels, of the Federal Emergency Management Agency (FEMA). "A lot of the structures that were elevated had incredible sand erosion underneath and were damaged." Dannels, deputy federal coordinating officer for mitigation, was commenting on the damage wrought by Hurricane Opal as winds and a 15- to 20-ft-high storm surge swept a 100-mile stretch of the Florida panhandle between Pensacola and Panama City. In the center of the swath is Seaside, the prototype traditional community developed by Robert Davis and master-planned by architects Duany and Plater-Zyberk. "It's a pretty stark contrast," notes Dannels. Seaside was protected from towering waves, and sustained only minor wind damage.

Why did Seaside come through nearly unscathed? "They protected the dunes, and the dunes protected them," says Dannels. Davis credits Florida officials for convincing him to locate the town behind the 100-ft-wide dune. (It's now 50-ft-wide.) But Seaside did more. "Before the state went to a 150-mph wind-load standard [after Hurricane Andrew], we

required people to effectively meet it," he explains. "Pilings went from a minimum 6-ft depth to 12 ft. Buildings were tied from top to bottom." Materials that didn't have sufficient track record in Davis's view weren't used: hardboard, vinyl, and oriented strand-board siding. "If it didn't exist before 1940, we didn't feel it was proven," he says.

According to Richard Dixon, director of the Florida Department of Community Affairs' building codes/standards office, any houses seaward of the state's Coastal Construction Control Line can only be rebuilt with the approval of the governor and the cabinet. As of now, officials aren't contemplating regulation changes. Reconstructed buildings will likely have to meet the 150-mph standard and be raised on pilings, but such improvements are often not covered by homeowners insurance. Some commented that Seaside did so well because it is an affluent community that could afford to take precautions. Davis replies, "It seems penny-wise and pound foolish that you would begrudge the extra five or 10 percent to build to the wind load for a high-hazard area such as this." *J.S.R.*



© AP photos

Waves up to 20-ft-high demolished ocean-front homes in Mexico Beach, Fla (top). Only a few miles away, Seaside (bottom), set behind a 100-ft-wide dune, sustained only minor wind damage.

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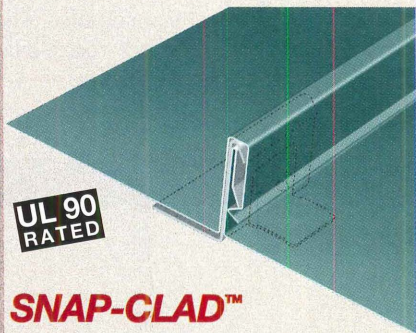
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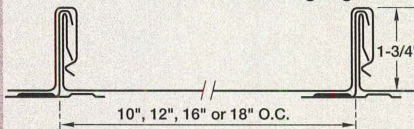
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Spanish City Transforms Itself With World-Class Architecture



That “old Bilbao moon” that Kurt Weil and Bertold Brecht immortalized in their Berlin songs still shines over this ancient port in northern Spain’s Basque Country. The city of shipyards, however, is changing radically to a business and cultural center. To commemorate its 700th birthday in 2000, Bilbao has embarked on a major redevelopment involving international and national architects in buildings, urban design, and infrastructure. While an exhibit by Dennis Sharp last spring at the Royal Festival Hall in London gave the outside world a glimmer of what’s going on, the best testimony so far to the city’s vision is the Guggenheim Museum Bilbao, by Frank Gehry, which already is drawing the art world to the region. And it’s not even finished. The 256,000-sq-ft structure (1), a sculptural extravaganza in a carapace of soft gray titanium and amber limestone, opens in the summer of 1997.

According to the agreement, Basque authorities are paying for the \$100-million facility, while the Guggenheim is providing the art; a joint board will oversee its operation. The region has been seeking foreign investment, anticipating fallout from the creation of the European Economic Community, and such a museum adds to its touristic appeal. With its 13-story-high atrium and galleries of various spectacular shapes and sizes overlooking the Nervion River—not to mention the Guggenheim’s impressive resources—the museum should do much to deliver the goods.

Other projects in construction include:
 • A footbridge over the river by Santiago Calatrava. Scheduled for a late spring com-

pletion, it spans almost 240 feet. Looking like it’s ready for grander things than mere pedestrian traffic, the bridge is dominated by a high ribbed-steel arch. The actual walkway is composed of steel ribs supporting glass blocks. Lighting, placed within the steel ribs, should give it an eerie translucence at night.
 • The Sarriko Metro station, part of the first phase of the city’s underground (3), by Sir Norman Foster, who won a competition to design 10 stations of an expanded system.

Projects planned to start construction in the next few years include:

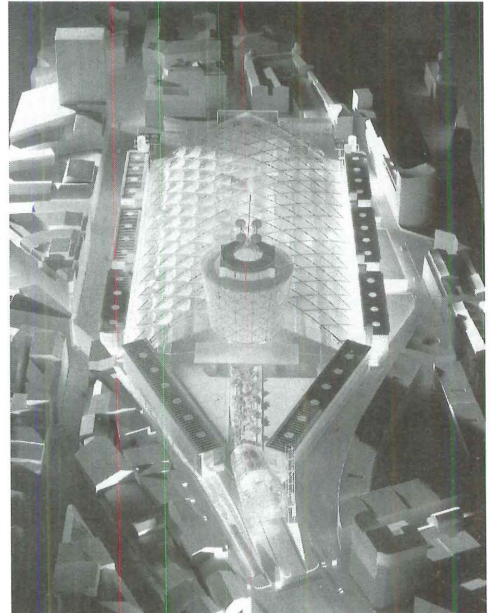
- The Abando Passenger Interchange (2) by Michael Wilford and Partners (successor to James Stirling Michael Wilford and Associates). Scheduled to begin construction in 1996, this transportation hub is a ship-like behemoth located across the river from the restored Arriago Municipal Theater. It will contain a bus station, two railway stations, and other amenities.
- Sondica Airport’s new terminal (4) by Calatrava—a concrete structure with a steel-ribbed roof—is an Eero Saarinen-like abstract bird. Construction start is not set.
- Master plan of Abandoibarra business center in the former port’s heart, by Cesar Pelli & Associates, Balmori Associates, and Eugenio Aguinaga, of Bilbao, which calls for two office towers, residential and retail facilities, a hotel, and a library. Part of the city’s master plan, it depends on public and private investment for implementation.
- Other projects include a conference and music center by Federico Soriano and Dolores Palacios, of Madrid, and a cultural center and municipal center by Elías Más and Blanca Brea, city architects for Bilbao.

Many of these projects involved competitions (Gehry won out over Coop Himmelblau and Arata Isozaki; Pelli over Ricardo Bofill), and numerous government agencies separately made decisions. The Bizkaia Provincial Government is in charge of Wilford’s scheme; the airport agency commissioned Calatrava; the Bilbao City Hall initiated Pelli’s project; and the Basque government’s department of transportation and public works is overseeing Foster. All the separate interests kept the selection process at an astoundingly high level. And now the world awaits the outcome.
Suzanne Stephens

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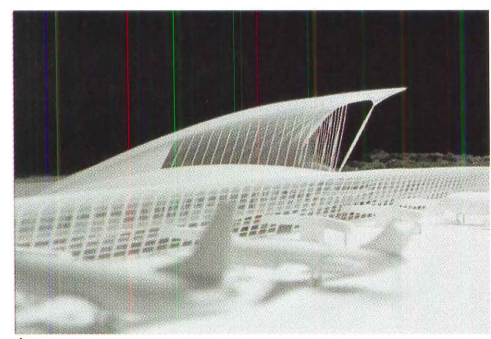


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Briefs

Gluckman to redo Whitney Museum

Richard Gluckman Architects recently presented its plan to renovate and expand the Whitney Museum of American Art in New York City, originally designed by Marcel Breuer. Gluckman is best known for his pared-down approach to galleries and other venues for high-powered art, including the Andy Warhol Museum in Pittsburgh [RECORD, September 1994, pages 74-79]. The Whitney Museum's top floor, currently used for curatorial and administrative offices, will be converted into 8,500 sq ft of exhibition space for its permanent collection of 20th-century art. The fourth-floor mezzanine will become a gallery for works on paper. Museum staff will be relocated to renovated townhouses, located directly south of the Breuer building. Unlike the controversial (and more costly) Michael Graves schemes of the 1980s, this \$14-million renovation will not change the exterior of the Breuer building.

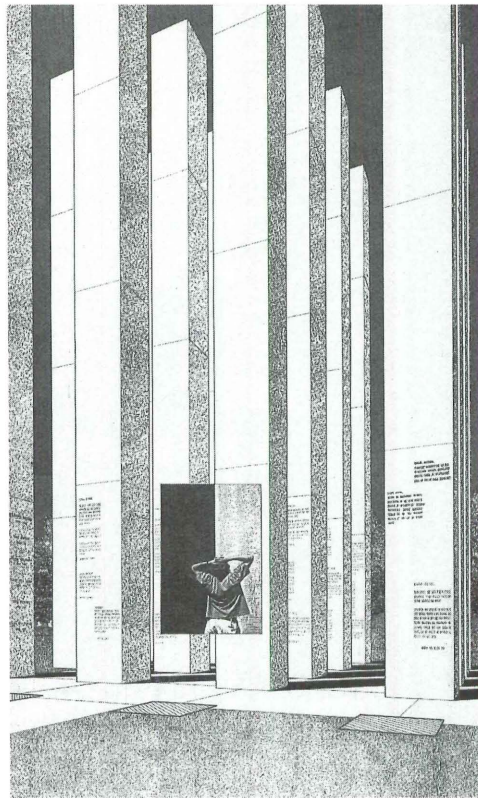
Armstrong gets award for quality

Armstrong World Industries' Building Products Operations, maker of acoustical ceilings, is a winner of the 1995 Malcolm Baldrige National Quality Award for business excellence. Named for a former Secretary of Commerce, the award was established by Congress in 1987 to "recognize significant quality achievements of U.S. companies." Criteria used in evaluating nominated companies are: leadership, information and analysis, strategic planning, human-resource development and management, process management, business results, and customer focus and satisfaction.

Paul Newman gets help from his friends

Following the success of his Hole in the Wall Gang Camp in Connecticut, designed for children with life-threatening diseases [RECORD, January 1989, pages 86-91], actor and philanthropist Paul Newman has taken his act on the road, to Winterpark, Fla., thanks to friends General H. Norman Schwarzkopf, and businessman Ted Forstmann, co-founders of The Boggy Creek Camp. A 232-acre site north of Orlando was provided by the Walt Disney Memorial Cancer Institute at Florida Hospital, and Ellerbe Becket is contributing a master plan; some 70 other firms are also donating services. The camp will begin to accept campers between 7 and 17 years old free of charge next year. ■

Architects Pay Tribute to Veterans With a Field of Pillars



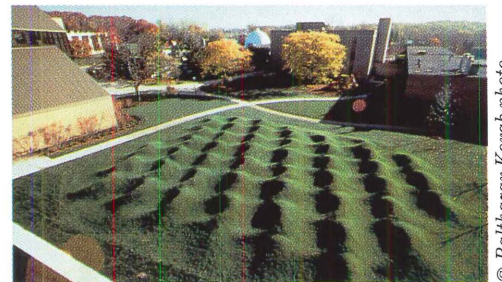
Thompson and Rose Architects' Bartholomew County Veterans' Memorial is intended as a journey through a memory-filled field. The Cambridge, Mass.-based architectural firm, in collaboration with landscape architect Michael Van Valkenburgh, has designed two contrasting worlds alongside the county courthouse in south-central Indiana: a haunting labyrinth of towering 40-ft-high pillars will stand amid a serene field of rustling trees.

The scheme depicts the 25 limestone pillars arranged in a dense grid. As you approach them, they appear blank: rough-cut and unmarked. Once you enter into this new "grove," however, the inner surfaces of the pillars are inscribed with the names of the 156 soldiers from Bartholomew County who died during wars of this century. As you reach the center of the memorial, material on view becomes increasingly intimate: personal letters, journal entries, and relevant newspaper clippings will be engraved on the smooth surfaces. Local residents will contribute text to the memorial, which will be lit at night. *N. O.*

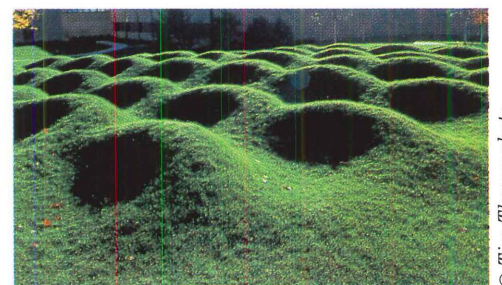
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Maya Lin Does the Wave

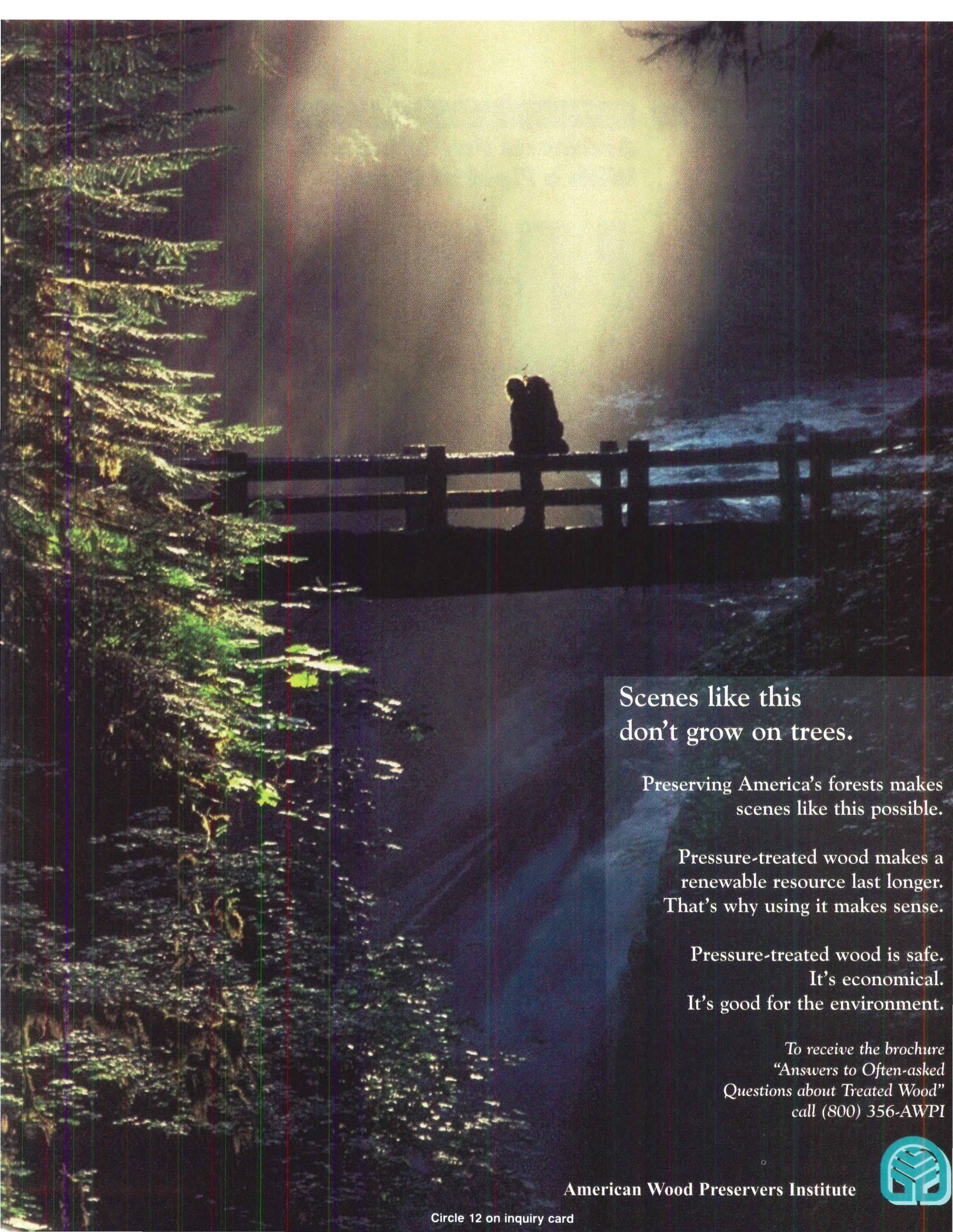
Maya Lin is known as an architect, artist, and monument-maker. But confusion over her professional identity actually speaks to the breadth of her work. At the University of Michigan's School of Engineering, she has shaped a 8,100-sq-ft blanket of grass into precise rows of undulating mounds. Be it art or architecture, "The Wave Field" is meant for students, who can weave across the lawn or rest against the forms. The project is a memorial to François-Xavier Bagnoud, a helicopter pilot who died in a 1986 crash in Mali; he was a graduate of the school. Lin took cues from a book on fluid dynamics, where, she says, she discovered images of highly regulated, three-dimensional wave patterns. Landscape architect Johnson and Roy and landscape contractor Cannon Russeau collaborated on the project, which was dedicated last month. *N.O.*



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A romantic scene of a couple embracing on a wooden bridge over a river at sunset. The sun is low on the horizon, creating a warm, golden glow. The bridge is made of dark wood and has a simple railing. The river flows beneath the bridge, and the surrounding forest is visible on the left side of the frame.

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The Life and Near Death of a Great American City

New York 1960: Architecture and Urbanism Between the Second World War and the Bicentennial, by Robert A.M. Stern, Thomas Mellins, and David Fishman. New York: Monacelli, 1995, 1,376 pages, \$125.

Reviewed by Jeffrey Kroessler

New York 1960 is a cross between an encyclopedia and *Moby Dick*. The work is exhaustive, but it is never tedious, even when a chapter describes one banal building after another. Like Melville's masterpiece, *New York 1960* draws the reader in through the wealth of detail and the inherent drama of the tale. Powerful, influential, and eccentric figures stride or slink across the page: Robert Moses and Jane Jacobs, Robert Wagner and John Lindsay, Philip Johnson, William Zeckendorf, and Lewis Mumford.

Peppered with heroes and villains, the story is replete with tales of honor and intrigue, brilliance and outright stupidity. This unrivaled history of New York chronicles the city from its pinnacle as the capital of the American century to its near bankruptcy and political impotence in the 1970s.

Assessing the period, the authors state unequivocally that there was a "decline of esthetic and tectonic quality in postwar buildings." One of the more frightening episodes was the 1956 proposal to demolish Carnegie Hall and replace it with a 44-story tower "to be sheathed in a checkerboard pattern of gold-tinted windows, trimmed in low-luster, gold-anodized aluminum, alternating with vermilion porcelain spandrels." The image is almost pornographic. Beyond an analysis of postwar trends in planning and architecture, the authors ask how the city could have permitted the demolition of its historic monuments: Pennsylvania Station, the Singer Building, the Metropolitan Opera House, and Manhattan's mansions. How could New Yorkers have betrayed the triumphant urbanism that made the city a global icon in favor of severe Modernism, pale suburban values, and plastic pastiche?

Jeffrey Kroessler teaches history at Long Island University and is co-author of Historic Preservation in Queens.



Two views of N.Y.: Lower Manhattan on the rise (left) and the 1964 World's Fair (right).

It was as if New York, at the very moment it enjoyed international preeminence in economics, culture, and politics, abdicated the throne. Cities were suddenly and surprisingly out of fashion. Not until Jane Jacobs published *The Death and Life of Great American Cities* in 1961 did America begin to rediscover the richness of urban life.

New York 1960 is more than an inventory of postwar architecture, although it is certainly the place to start for questions on that topic. It is also a solid work of urban history and a strong defense of urbanism. Stern, Mellins, and Fishman identify the causes of the city's transformation and explore the political and economic influences: the 1961 zoning resolution that encouraged oversized towers through the now-discredited plaza bonus; the creation of the Landmarks Preservation Commission in 1965; the rise of the service economy, a trend noted as early as 1956 when there were still hundreds of thousands of manufacturing jobs in the region; the federal highway program and the changing dynamic between the city and the automobile; and the suburbanization of work, residence, shopping, and, unfortunately, taste.

Beyond the demolition of architectural treasures, the city also exhibited a loss of nerve as its financial base weakened and its dependence on federal and state aid increased.

With an almost incredulous tone, the authors chronicle the failure to build the Second Avenue Subway and a replacement for the crumbling West Side Highway, and lambast postwar public-housing projects with their sterile open spaces. The comparison with the prewar metropolis is not flattering.

The one opportunity to celebrate postwar achievements and taste was the 1964 World's Fair, but that event was almost universally panned at the time. The chapter on the fair is the most insightful appraisal of its planning, design, and influence to be found anywhere.

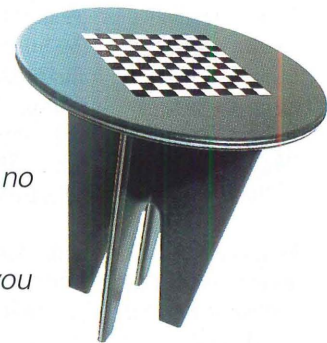
Despite the comprehensive nature of this work, a crucial question remains. If we are not to preserve the city as an architectural mausoleum or transform it into a Modernist nightmare of Corbusier-inspired towers, how is New York to prosper and continue its tradition of triumphant architecture and public works? The answer may be that the rest of the country has caught up with New York, and that technology has rendered the concept of a single, dominant metropolis obsolete. But other factors are at work. The authors describe how Manhattan department stores opened new branches in the suburbs in the '50s and '60s. Today the city has become just another market for megastores. In other words, New York is no longer a colonizer, but just another retail colony. ■



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An Inquiry and an Elegy

Streets: Critical Perspectives on Public Space, edited by Zeynep Çelik, Diane Favro, and Richard Ingersoll. Berkeley: University of California Press, 1994, 294 pages, \$40.

The Grand American Avenue: 1850-1920, edited by Jan Cigliano and Sarah Bradford Landau. San Francisco: Pomegranate Artbooks, with The Octagon, The Museum of the American Architectural Foundation, 1994, 389 pages, \$45 (\$30, paper).

Reviewed by Nancy Levinson

Streets: Critical Perspectives on Public Space, is a compilation of 21 critical essays dedicated to the memory of the renowned architectural historian Spiro Kostof, who died in 1991. Ambitious in scope, the volume provides what might be called a scholar's tour of great thoroughfares across the globe and through the ages, including the main street of ancient Ephesus, skid row in early 20th-century San Francisco, the commercial districts of Kaifeng and Yangzhou in China between the sixth and 12th centuries, and the levee along the Mississippi in New Orleans. The book begins briskly, with an essay by Kostof himself. A discussion of the intentions and consequences of large-scale demolition used as a tool of urban design, this essay is animated by the historical breadth and moral passion that characterize other Kostof works such as *The City Shaped*.

Unfortunately, few of the essays that follow, most written by former students of Kostof, achieve the standard set by the teacher. To be sure, some are quite good, especially Zeynep Çelik's pointed account of the sanitizing process by which Sogukçesme Street in Istanbul was turned into an "urban theme park", Greg Castillo's perspective on Stalinist efforts to make Gorki Street in Moscow an exemplary Soviet avenue, Richard Longstreth's look at the early development of Silver Spring, Maryland, as a suburban shopping district, and Marc Treib's interesting study of the multi-level commercial arcade underneath the Umeda Station in Osaka.

But generally the chapters here display more diligence than inspiration, more painstaking aggregation of detail than vigorous point of view. Thoroughly respectable, thoughtfully illustrated, and carefully written products of



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Prairie Avenue in Chicago in 1887 (top) and Wilshire Boulevard in the 1930s (above).

scholarship, they lack the sense of urgency that distinguishes powerful works of history—the kind of urgency that results when the scholar dares to make the intuitive leap, the brilliant synthesis, and thus has something important and original to say. Given the affection with which this book was conceived, and the care with which it was compiled, this seems especially regrettable.

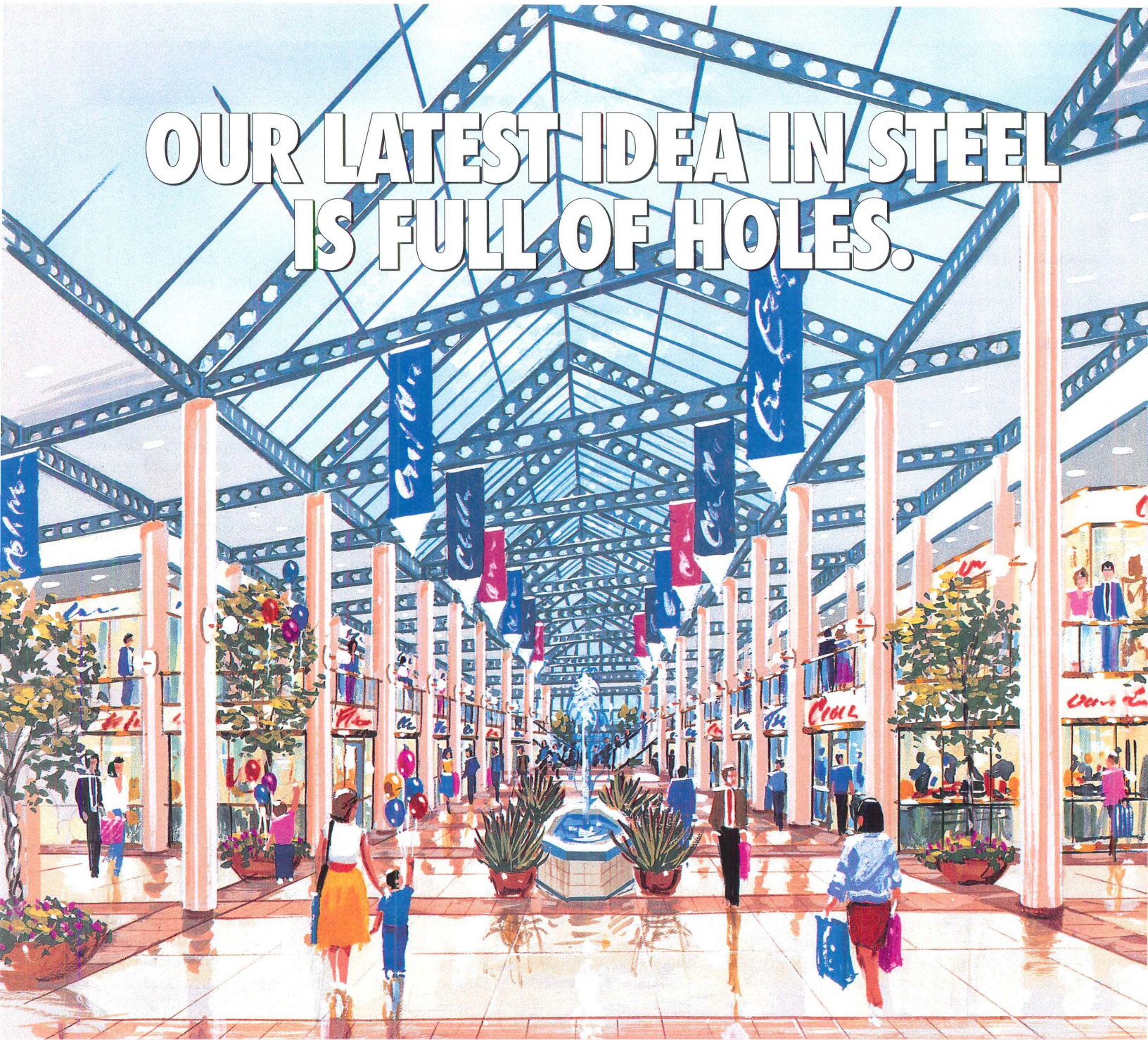
Another omnibus volume on a similar theme, *The Grand American Avenue: 1850-1920*, is the literary accompaniment to a recent exhibition organized by the American Architectural Foundation. Through essays and images, it charts the spectacular development and dramatic (and often disastrous) transformations of 12 streets that epitomized American wealth and power—or, depending on your viewpoint, greed and rapacity—during our Gilded Age. These include such world-famous avenues as Fifth in New York and Wilshire Boulevard in Los Angeles, and ones of regional prominence, such as Kansas City's Ward Parkway, Vandeventer Place in St. Louis, and Broadway in Galveston, Tex.

As in *Streets*, the essays in *Avenue* tend, at times, to lapse into recitations of research, unenlivened by any compelling or particular perspective. With their dutiful, block-by-block detailing of ownership and architectural histories, parts of some chapters read like painfully inflated versions of National Trust pocket guidebooks. Happily, though, other chronicles are often lively and interesting, offering social as well as architectural history. The excesses of the pre-income-tax plutocracy have long fascinated Americans. Little wonder: it's weirdly interesting to read, in Mary Alice Molloy's acerbic account of Chicago's Prairie Avenue, that at the Marshall Fields' 1885 Mikado Ball, given for their children, the party favors were designed by James McNeill Whistler. It's equally entertaining to learn that John D. Rockefeller's Italianate house on Cleveland's Euclid Avenue was, after the founder of Standard Oil died in 1937, sold and razed, whereupon the site was redeveloped as a gas station.

Just as important as the essays are the images—the drawings and, especially, the well-reproduced period photographs. Many of these show the grand houses, most long-since demolished, increasing madly in scale as the 19th century progresses; thus we observe the relatively modest Gothic-style villas of mid-century give way to the colossal, eclectic castles of the '90s. Even more intriguing are the images that capture process—both development and decay. An 1870 photograph shows mid-Manhattan as a still-open landscape of muddy fields and building sites; an image from 1958 portrays the demolition of a massive Federal-style house by McKim, Mead & White; a recent aerial shot illustrates the on-going decline of Woodward Avenue in Detroit, its prosperous residences and well-tended landscapes replaced by discount stores and now-struggling factories.

In a way, the whole book is an elegy, a memorial to places Americans no longer create. Today the very rich rarely build their fancy houses on major public thoroughfares. And if we do not regret the passing of the social and architectural environment that inspired Thorstein Veblen to coin the term "conspicuous consumption," we might remind ourselves that these avenues were—and some still are—vital parts of their cities. ■

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Oscar Niemeyer and the Architecture of Brazil, by David Underwood. New York: Rizzoli, 1994, 223 pages, \$60, \$35 (paper)

Reviewed by Katherine Kai-sun Chia

The written history of Modernism has long focused on the achievements of architects in the United States and Europe, overlooking their South American counterparts who were involved in the movement and who built a great deal. *Oscar Niemeyer and the Architecture of Brazil* confronts that bias by taking a thoughtful look at one of the great Brazilian Modernists whose formative years helped change a nation's design ideology.

David Underwood's approach in this book is to review Niemeyer's projects—built and unbuilt, local and international—and then set them in the context of the architect's stylistic evolution and the socio-political framework of Brazil. The discussion becomes more complex as the author reveals the ironies and paradoxes between Modernist utopian principles and a highly stratified society. In art and architecture, as in all other fields in Brazil, the masses were expected to defer to elite patrons and their artists who would produce "architectural and urban projects that involve social edification, political indoctrination, popular co-optation, or cultural creation," writes Underwood. Usually, these projects aimed to "change history through a ground-breaking work of monumental proportions, usually carried out with public funds and completed in record time..." Despite being an outspoken Communist sensitive to the plight of the masses, Niemeyer was a beneficiary of this elite patronage system that built monuments for the ambitious and the powerful.

Niemeyer, who will turn 87 this year, never gave up on Modernism. As a young draftsman, he was influenced by a six-week visit by Le Corbusier to Rio de Janeiro in 1936 to consult on the design of the Ministry of Education and Health Building. Niemeyer, a member of the design team, was devoted to the principles of the European master. He skillfully adapted Le Corbusier's five points

Katherine Kai-sun Chia is an architect and principal of Desai/Chia Studio in New York.

(pilotis, roof garden, ramps, ribbon windows, and open plan) in all of his early work.

Yet he was also committed to "Brazilianizing" Modernism: He inherited the same philosophy as his Brazilian mentor, architect Lucio Costas, who revered the baroque architecture of colonial Brazil (which he saw as truly Brazilian), while also hailing Le Corbusier's *Vers Une Architecture* as the scripture of Modern architecture. Niemeyer was also interested in the organic, sensual, and even sexual imagery of the physical geography of Brazil and its women. His motto was "Form follows feminine."

Niemeyer's tug-of-war with this "Corbusian-Brazilian dialectic" emerges throughout the book as an unresolved struggle. His architecture championed the organic topography of Brazil yet expressed itself in vast cold places of reinforced concrete. Underwood's analysis of Niemeyer's own house of 1942 in Rio shows how the architect tried to incorporate the *favelas* (hill-town shanties) of his native city into a Modernist framework. The goal was to convey "a sense of social solidarity or unity across the classes," even though the house stood in "the realm of high Modernist art for the elite."

A significant portion of the book is devoted to Niemeyer's largest and most controversial contribution to Modernism and Brazil: the development of the inland capital of Brasilia. Photographs of the city center reveal grand but scaleless archi-sculptures set in vast, paved fields. While trying to neutralize class categories through his architecture, Niemeyer ended up reinforcing them. Although Brasilia continues to be categorized as failed civic architecture by many architects, it is, as Underwood states, "the most refined vision of the Modernist utopia to take actual form."

The strength of Underwood's analysis lies in his ability to contrast Niemeyer's achievements as an international champion of Modernism (as seen in his work on the United Nations building in New York) with his unsuccessful struggle to develop an architectural language that transcends class divisions in Brazilian society. Photographs in this book illustrate Niemeyer's life-long search for innovation in architectural form. ■

New Directions in Hospital and Healthcare Facility Design, by Richard L. Miller and Earl S. Swensson. New York: McGraw-Hill, 1995, 349 pages, \$75.

An excellent overview of healthcare design, this book addresses such important topics as how the design of healthcare facilities must reflect changes in the healthcare market and how to make "yesterday's hospitals work today." Individual chapters examine the design of emergency rooms, diagnostic-imaging units, surgery facilities, critical-care units, patient-care areas, ambulatory-care and professional offices, and women's health and pediatrics centers.

Innovations in Healthcare Design, edited by Sara O. Marberry. New York: Van Nostrand Reinhold, 1995, 306 pages, \$60.

A collection of presentations from the first five years of the National Symposium on Healthcare Design, starting with 1986, this book speaks with many voices—which is both its strength and its weakness. The articles are organized into loose-fitting categories such as "new possibilities" and "patient-focused care," as well as more focused ones such as pediatrics and long-term care.

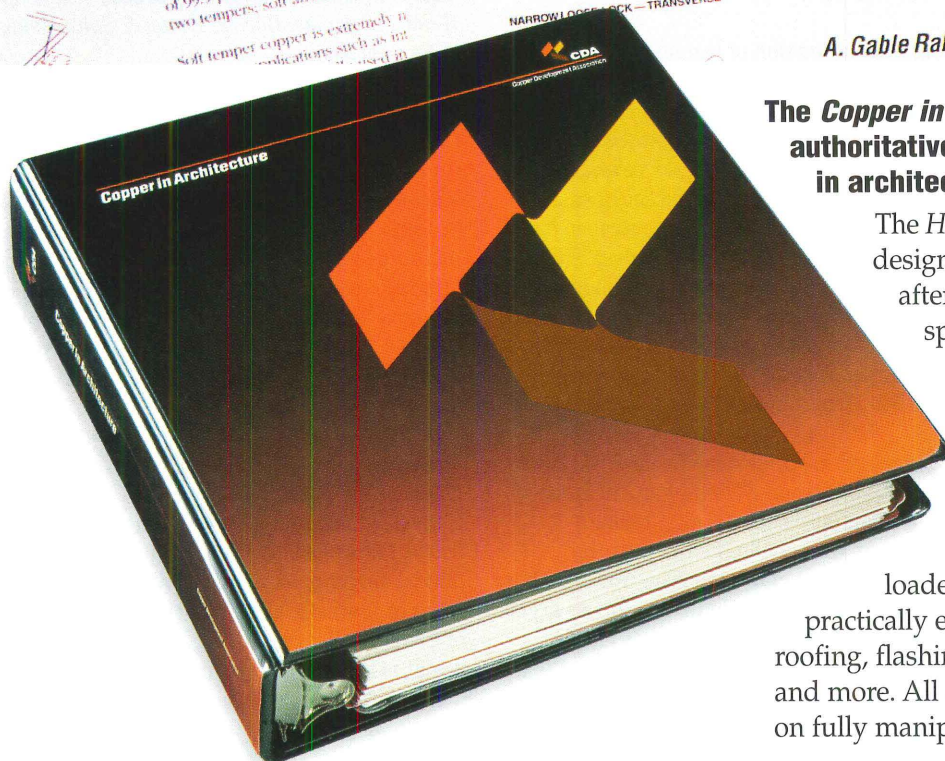
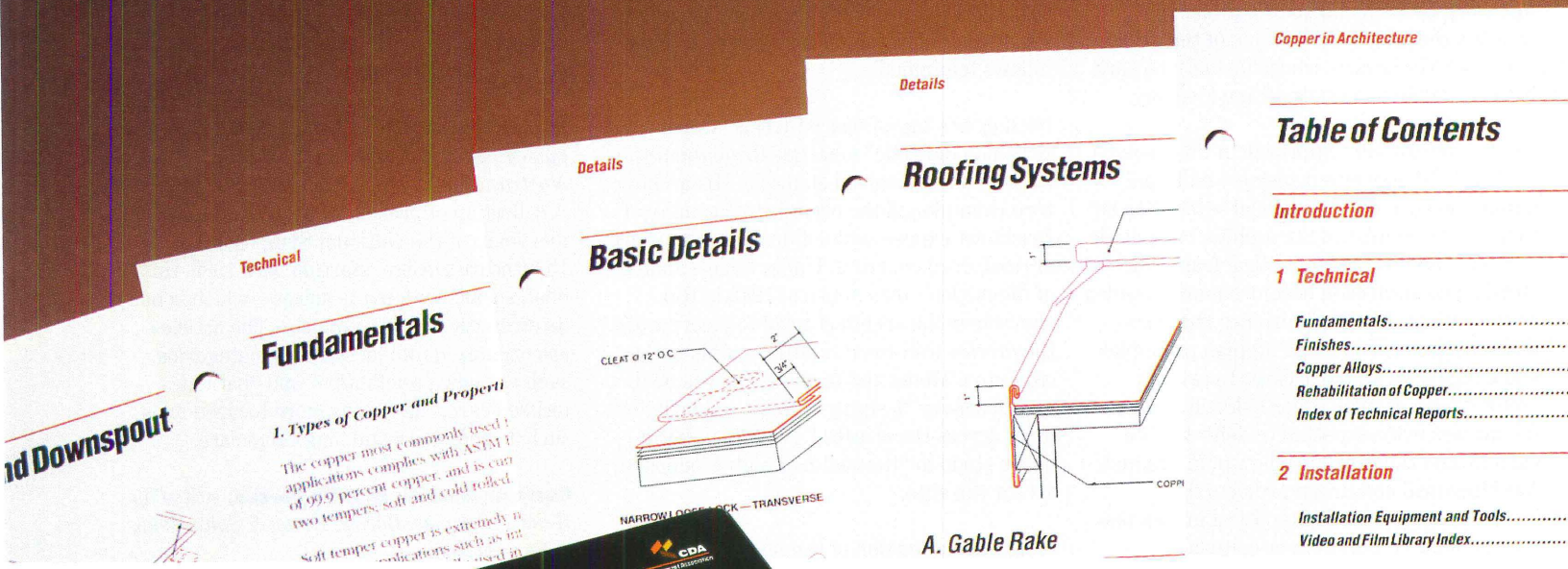
Ben van Berkel: Mobile Forces, edited by Kristin Feireiss. Berlin: Ernst & Sohn, 1995, 240 pages, \$60.

A rising star among Dutch architects, Ben van Berkel has grabbed international attention with his Erasmus Bridge in Rotterdam (to be completed next year), his building for Karbouw Contractors in Amersfoort (finished in 1992), and his transformation of the Acom building in Amersfoort (now on exhibit in the "Light Construction" show at the Museum of Modern Art in New York). This monograph includes 23 buildings and projects and four essays by van Berkel and his partner Caroline Bos.

Architectures in Love, by John Hejduk. New York: Rizzoli, 1995, 72 pages, \$35.

Convalescing from a serious illness, Hejduk, dean of Cooper Union's architecture school, filled a sketchbook with drawings and collages of fantastic buildings that explore ideas of gender, spirituality, love, and death. The result is this wonderful little book that delights the eye while mining some deep veins of architectural mystery.

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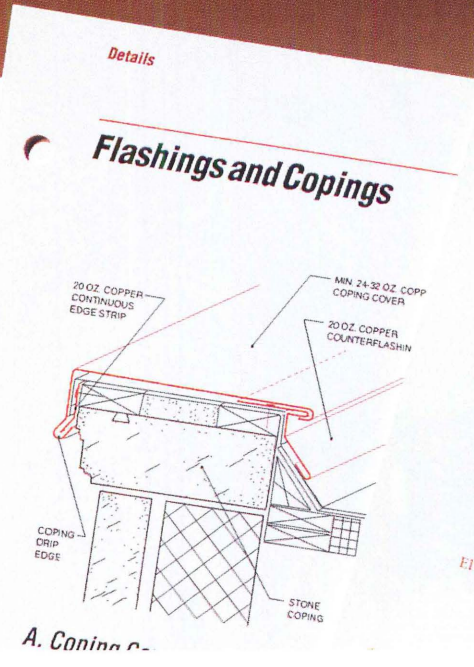
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Section 07612/Sheet Copp

THIS SECTION USES THE TERM "ARCHITECT" FOR THE ACTUAL TERM USED TO IDENTIFY THE PROFESSIONAL AND SUPPLEMENTARY CONDITIONS.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Division 1 Specification Sections

1.2 SUMMARY

A. This Section includes the following:

EDIT LIST BELOW TO SUIT PROJECT.

1. Flat-seam copings

Standing Seam Roof Panel Test

Report Number: C.C.L. Performance Test Report #90-1056
Report Date: 1 February 1991 Revised: 7 March 1991

Introduction

A Mock-Up Test Specimen consisted of a 16 oz copper, cold rolled temper, 1" high standing seam roof section, sloped to a 4" in 12" pitch. The specimen was tested in accordance with SMACNA Roof Panel Test clarifications at the direction of SMACNA. The following text is an abbreviated description of testing procedures.

Air Exfiltration Test per AIA

exterior face of the specimen was impervious visqueen material. The exterior face and specimen were sealed to allow no air movement. The exterior face and specimen were subjected to a negative static pressure of 5.20 p.s.f. The measurement was through the chamber. The measurement was impervious.

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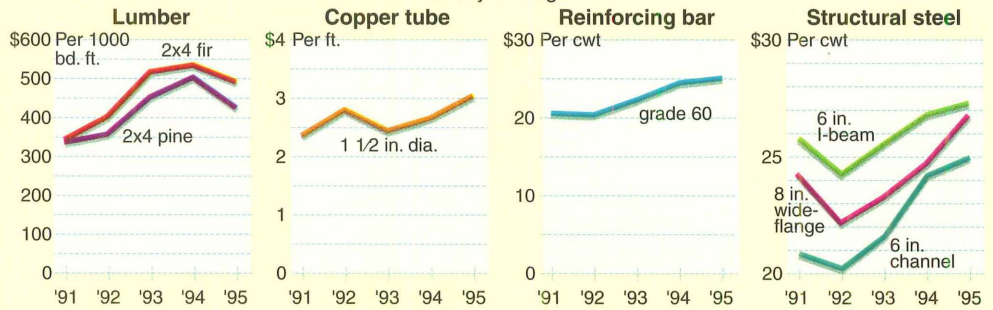
Indicators

Spot shortages in materials, labor

Growing highway and non-residential construction has spurred spot shortages of some commodities in recent months. Suppliers are seeing annual price hikes of 15.5 percent for asphalt, 26 percent for copper water tubing, 23 percent for aluminum sheet, and 16.6 percent for stainless-steel plate, reports ENR. Some rises may not hold, as infrastructure work is expected to slip next year. Skilled workers are also increasingly in demand, but labor-rate increases have held around 3 percent. ■

Prices of Selected Commodities

20-city average



Source: ENR Construction Economics Dept.

Figures for 1995 as of late September

Cities' cost rises still in check

In most metro areas, building costs are well below inflation. The reason is that overall construction-volume increases remain modest (see report following pages), taking the steam out of spot shortages (above). There are variations, however. Prices are sharply lower in Atlanta, as Olympics-oriented construction nears completion. New Orleans and Kansas City have not seen significant growth, though much of the rest of the Midwest has. The rises in San Francisco, New York City, and Philadelphia are making up for discounting that plagued these cities, since they are in regions that lagged improvement in the overall economy. Labor costs have stayed quiescent as unemployment fears outweigh concern over wage stagnation. Also declining construction sectors are taking the inflationary steam out of expanding ones. Non-residential work is growing, but from a small base, and housing is growing, but not at a blistering pace. At the same time, health-care and infrastructure are slipping. ■

Building Cost Indexes

	12/1990	12/1991	12/1992	12/93	12/94	6/95	10/95	% change from 6/95	% change from 10/94
Atlanta	2238.80	2278.83	2404.75	2477.13	2480.55	2445.34	2377.70	-2.3	-5.6
Baltimore	2579.90	2508.06	2607.76	2673.24	2830.66	2843.05	2889.09	+1.6	+1.5
Birmingham	2149.96	2189.75	2279.26	2352.15	2439.28	2501.36	2500.51	-0.1	+1.3
Boston	3110.03	3102.31	3355.57	3539.63	3601.94	3493.95	3538.92	+1.3	-1.8
Chicago	2893.6	3034.72	3162.99	3325.70	3415.62	3418.52	3490.03	+2.1	+1.3
Cincinnati	2638.73	2674.15	2817.16	2920.20	3001.15	2923.77	2935.02	+0.4	-1.9
Cleveland	2886.93	2903.81	2903.1	3088.76	3218.65	3225.56	3259.99	+1.1	-0.6
Dallas	2061.61	2215.88	2278.21	2307.62	2448.62	2466.77	2429.60	-1.5	-0.9
Denver	2321.28	2375.26	2438.39	2501.00	2608.72	2571.02	2567.68	-0.1	-1.9
Detroit	2974.47	3046.92	3136.74	3278.20	3424.95	3392.36	3465.60	+2.2	+1.7
Kansas City	2645.28	2637.20	2677.21	2873.20	2916.25	2902.18	2889.17	-0.4	-0.9
Los Angeles	3020.51	3097.83	3198.66	3359.03	3420.42	3416.90	3443.97	+0.8	+0.2
Minneapolis	2648.43	2711.5	2811.14	2989.48	3131.05	3071.39	3086.00	+0.5	-2.3
New Orleans	2220.20	2260.52	2360.24	2330.86	2469.21	2474.83	2442.50	-1.3	-1.7
New York	3847.21	3997.91	4151.28	4343.76	4458.36	4518.48	4559.62	+0.9	+2.4
Philadelphia	3040.85	3169.81	3130.58	3532.34	3480.78	3504.04	3563.18	+1.7	+2.1
Pittsburgh	2717.08	2807.73	2954.64	3038.97	3218.37	3183.21	3277.04	+2.9	+1.4
St. Louis	2602.16	2686.93	2743.01	2840.58	3091.81	3011.18	3067.14	+1.9	+3.3
San Francisco	3245.04	3270.90	3298.09	3463.34	3519.17	3531.80	3579.79	+1.4	+1.2
Seattle	2552.58	2715.04	2787.74	2948.18	3024.48	3005.51	3043.52	+1.3	-0.7
20-City avg.	2702	2751	2834	3009	3110	3095	3117	+0.7	+0.1

Source: Engineering News-Record, Construction Economics Department. The Building Cost Index combines 68.38 hours of skilled labor weighted by the 20-city average of bricklayers', carpenters', and structural ironworkers' rates, plus 25 cwt of standard structural steel shapes at the mill price, plus 22.56 cwt (1.128 tons) of portland cement spot-priced locally, plus 1,088 board-ft of 2 by 4 lumber spot-priced locally. The base year is 1913 = 100. To compare

a given city's costs by percent, divide one index into the other. Example: the index for a city for one period (200.0) divided by the index for an earlier period (150.0) yields 1.33, which means the costs in the later period are 33 percent higher than the earlier period. Likewise, the earlier period's costs are 75 percent of those in the later period (150.0 divided by 200.0 = .75 or 75 percent).

Short Takes

• **New look for outlooks:** RECORD has long published construction-volume forecasts prepared by F. W. Dodge (the most authoritative source for such data), and assessments of the effects of financial markets on construction by Phillip E. Kidd. With this issue we're expanding that coverage by adding stories on specific market segments that promise special volatility. Our look at prospects in federal-government building, retail, and office buildings—augmenting information provided every month in our Building Types Studies—should help you

anticipate trends, rather than react to those already established. Different building categories will be examined in future outlooks.

• **Energy ratings for homes:** Voluntary guidelines intended to make claims of home energy efficiency more uniform (akin to the ratings consumers find on appliances) have recently been published by the Home Energy Rating Systems Council. If widely adopted, buyers should be better able to consider efficient assemblies, and may qualify for lower mortgage rates. Information: Cynthia Gardstein, Council Administrator 202/638-3700. ■

Expect Commercial Construction to Sustain Expansion

The construction industry is expected to show slightly stronger growth in 1996, up 4 percent compared to the 1 percent estimated for the current year. This figure is lower than the gains registered during the recovery's first three years. Indeed, the essentially flat total construction volume in 1995 represents a sharp change from the performance of the 1992-94 period, which witnessed unusually steady expansion of 8 to 9 percent per year. Has the cyclical peak been achieved? The gradual and well-paced character of the current recovery may well carry with it greater sustainability. Economic indicators for this year's third quarter have been mixed, but suggest a stronger pace of expansion has emerged following the 1.3-percent economic growth in the second quarter.

Single-family housing: an uptick

Subdued inflation and passage of a credible deficit-reduction plan by Congress should prove beneficial to the cost of home financing, allowing fixed mortgage rates to hold steady and possibly decline. Don't expect rates to decline if the federal budget cuts 1996 taxes but delays spending cuts. Growth of the population in the 35- to 54-year-old group (and high levels of recent immigration) will keep the demand for single-family housing strong during the second half of the 1990s. Strong growth in the older segment of this group means that trade-up demand should remain healthy.

Most commercial up; stores slack

In the early stages of this recovery, lenders made almost no funds available for speculative projects. Lately, bank-lending practices have eased, and improving conditions in some metropolitan markets have enabled the start of several spec projects this year.

The volume of commercial and industrial loans increased 4 percent in 1994 and is up a further 13 percent during the first nine months of 1995. Pension funds and insurance companies have also demonstrated renewed interest in real-estate investment, so the stigma once associated with income properties has largely faded. For 1996, expect some tightening of credit availability. Categories that have experienced a meager-to-fair recovery—offices, hotels, multi-family housing—should see continued expansion, but the

1996 National Estimates Dodge Construction Potentials October 1995

1995 Preliminary 1996 Forecast Percent Change 1996/95

Non-residential Buildings

Floor Area (in millions of sq. ft.)		1995 Preliminary	1996 Forecast	Percent Change 1996/95
	Office Buildings	120	130	8
	Stores and Shopping Centers	260	235	-10
	Other Commercial	304	302	-1
	Manufacturing Buildings	158	153	-3
	Total Commercial & Manufacturing	842	820	-3
	Educational	180	186	3
	Hospital & Health	68	67	-1
	Other Non-residential Buildings	170	169	-1
	Total Institutional & Other	418	422	1
	TOTAL NON-RESIDENTIAL BUILDINGS	1,260	1,242	-1
Contract Value (millions of \$)	Office Buildings	\$15,650	\$17,125	9
	Stores and Shopping Centers	16,025	15,275	-5
	Other Commercial	14,825	15,200	3
	Manufacturing Buildings	11,125	11,450	3
	Total Commercial & Manufacturing	\$57,625	\$59,050	2
	Educational	\$21,550	\$22,925	6
	Hospital and Health	9,650	9,500	-2
	Other Non-residential Buildings	20,525	20,650	1
	Total Institutional & Other	\$51,725	53,075	3
	TOTAL NON-RESIDENTIAL BUILDINGS	\$109,350	\$112,125	3

Residential Buildings

Dwelling Units* (thous. of units)		1995 Preliminary	1996 Forecast	Percent Change 1996/95
	Single-Family Houses	970	1,000	3
	Multifamily Housing	280	290	4
	Total Residential Buildings	1,250	1,290	3
Floor Area (millions of sq. ft.)	Single-Family Houses	1,824	1,883	3
	Multifamily Housing	296	307	4
	Total Residential Buildings	2,120	2,190	3
Contract Value (millions of \$)	Single-Family Houses	\$109,400	116,900	7
	Multifamily Housing	17,400	18,800	8
	Total Residential Buildings	\$126,800	135,700	7

Non-building Construction

Contract Value (millions of \$)		1995 Preliminary	1996 Forecast	Percent Change 1996/95
	Transportation Construction	\$41,450	\$41,100	-1
	Environmental Construction	18,150	17,825	-2
	Total Public Works	\$59,600	\$58,925	-1
	Utilities	\$4,200	\$4,350	4
	TOTAL NON-BUILDING CONSTRUCTION	\$63,800	\$63,275	-1

All Construction

Contract Value (millions of \$)		1995 Preliminary	1996 Forecast	Percent Change 1996/95
	Total Construction	\$299,950	\$311,100	4
	Dodge Index (1987=100)	116	120	

*F.W. Dodge basis

Robert Murray offers *F. W. Dodge's 1996 Construction Volume Outlook*—an overview. On the following pages, find close-ups on financial markets, federal-government building, office, and retail.

1996 Regional Estimates

Dodge Construction Potentials

October 1995

Contract Value (millions of dollars)	1995		Percent Change 1996/95	1996		Percent Change 1996/95
	Preliminary	Forecast		Preliminary	Forecast	
Northeast						
CT, ME, MA, NH, NJ, NY, PA, RI, VT						
Non-residential Buildings						
Commercial and Manufacturing	\$8,975	\$9,125	2			
Institutional and Other	9,425	9,800	4			
Total	\$18,400	\$18,925	3			
Residential Buildings						
Single-Family Houses	\$11,375	\$12,775	+12			
Multifamily Housing	2,350	2,725	+16			
Total	\$13,725	\$15,500	+13			
Non-building Construction	\$11,175	\$11,475	3	TOTAL CONSTRUCTION	\$43,300	\$45,900
						+6

North Central

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

Non-residential Buildings						
Commercial and Manufacturing	\$14,400	\$13,975	-3			
Institutional and Other	11,950	12,050	1			
Total	\$26,350	\$26,025	-1			
Residential Buildings						
Single-Family Houses	\$23,350	\$24,250	+4			
Multifamily Housing	3,700	3,925	6			
Total	\$27,050	\$28,175	+4			
Non-building Construction	\$14,075	\$14,200	1	TOTAL CONSTRUCTION	\$67,475	\$68,400
						+1

South Atlantic

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

Non-residential Buildings						
Commercial and Manufacturing	\$11,650	\$11,875	2			
Institutional and Other	10,750	11,075	3			
Total	\$22,400	\$22,950	2			
Residential Buildings						
Single-Family Houses	\$28,300	\$30,100	+6			
Multifamily Housing	4,525	4,525	+0			
Total	\$32,825	\$34,625	+5			
Non-building Construction	\$11,650	\$11,450	-2	TOTAL CONSTRUCTION	\$66,875	\$69,025
						+3

South Central

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

Non-residential Buildings						
Commercial and Manufacturing	\$9,350	\$9,975	7			
Institutional and Other	8,575	8,700	1			
Total	\$17,925	\$18,675	4			
Residential Buildings						
Single-Family Houses	\$18,125	\$19,325	+7			
Multifamily Housing	2,325	2,625	+13			
Total	\$20,450	\$21,950	+7			
Non-building Construction	\$10,650	\$10,350	-3	TOTAL CONSTRUCTION	\$49,025	\$50,975
						+4

West

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

Non-residential Buildings						
Commercial and Manufacturing	\$13,250	\$14,100	6			
Institutional and Other	11,025	11,450	4			
Total	\$24,275	\$25,550	5			
Residential Buildings						
Single-Family Houses	\$28,250	\$30,450	+8			
Multifamily Housing	4,500	5,000	+11			
Total	\$32,750	\$35,450	+8			
Non-building Construction	\$16,250	\$15,800	-3	TOTAL CONSTRUCTION	\$73,275	\$76,800
						+5

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

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vibrant store category is due for a correction, which will also reduce warehouse volume.

Though the income-property total next year is projected to edge back slightly, the square footage amount for income properties rises 3 percent if stores are excluded.

• *Offices:* This year's level is estimated at 120 million sq ft—still 65 percent below the mid-1980s peak. If one assumes that the equilibrium vacancy rate is about 10 percent, then excess space has been reduced by more than 40 percent. Office rents in most markets are still too low to produce the cash flow necessary to justify new spec construction, but exceptions are starting to appear, including suburban Atlanta, Washington, D.C., and Los Angeles. Office construction is expected to gain 8 percent. Dodge data show that alterations as a share of total contract value has averaged 38 percent in the 1990s, versus 18 percent in the 1980s.

• *Hotels:* The lodging industry's return to profitability in 1993 set the stage for a sharp construction rebound, from 19 million sq ft in 1993 to an estimated 45 million next year. Room-occupancy rates are up, and the industry has segmented its offerings, so that chains may pamper travelers under one brand name, while putting up the budget-conscious at lower cost in limited-service, mid-priced accommodations. The growth of casino gambling has also been an impetus for new construction. With the economy more sluggish, growth is expected to moderate.

• *Multifamily:* After hitting bottom in 1992, activity has climbed more than 60 percent. Tax credits for low-income housing have also boosted the total, and this category has been an especially hot market for real-estate investment trusts. The tepid economy in 1996 should allow for continued but slower growth.

• *Stores:* Resisting the downward pull of 1995's economy and hesitant retail sales, store construction has been able to maintain a robust pace through most of this year. Against a backdrop of continued subdued retail-sales growth and only a modest increase in housing, the volume of store construction next year is forecast to slip to 235 million sq ft—still a healthy amount.

Continued on page 57

Lower Rates Can Balance Government Cutbacks

Serious government budget cutting will dampen demand in 1996, but the Federal Reserve can keep growth on track by lowering interest rates now.

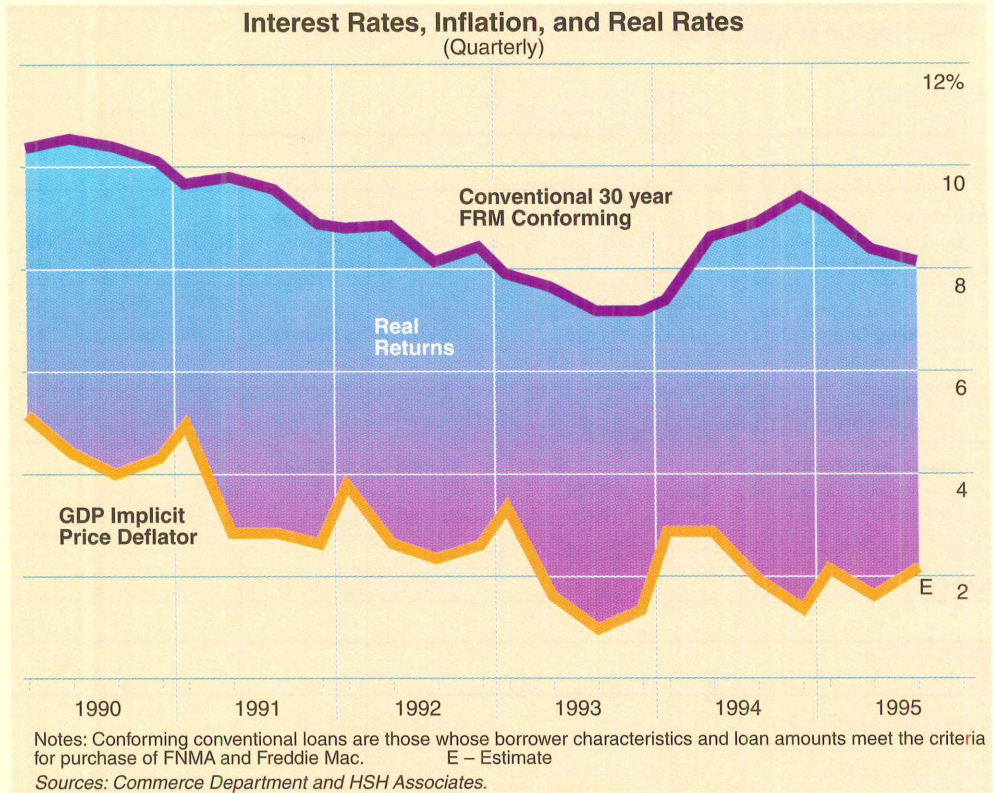
The U.S. economy is into its 55th month of expansion—a longer than average advance—and there's still room for growth. After a long struggle, our capacity to produce high-quality goods and services in a wide range of industries for a broad array of domestic and foreign markets is now the marvel of the world. Still, there are economic storm clouds massing on the horizon. By far the biggest challenge to date is the long-awaited restructuring of that most intractable part of the economy—the federal government. The acrimonious debate over the 1996 Budget highlights the broad differences on the details for implementing this transformation.

In theory, balancing the budget and reducing the deficit will free billions and billions of dollars for private investment in productive capacity. Little discussed, though, is that downsizing the federal government, which accounts for roughly one-fifth of GDP, will cause disruptions in employment and personal income for many years as agencies lay off staff and reduce purchases from suppliers. Economic pain is inescapable.

Needed: Fed spur to growth

Faster growth, which stimulates overall employment, is the best antidote to the fiscal drag expected from reducing the scope of government. Quickly easing monetary policy can unleash this growth. The current, prolonged, tight monetary policy has kept interest rates much too high given the weakening of inflationary pressures in the past few years (graph right). Aggressively relaxing monetary policy now, by lowering the cost to borrow, can lift the economy out of its sluggish expansion, moving it toward a sustainable and non-inflationary long-term growth rate above 3 percent.

The Federal Reserve voted to keep rates at current levels in late September. But delay could prove costly. Monetary policy takes some time to impact economic activity. When the Federal Reserve started raising rates in February 1994, the economy didn't feel the impact until a year later. Then growth slowed precipitously in the first quarter of this year. Since it lowered the discount rate in July, the Federal Reserve has been holding off further easing until it knows how much the deficit will actually be cut in the 1996 Budget. Con-



The gap between the GDP deflator and mortgage interest remains wide, an indication that real borrowing costs—nominal rates adjusted for inflation—are too high.

gress and the President have dueled so long that fiscal 1996 (it started October 1) will be several months old before there is a budget.

Every day's delay in passing a budget puts the Federal Reserve in a bigger bind. To boost the economy next year, when federal reductions begin to be felt, it must energetically relax monetary policy immediately (cutting the discount rate at least 0.5 percent either before or at the board's November 15 Open Market Committee Meeting). The Fed must make this move without knowing just how disciplined Congress will be. Actually, easing monetary policy isn't much of a gamble, because the economy can expand at 3 percent next year without boosting inflation. The real gamble is not relaxing policy soon enough.

What can sharply eased monetary policy do? If fixed-rate mortgages quickly move down toward 7 percent, residential construction will continue its current strong advance. If

rates remain near their current 8 percent, housing starts will drift lower in 1996.

Though new non-residential building awards are expected to post solid percentage increases in 1996, commercial building could also benefit from lower rates. Commercial real estate is again a hot investment among financial institutions, such as life-insurance companies, pension funds, and REITs. Institutional Real Estate, Inc. says that 101 financial institutions had \$33 billion at the end of the second quarter available for real-estate investment, a jump of 74 percent in 24 months. With relatively little new construction, compared to the 1980s, many investors are reporting difficulty in finding institutional-grade buildings in which to invest. Downsizing government will add to the supply of investment-grade square footage as federally owned or leased buildings come on to the market. If the economy grows faster, this space will be sopped up by the private sector.

Philip E. Kidd

A Shrinking Federal Pie Costs Courts and Hospitals

Congress' budget-cutting mood spells woe for most sectors of federal construction. The low-income housing tax credit is also on the block.

By Tom Ichniowski

Tough times are here for federal spending on buildings. With few exceptions, construction programs face budget reductions in the fiscal year that began Oct. 1. Although Congress is providing hundreds of millions of dollars worth of construction, the bad news for architects is that lawmakers are clamping down especially hard on new starts.

At press time, final figures weren't in for fiscal 1996 appropriations. On September 30, President Clinton signed into law short-term funding until November 13. This "continuing resolution" was needed because only one appropriations bill (covering military construction) of 13 had been enacted.

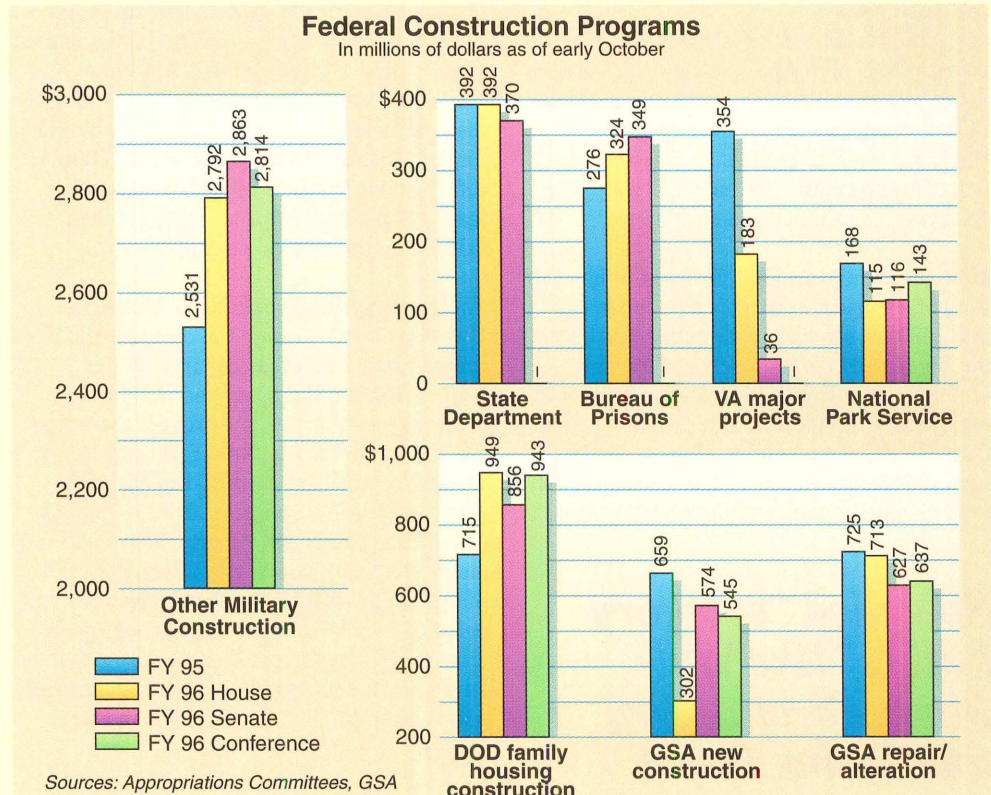
Of the major federal-buildings programs, the only ones projected to show increases are military construction, federal prisons, and possibly the National Park Service. In the military-construction bill, lawmakers chose to spend more heavily on housing, both for families and single personnel, which is widely described as in deplorable condition.

Up: Defense housing and prisons

Department of Defense family-housing construction will rise 32 percent (chart). Other military construction will climb 11 percent, including funds for several large Army barracks projects. Congress also appears willing to support Defense Secretary William J. Perry's plan to use developers to get family-housing units up faster. One idea is for DOD to contribute cash or land in joint ventures.

The construction budget for the Justice Department's Bureau of Prisons is expected to rise at least 17 percent, reflecting prison overcrowding and Congress' inclination to jail more offenders. A Bureau of Justice Statistics report shows the federal prison system was running at 125 percent of its 68,221-bed capacity. One project in the House and Senate versions of the Justice Department 1996 appropriation bill: design for a new medium-security prison in Lee County, Va. The House also included \$500 million (the Senate, \$750 million) in grants for state prisons.

Tom Ichniowski is Washington, D.C., bureau chief of Engineering News-Record.



At press time, President Clinton had signed only one appropriation bill. House and Senate negotiators were working out differences, and several bills faced Clinton vetoes.

Down: Offices, courts, embassies, VA

At the General Services Administration, new construction is in line for a 17 percent cut—a relatively pleasant surprise to GSA. GSA could have received “a whole lot fewer dollars,” says William Early, the agency’s budget director. Indeed, the House proposed funding of just \$302 million.

Most of GSA funding will go for projects past the design stage. Of the 16 buildings on the new construction list approved by House and Senate appropriations conferees, Early sees only three for which a design contract hadn’t been awarded as of September: courthouse annexes in Savannah, Ga., and Columbia, S.C., and a new courthouse in Seattle.

“I think you won’t see many new stand-alone buildings” approved for GSA, says Gary P. Haney, director of architecture in Skidmore, Owings & Merrill’s Washington office. “They look too much like a target to Congress and they just won’t be funded.” The focus will be

on renovation and additions, he predicts.

GSA’s 1996 repair and alteration account was sliced 12 percent, but it includes some big items, such as \$58 million for work on older Federal Triangle buildings in Washington.

The picture is even worse for the Department of Veterans Affairs. The House trimmed VA’s major-projects program, which has largely been hospitals, by 48 percent, but the Senate slashed it by 90 percent, leaving just \$36 million. Ted Sutherland, senior vice president of Smith, Hinchman & Grylls’ Washington office, observes that VA will continue to have facilities needs because it is the biggest single U.S. healthcare provider. Members of Congress are questioning whether VA needs as many in-patient beds as it seeks at a time when private-sector doctors are doing more procedures in ambulatory settings. With some in Congress trying to force VA operating costs down, the money to run new beds may not be available.

Continued on page 112

Retail's a Roller Coaster

Retail's opportunities are legion—from "re-imagining" malls to fantasy retail. But shoppers are fickle; retailers shift gears faster than ever.

By Peter Slatin

After the Mall of America, everything in retail looks small. And small is one direction retail is heading. "It's unlikely that anything of that magnitude will ever be built again in the U.S.," says Mark Shoifitt, an executive with the International Council of Shopping Centers. "That was a one-shot thing."

How the retail world has changed. When the Mall of America began construction in the late 1980s, it seemed that malls would only get bigger and bigger, anchored by more department-store tenants. A combination of recession, overbuilding, and the savings-and-loan debacle put an end to all that. Anchor-tenant department stores found themselves in bankruptcy, victims of junk-bond hubris

So-called "category killers" like Wal-Mart, Circuit City, and Home Depot, may have reached saturation.

and shoppers' switch to discounters. Mall construction went into a tailspin.

Still, retail construction didn't collapse the way other commercial types did. In the recovery, store construction has held up well; F.W. Dodge's preliminary figures show 1995's volume at only 4 percent below the mid-1980s peak. The story behind this is the retail industry's scramble to re-make, re-image, and shift price points to capture or keep fickle shoppers, who are confronted with more choices than ever—from highly themed fantasy retail environments to mammoth, bare-bones discounters.

Outlook mixed by retail type

"Big box" retail: Largely responsible for the levels of retail square footage built over the last few years, the growth of huge discounters and so-called "category killers" like Circuit City and Home Depot may have reached saturation. Also, small towns, the

traditional source of growth for Wal-Mart, are increasingly organizing against big boxes, seeing them as sucking life out of Main Street. These stores and outlet malls, which also compete for the discount-shopper's dollar, find themselves adding amenities both to differentiate themselves and to fight off leaner department stores, which can use sales to match outlets' pricing.

Theme retail: While giants like Oklahoma City-based BSW design the discounters, the theme-retail trend that began with San Diego's Horton Plaza and the Hard Rock Cafes proceeds apace and creates opportunities for smaller firms. New York City-based David Rockwell has done 27 Planet Hollywood restaurants and grew from 18 employees to 70 in two years, reports *New York* magazine. From Las Vegas' glitzy Forum Shops to New York's tony Fifth Avenue, names like Nike, Coca Cola, Warner Brothers, and Disney are building fantasy retail environments intended to draw a logo-crazed public away from home shopping and video games.

Traditional malls: Most activity is still in renovation and expansion, which outpaces new construction two to one. But new starts on malls are up 20 percent for the first six months of 1995, according to Dodge statistics. Though Dodge predicts lower store construction next year, some trends suggest that this swing to new construction may not be a fluke.

New realities in finance and planning

Financing, which has been very tight after the excesses of the '80s, is increasingly available. Instead of "giving away the store," i.e., financing the whole deal, as might have occurred in the 1980s, lenders are offering 50 or 60 percent financing to developers, who must not only put up the rest in cash, but must satisfy stringent new loan conditions.

New retail construction is, not surprisingly, following population growth and jobs. Large regional malls have opened or are in construction in Orlando, Las Vegas, Phoenix, and Denver, as well as elsewhere in the Rocky Mountain region. Salt Lake City, a prime area for California emigres, is also busy. Parts of the Southeast, such as the Carolinas,

are also seeing some development, and the Washington, D.C., area is strong. Large anchor tenants, once a must in new malls, are slowly being replaced by a larger number of smaller anchors. A new mall under construction in San Diego will have 11 mini-anchors.

Although the preponderance of mall construction continues to occur in suburban locations, some important projects are going up in downtown areas. Cleveland, St. Louis, and Baltimore have all made use of historic properties or districts as shopping centers to spur in-city growth. In Columbus, Ohio, a major mall has opened in the center of downtown. When Frederick & Nelson's financially troubled parent closed the landmark store in downtown Seattle, city officials made concessions to move hometown retail giant Nordstrom into the space. Nordstrom's original site will be redeveloped.

New York City, a retail powerhouse that has largely resisted malls, has also seen shifts. While apparel sales overall have been drooping, Madison Avenue, the city's high-fashion strip, added a Barney's and flagship stores for Calvin Klein and Giorgio Armani.

As residential areas become established around older malls, they may resist growth. Prodded by neighborhood groups and plan-

One mall, Northgate, near Seattle, is remaking itself in the traditional-neighborhood-development mode.

ners, one of the nation's first shopping centers, Northgate, near Seattle, is remaking itself in the traditional-neighborhood-development mode. Other land-locked centers are diversifying with offices and other uses, finding space by pushing surface parking into garages. Such developments are emblematic. The days when retail meant either malls or highway strips are gone. ■

Strength in Office Buildings

Expect variations by metro area, and don't count on much new construction, but most indicators for office-building renovation and retrofit are up.

By Peter Slatin

The depth and length of the recession that rolled across the office-building market in the late 1980's and early '90s crippled an unprepared design, construction, and real-estate industry that had become accustomed to the free-spending mid-'80s. As the economy has picked up speed in the past few years, the office-space glut has receded. With ample funds to lend, cautious banks have begun to put money back into real estate—even as many of them are still disposing of properties taken over in foreclosure as part of what brokers call the era's unfortunate "loan-to-own" programs.

The outlook for commercial real estate is, however, highly variable by region. Midwestern and many southeastern markets have shown steady improvement. Vacancies have tightened in Portland, Seattle, and Denver—all places benefitting from a California exodus. Indeed, Southern California and the Northeast, and industrial centers such as Hartford, Conn., Detroit, and Buffalo, continue to lag the nation.

Few markets yet have vacancies under 10 percent, and corporate restructuring and downsizing continue to dampen space absorption. Thus, much of the activity is not in new construction, but in the overhaul of older office buildings. It's often cheaper as well as easier to justify to lenders and community leaders, and lenders themselves are often anxious to bring under-performing properties up to speed.

What's in downtowns, suburbs, exurbs

This approach is not at all confined to old buildings in older downtowns. Upgrading the power, mechanical systems, and appearance of spec buildings and corporate headquarters is actively being pursued in inner suburbs and edge cities, such as White Plains, N.Y., or Gaithersburg, Md. As large companies have downsized, are sold, or are restructured, they have increasingly abandoned the greenery-swathed, built-to-suit headquarters. Following the example of Manville, outside Denver, such northeastern giants as IBM, in New York's Westchester County, and Union

Peter Slatin reports on real estate for Crain's New York Business.

Carbide, near Stamford, Conn., have put signature headquarters on the block.

John Powers, executive managing director at Edward S. Gordon Co., in New York City, where he heads the firm's corporate consulting group, says that such corporate suburban enclaves should continue to prosper. But he notes that the reasons for their strength have changed. "Companies would pull out of the city and go to the suburbs because that's where the chief executive and other top people lived," says Powers. "Now, though, the work force is there too." As long as suburbs have good access to those things commuters once went to cities for [ample highways, airports, research institutions, cultural and recreational amenities], companies will move to, or stay in suburbs, Powers says.

Non-urban places, such as Wyoming and South Dakota, continue to lure back-office functions of such companies as Wall Street's Fitch Investors Services, a bond-ratings agency, with low costs, a slow-paced lifestyle, and tax benefits. Sophisticated telecommunication links permitted the company not only to relocate outside of Manhattan, but to leapfrog suburban New Jersey, hitherto the preferred back-office destination.

Some downtowns are doing well, however. Austin, Tex., continues to draw high-tech and software companies, and San Francisco is seeing construction of Levi's new headquarters. New construction in Charlotte, N.C., is helping to consolidate that city's claim to be a premier banking center. Columbus, Ohio, is also a tight market. Multimedia publishing is burgeoning in lower Manhattan because of the confluence of graphic artists, and a huge presence of media, entertainment, and publishing companies.

Indeed, the emergence of Manhattan's so-called "silicon alley" is one of the reasons Powers and other real-estate analysts point to the telecommunications, software, and entertainment industries as offering strong potential for growth in the near future, especially as they make alliances (phone companies and cable companies; entertainment and software companies) to exploit the Internet and other forms of interactive electronic communications.



After many failed attempts, a public-private partnership is restoring Burnham & Root's 1891 skyscraper prototype, the Reliance Building, in Chicago. The retrofit market is strong because older buildings—even ones built in the '70s—need rework to compete.

Indeed, keeping existing buildings wired and serviced to suit fast-changing technologies presents the biggest challenge for office-building architects. Cable management has emerged as a new subcontract specialty. Jerry Speyer, chief executive of Tishman Speyer Properties, which developed the Mesetum in Frankfurt as well as properties around the U.S., already looks forward to the as yet little-understood "wireless" office.

Despite a sustained upturn, the next year could bring a slowdown as the presidential campaign unfolds. "What CEO is going to make a major building or relocation decision in an election year?" asks David Gialanella, the executive in charge of the Northeast region for Cushman & Wakefield, the international real-estate company based in New York. "These guys will be waiting to see who wins and how that will affect their business going forward into the next century, so they are likely to stay on the sidelines." ■

Doing Lots With a Little

For both the acoustician and the architect, concert halls are the field's most challenging and most glamorous applications. These are the projects most architects hear about, but they are rare, even for the most accomplished acousticians. An architect is very lucky if such projects prove to be more than once-in-a-lifetime events. But day-to-day acoustical problems can also be challenging, and sound and computer technology are permitting owners to try solutions once thought economically or technically unfeasible.

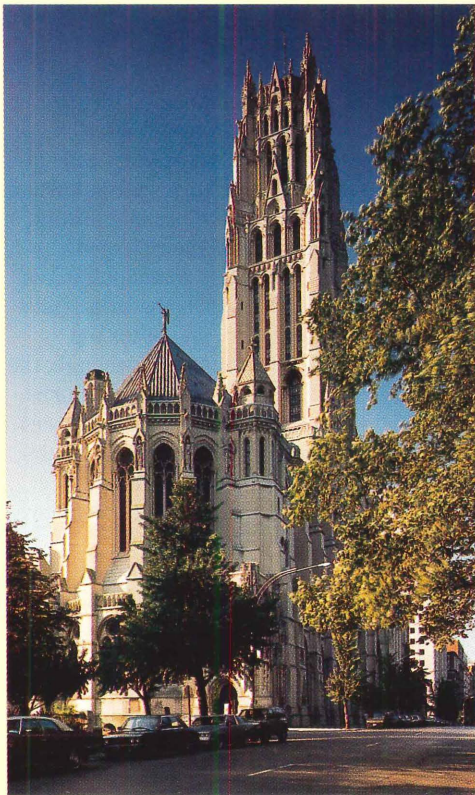
At Riverside Church (these pages), the design team has essentially reversed the acoustic emphasis of the landmark's original design because technology has "solved" the very problem the church's once-ground-breaking design was intended to address. Changing the acoustics was not a matter of installing elaborate reflecting "clouds" or other intrusive elements, but instead involved little more than paint (though, admittedly, a carefully tested one).

A multi-purpose auditorium at Columbia University's College of Physicians and Surgeons (following pages) did lend itself to the addition of architectural elements. But the renovation was also driven by a desire to integrate the kind of sophisticated audio-visual system that permits students to, for example, witness an operation in progress at a remote location.

This is not to say that acoustics has been reduced entirely to a science. The Riverside Church project reveals yet again that what calculations predict is not necessarily what the listener hears within the space.

James S. Russell

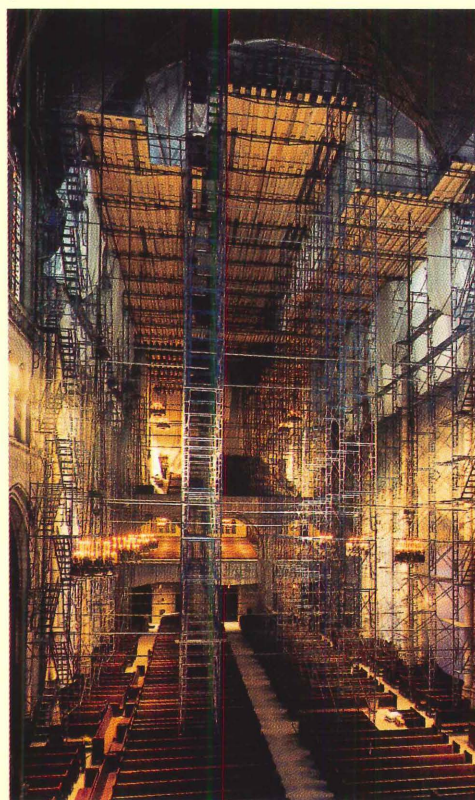
The 1930 Riverside Church (1) is steel-framed and limestone clad. Its interior mixes stone with matching sound-absorbing terra-cotta tiles. A vast scaffolding (3) supported painters (4) who applied a transparent-drying acrylic sealant (2).



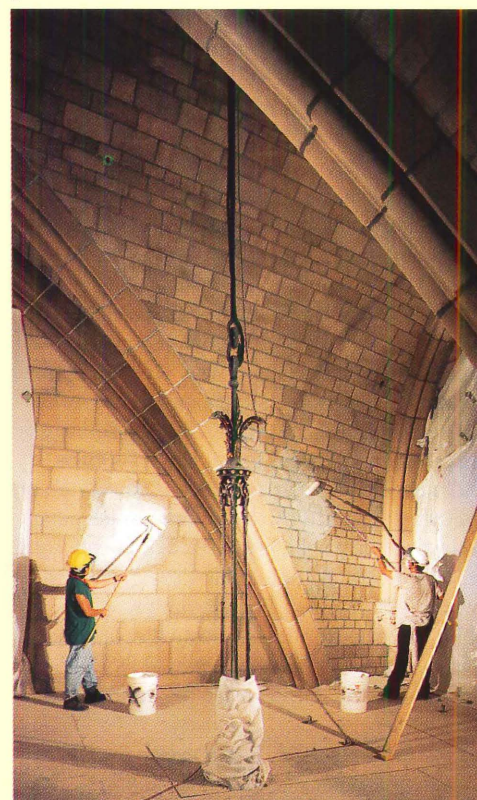
1



2



3



4

© John Buchman photos.

While acoustics can be a highly sophisticated art, some projects lend themselves to relatively simple solutions.

Church Finds its Voice

When the full power of the gigantic organ at Riverside Church is unleashed, the sound should feel as if it's being emitted by the building's very stones. For over 70 years, the Church didn't live up to its acoustical potential—by design. After a recent alteration that broke new ground, musical notes die slowly and majestically in the vast Gothic-revival structure, just as they should in architecture for which so much organ music was written.

The building was inhospitable to its great organ because of a compromise in the original design. In 1930, Wallace Sabine, a Harvard physics professor and an acoustic pioneer, worked with architects Allen & Collins and Henry C. Pelton to solve a centuries-old problem with large churches. The vaulted construction, hard surfaces, and huge volumes rendered speech unintelligible, encouraging the development of organ and choral music adapted to very long reverberation periods (the time a sound wave takes to drop below audibility).

On Riverside, and many other churches of this era of great American church-building, Sabine collaborated with Raphael Guastavino, a terra-cotta tile manufacturer, to create a tile that would absorb sound and render speech more understandable. Guastavino developed two kinds of porous tiles that were used in numerous large churches of the time. They did improve speech, but created spaces that were acoustically "dead" for music.

An acoustical reversal

As sophisticated voice amplification came into use, solving the speech problem, acousticians sought to seal the porous tiles to make these great church spaces more reverberant. In the 1950s, the two bays closest to the altar at Riverside were coated with a sealant. This technique was also tried on many similar structures. After erecting and removing expensive scaffolding, acousticians were frustrated to find conditions each time had improved much less than calculations indicated. Finally acoustician Lawrence Kirkegaard examined a sealed surface in the Rockefeller Chapel at the University of Chicago with a 30-power microscope and found that a high percentage of pores remained unsealed.

Thus, at Riverside, Kirkegaard's acousticians and architect Gerald Allen & Jeffrey Harbinson tested sealers, visually verifying that the pores were indeed closed. After cleaning and needed repointing, painters atop a scaffolding (3, opposite) applied an acrylic sealer made by Pro So Co (4) in nine thin coats. "The manufacturer insisted on a standard dilution so that the UV-rating and absorptive quality were maintained," says architect Gerald Allen. Ultraviolet stability is important because Riverside's earlier sealant had yellowed. Vapor permeability was also maintained because moisture can build up behind a completely sealed surface, causing masonry to deteriorate.

Measurements taken after the sealing project was finished showed reverberation times at 500 hz lengthened from about 2.5 seconds to 3.25 seconds, an improvement quite noticeable even to the untrained ear. Speech intelligibility was maintained by augmenting the existing high-quality public-address system. Most listeners hear the celebrant through speakers concealed in overhead light fixtures. Audio delay is introduced to mimic the time it

takes for sound to travel through the air. Speakers mounted on pew backs or concealed in statuary boost sound in areas overhead speakers don't reach. Sophisticated electronics automatically lower microphone sensitivity when needed.

Kirkegaard acoustician Scott Pfeiffer noted that the room could become even more reverberant if the remaining bays were re-sealed and absorbent cushions on the pews removed. The latter idea, cost-free, would require giving up backside comfort for acoustical vibrancy—a sacrifice listeners may well reject. *J.S.R.*

Credits

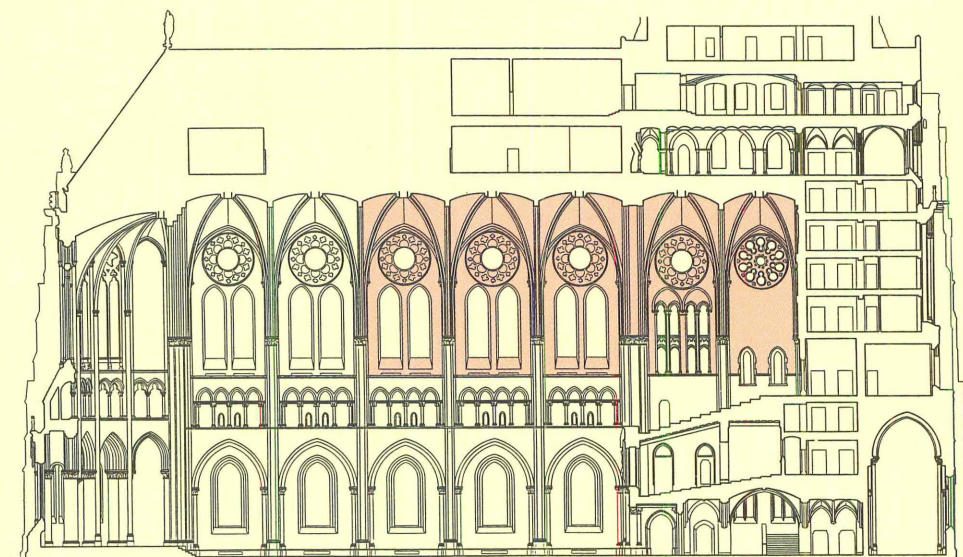
*The Riverside Church
New York City*

Owner: *The Riverside Church
(interdenominational)*

Architects: *Gerald Allen & Jeffrey
Harbinson Architects (renovation)*

Consultants: *Kirkegaard & Associates
(acoustics); Rosner Custom Sound, Inc.
(sound system); Keith Blades (masonry)*

Contractor: *Urban D. C. Inc.*



Shaded areas were treated to reduce absorption. The tiles were originally developed by Raphael Guastavino, Jr., the son of a Catalan tile-maker who had introduced a structural-tile vaulting of daring thinness used in many U.S. Beaux Arts buildings.

Acoustics

This update of a tired lecture hall shows that solving acoustical problems and adding sophisticated audio-visual capability need not break the bank of cost-driven academic clients.

Quieting a Lecture Hall

The litany of problems that beset Alumni Auditorium could describe any number of aging auditoria in academic settings. It was uncomfortably noisy, poorly lit, and its hvac system was gasping. Teachers increasingly sought sophisticated audio/visual capability that the hall couldn't handle. "Doctors and students shunned the space if they could," says Belmont Freeman, architect of the hall's renovation. What finally sparked the decision to proceed, says Freeman, is that the medical students' busy theatrical troupe, the Bard Players, raised funds so that the redone auditorium could also accommodate stage productions and musical performances.

To keep the project within its modest budget (\$1.5 million in high-cost Manhattan), Freeman carefully allocated architectural resources in taking the dingy, painted-plaster and pegboard interior to its inviting current state. Accommodating the Bard Players and the sophisticated audio-visual system proved the greatest challenges of the project (photos opposite). The shape of the hall is little changed; finishes were updated with an eye to correcting acoustical and technical flaws while meeting disabled needs and more-stringent life-safety requirements. The wood wall panels are slightly more reverberant than the original plaster surfaces, for example, which is better suited to performances.

Dennis Milsom, vice president at acoustical and audio-visual consultant Shen Milsom & Wilke, says the room had problems he commonly sees: "Generally, attacking noise sources in or outside a room gains the most benefit for the least dollars spent." A combination of inadequate vibration-reduction in the original installations within adjacent mechanical-rooms and the minimal maintenance an academic institution can typically afford meant that noise and vibration from these spaces contributed significantly to listeners' discomfort in the 720-seat medical-school lecture hall built in 1960. Corrections were coordinated with work of mechanical consultants.

The firm also found that the original pegboard that covered acoustically absorbent material on the back wall "wasn't transparent

enough," says Milsom, meaning that the size and spacing of the holes didn't allow enough sound to be absorbed. Freeman detailed a new acoustical assembly for the back wall (section right).

A-V: Make it easy to use

The auditorium has been adapted to the numerous technologies medical faculty use to teach. Lecturers can lower a 35-ft-wide blackboard, mounted on a steel truss. Above, a retractable screen can display information from slides or overhead projectors, video tape, or an in-progress procedure elsewhere in the hospital through closed-circuit TV (2, opposite). In years past, the controls for such a variety of systems were too complex for all but the most dedicated technophiles. Now, "touch-screen systems are very simple and user friendly," says Milsom. "A menu screen comes up first, and the presenter only sees controls for a particular element come up on screen—the video projector, for example." When the lecturer lowers the lights, the device automatically chooses the programmed lighting "scene" for video, and sets light levels accordingly. "He or she isn't looking at an array of 30 or 50 buttons," explains Milsom. The video projector, which lowers from the ceiling, can also handle output from portable-computer presentation applications, an increasingly popular way of conveying charts, graphs, or other graphics.

Such systems can be expensive, but "we handled them here in the most straightforward way possible to keep costs down," says Milsom. Auditoriums can cost twice as much to equip, he says. It's a matter of what the client can afford. *J.S.R.*

Credits

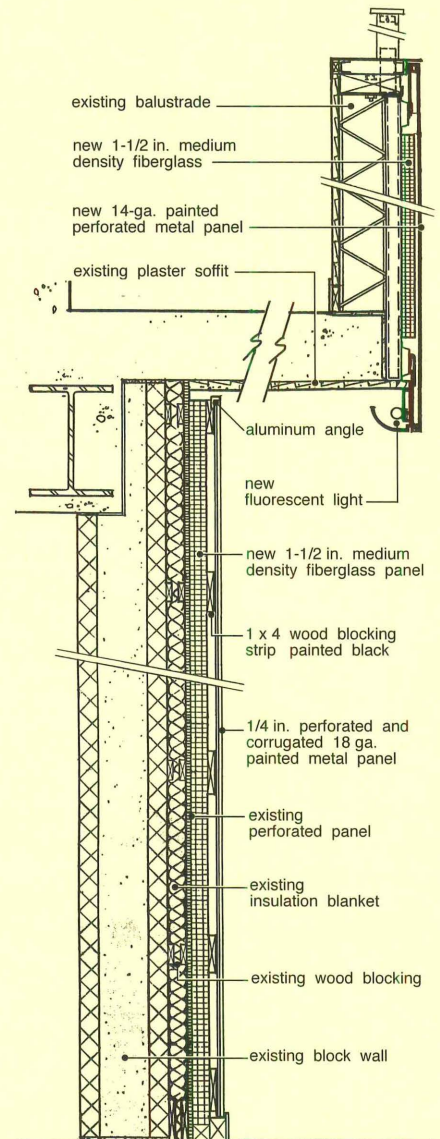
*Alumni Auditorium
New York City*

Owner: Columbia University, College of Physicians and Surgeons

Architect: Belmont Freeman Architects

Consultants: Shen Milsom & Wilke (acoustical, audio-visual); Atkinson Koven Feinberg (mechanical, electrical); Ann Kale Associates (lighting)

Construction Manager: Herbert Construction



SECTION THROUGH AUDITORIUM REAR WALL

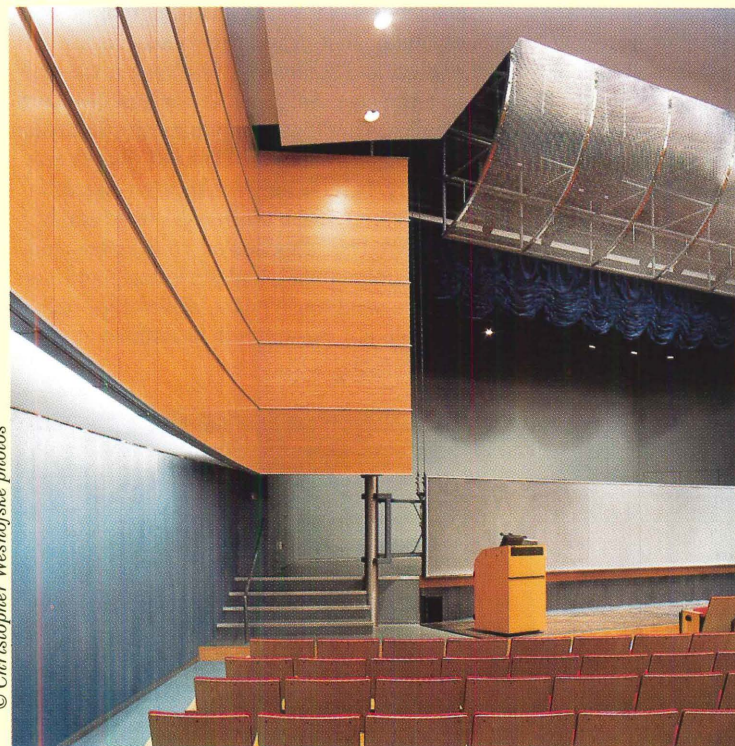
The architect applied new acoustically absorbing material over old. The perforations of the metal facing were carefully calibrated to acoustical needs. The existing material still adds some sound absorption.



1



2



3



4

Freeman extended the original stage—only 15 ft deep—with a 6-ft apron on lifts. In the raised position (1), the stage accommodates performances. Lowered, it puts lecturers close to students (3). The

upper walls, refinished in aluminum-splined oak-faced panels, wrap the stage, forming a proscenium (4). Over the stage, expanded-metal fabric conceals speakers and theater lights (2).

New for '96: ARCHT for AutoCAD; Cheap Bytes; SureTrak

By Steven S. Ross

Add-on products specifically for architects using AutoCAD 13 are just beginning to emerge. To prepare for reviewing them, we upgraded to Release 13 c3. The upgrade is free to those who have been using earlier versions of Release 13. It includes much faster Windows95 drivers (they were discussed in our A/E/C Systems coverage [RECORD, August 1995, pages 32-37] and sent to users in July), and also fixes some bugs while adding minor features.

The installation and changeover took us only about an hour (with the new software installing automatically from CD-ROM) and was flawless, although we have a decidedly non-standard machine, necessary for tasks that only reviewers ever perform.

Although some c3 improvements were in the DOS version (we use it side-by-side with the Windows version), the big news is an increase in speed on the Windows side of the aisle. It is now practical to run AutoCAD 13 for Windows on a small Pentium (say, 75 MHz with 16MB of RAM). A suitable machine costs less than \$2,000 without monitor. Before this summer, if you had a machine of that speed (or slower) you ran Release 13 in DOS. Or you decided to forego the pleasure and stick to Release 12 (Autodesk still sells R12).

All of this helps, of course. Windows makes lots of things easier in many cases—upgrades to printer and plotter drivers, a wider range of video drivers, easier interfacing with other software, and easier support of small networks. Autodesk now joins Bentley Systems in making its software truly Windows-ready.

The two industry leaders have joined in another way as well—in an effort that holds great promise for architects. Last month, Bentley signed on with the Autodesk-led initiative to develop industry-wide standards for “objects” in CAD drawings—doors windows, walls, and so forth. Autodesk has recast the initiative as an independent effort. It was unclear from initial press releases and the press conference (held by telephone conference call) what this will mean in terms of timing of new standards’ releases, and in terms of the standards themselves [see RECORD, August, 1995, pages 32-33].

ARCHT for AutoCAD 13

Vendor: KETIV, 6601 NE 78th Court, Suite A-8, Portland, OR 97218-9913, 503/252-3230, 800/458-0690, fax 503/252-3668.

Equipment required: Computer capable of running AutoCAD 13 in DOS or Windows95—that is, 80486 CPU or better, 16MB of RAM, fast hard drive. There is also a version for AutoCAD 12.

Cost: \$1,195 with 90 days’ toll-free support; the next 270 days is \$195, then \$195 per year, or \$2 per minute. Competitive upgrade, \$495; upgrades from previous versions range from \$50 to \$495.

Looking for a good architectural drafting add-on for AutoCAD? ARCHT may be for you. We reviewed it in DOS and Windows versions, and found it to be a solid performer. It produces drawings that are quite ready for rendering with another KETIV product, ARE-24. Mated with AutoCAD’s new Release 13 c3 (see discussion box at left), it runs quite happily on a low-end Pentium computer.

In general, when you want to insert a new object into a drawing, you select a block close to what you want, use a dialog box to edit it, then insert the block into the drawing. You can edit the block afterwards, of course, but it is easier to define what you want in the first place.

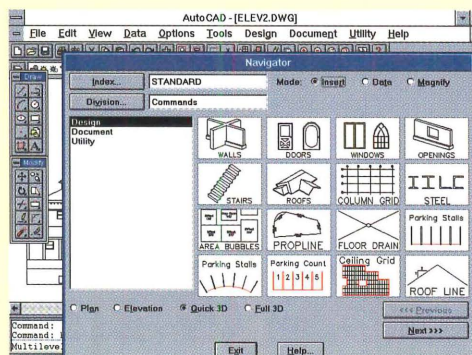
For walls, you draw the baselines, select a wall style, convert the baselines to walls, fiddle with placement, and then—once you are reasonably sure walls are where you

want them—insert windows and doors.

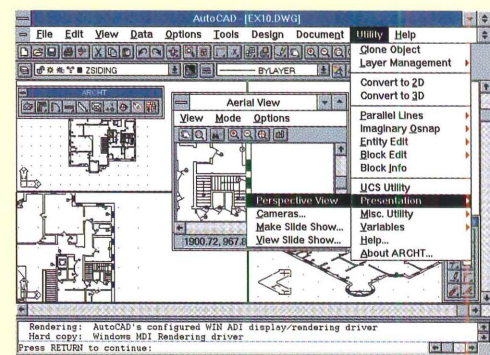
ARCHT is one of a select group of vendors offering comprehensive drafting add-ons for architects using AutoCAD. In philosophy, ARCHT is closer to Eagle Point (which automates many of the most annoying drawing tasks but is mainly a drafting-productivity tool) than Softdesk (which offers a more comprehensive approach and great database links).

The lines between all these programs are beginning to blur as each adds features desired by its specific user base, and as Autodesk puts more functionality into AutoCAD itself (it is hard to believe, but when we first reviewed AutoCAD nine years ago, it could not draw a parallel line in one step). But prospective users should shop carefully, trying the software out on their own. KETIV, for instance, sometimes stops short of automating an entire drawing task.

As an example (a good one, because just about every vendor includes the capability), consider KETIV’s stair-drawing tool. It’s fast and flexible, but draws the treads, risers, landings, and stringers—leaving out the railings and posts. Softdesk, in contrast, can add the railings and posts automatically, but some of our readers complain that the results are, well, ugly. Is it easier to change an element that’s already there (Softdesk), or to add it (KETIV)? That depends on your tastes, and your business (brick-and-stick designers, for instance, need those posts, while office buildings often put the stairs in a confined well).



Navigator can access commands for specific objects. It’s also used for displaying symbols.



Multiple views in KETIV’s AutoCAD 13 add-on, ARCHT. The “feel” is excellent.

Horn of plenty: an AutoCAD-specific add-on; a major upgrade to a low-end project-management application; a clever way to store big files.

KETIV also puts more thought into novice users' needs, and the needs of offices with high turnover among drafters. There's a nice navigator dialog box, for instance, that allows easy viewing and selection of blocks (symbols). It also pulls together many separate pulldown menu commands in a task-by-task way. I'd rather use the menus anyway, but one of our testers loved the navigator. The extensive block library is arranged by CSI category.

Softdesk has better built-in links to underlying data, but there are an increasing number of other, separate, Windows- and Unix-based solutions for this.

Neither program is all that fast (that is, you need more than a minimum AutoCAD computer to handle them). So offices with repetitive needs might want to consider simpler approaches.

Manuals: Installation, tutorial, and reference are in separate paperbacks. The material was prepared for the Release 12 version and, on a few small points, does not match the current software.

Ease-of-use: Excellent in Windows, very good in DOS. We liked the ability to easily change walls and doors.

Error-trapping: The big problems were in wall edits. You can stretch or shrink or move a wall with its baseline still frozen. If you then decide to do wholesale edits, and work on the baselines themselves (with the idea of converting back to walls at the end of the process), you may forget what's really in the drawing. You can also group edit walls—but if you do, leave their starting and ending points alone, or you could end up with all the walls starting at the same place. You can overwrite an existing style by importing a new style (for a door, for instance) of the same name.

300 on Reader Service Card

Iomega ZIP Drive

Vendor: Iomega, 1821 W. Iomega Way, Roy UT 84067, 800/456-5522; 801/778-3000; Internet: Info@Iomega.com

Equipment required: DOS/Windows computer with SCSI or parallel (printer) port; Macintosh with SCSI port.

Cost: This cheap and clever drive has just about the right capacity for architects' files—100MB. The price is right, too—about \$15 for the rugged disks (they are a bit larger than standard 3.5-in.-high density floppies) and a \$199 street price for the drive (\$239 list). If you've been using old SyQuest cartridges or DC2120-type tapes to move files around, you should give the Zip a close look.

The drive, which weighs little more than a pound, can be connected to your computer's SCSI or parallel (printer) port. We've seen the disks dropped from a height of more than 5 ft with no damage; Iomega says they'll survive an 8-ft drop.

We've looked at both the SCSI version for Mac (there's also a SCSI version for PCs) and the parallel-port version (PC only). We checked whether the drive works with copy-protection hardware (common on parallel ports for architectural software). It does. We checked whether software will install on the Zip drive under Windows. Again, it does—unlike the situation with Iomega's older Bernoulli drives (you can use the Zip software to access the older Bernoulli models, solving this problem for those drives as well).

We checked whether the Zip drive interfered with printing large documents. There was no problem on the Mac or PC with files as large as the 5MB we tested, although there have been reports of 10MB files not printing on the Mac (Iomega is fixing the problem).

Manuals: A small sheet of paper serves as the installation guide. There's good documentation on disk. Look especially for advice on fine-tuning parallel-port performance; you can double transfer speed.

Ease of use: Simple.

Error-trapping: You must have the drive connected and powered up before you boot your computer—otherwise, it will not be recognized. Also, it must be powered up to print if your printer is connected to it rather than directly connected to the parallel port. Under some (rare) circumstances, the drive will assign itself a letter in the middle of your designations, that can disconnect your Windows icons from the drive letter they originally referred to.

301 on Reader Service Card

SureTrak Project Manager 1.5

Vendor: Primavera Systems, SureTrak Division, 1574 W. 1700 South, Salt Lake City, UT 84104, 801/973-1300, fax 801/973-9725.

Equipment required: DOS 5.0 or higher, Windows95-capable computer, 8MB of RAM, 80386 or newer CPU (we recommend a small Pentium and 16MB of RAM to use new OLE features), numerous server and peer-to-peer networks supported. Color Windows printer or plotter strongly recommended.

Cost: \$695 (street price approximately \$300), \$99 upgrade from version 1.0.

We liked SureTrak Project Manager 1.0 [RECORD, May 1995, page 45]. We like this new upgrade even more.

The product, from the people that bring you Primavera Project Planner, has evolved into something somewhat different than "Primavera Lite." It has improved network capabilities. It links easily to share data with to OLE server software such as the Windows versions of Lotus 1-2-3, Excel, WordPerfect and many database packages.

It has clever wizards guide novices in handling difficult tasks. One of the trickiest is creating pivot tables in Excel for cross-tabs (relating one variable, such as labor cost, with another, such as accumulated project delays). There are also a few improvements in cost and resource curves—accumulated earned value, cash flow, net profit/loss, and so forth.

All this makes SureTrak ideal for novices or occasional project-planner users, and for those who handle project planning for small and medium-size companies.

Manuals: Good

Ease of use: The easy things are easy, the hard things are harder—Wizards help.

Error-trapping: We managed to crash the system by over-aggressively linking objects from multiple sources (Lotus, Excel, Word, and so forth) and pulling them up one right after another. We think the crash was due to disk errors, not SureTrak.

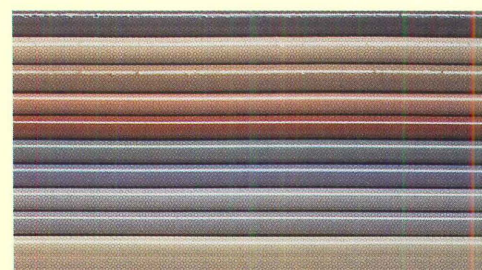
302 on Reader Service Card

THE PROFESSION New Products

Products for Healthcare

303. Slip-resistant vinyl flooring

A new floor introduced this year, Safe-guard sheet vinyl appears to resolve two sometimes conflicting requirements of health-care environments: a floor that is both slip-retardant and easy to clean. Made in 2-m wide, 18-m long rolls (about 6.5- by 59-ft), flooring can be heat-welded at seams, using color-coordinated rods, bottom right, to create a smooth, uniform, moisture-resistant surface that can be damp-mopped with hospital-type phenolic or ammonia-based disinfectants. Offered in the 10 colors shown top right (Blue and light gray are shown used near a retirement community's pool, right), Safeguard incorporates silicone-carbide grit throughout the wear layer; meets the ADA's 0.8 coefficient-of-friction recommendation for ramps. Institutional floorings sample program: 800/292-6308. Armstrong World Industries, Lancaster, Pa.



304. Multiple-function nursing station

Contract-furniture giant Steelcase has translated its expertise in office layouts and work-flow efficiencies into its recently enhanced Interact modular casework system. Based upon an easily reconfigurable nurses' station, bottom left, freestanding centers are designed specifically for transient personnel (doctors, nurses, visitors, technicians—even patients) and around-the-clock patient care, reception, and record-keeping tasks. Counters at various heights accommodate different functions: an accessible reception core, called out by illuminated "bumper columns," facilitates face-to-face communication with all, including children and patients using wheelchairs; standing-height counter gives attending physicians a place to annotate charts. (Photo right shows the system in a Kansas hospital.) Curved work surfaces behind upholstered, tackable panels make good use of space for computer tasks and record keeping. Edges are rounded; chart-holding racks can be accessed from two sides of a station. Countertops can be specified as non-porous Corian in solid colors and stone looks (bottom right). All components are modular. Storage pedestals, desk-like core units, partition panels (in four heights for task privacy), and linking countertops expand, contract, and reconfigure to change with the hospital. CAD design help is available. 800/224-8705. Steelcase, Inc., Grand Rapids, Mich.



The patient-care environment demands a lot from furnishings: they must be easy to clean, contribute to the healing process, function under abuse, and meet budget restraints. Here are some that can.

305. Homey institutional casegoods

Furniture and upholstered seating for hospitals and long-term care facilities needs to look warm and comfortable, with a home-like atmosphere that encourages healing, without compromising the wear-like-iron, easy-to-clean characteristics needed in such heavy-use environments. Desks, nightstands, bureaus, bookcases, and wardrobes—shown here in this maker's new "contemporary" Milford style, right—are constructed with laminate tops, solid-oak radiused edges, and hardwood components in natural, bleached, and stained finishes. Upholstered waiting-room seating (not pictured) is made with an unobtrusive gap between seat platform and back to permit complete cleaning. A series of updated color catalogs show all current designs and finish options. 508/454-7848. Adden Furniture, Inc., Lowell, Mass.



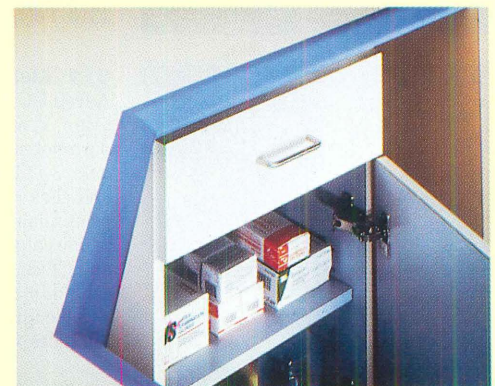
306. Medical furnishings

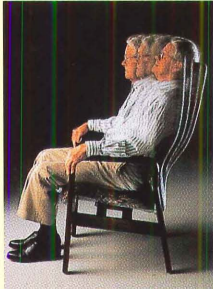
A new division (started in 1994) of Baltimore-based LUI Corporation, HealthcarePlus designs and makes furniture for hospitals and long-term-care facilities, including casegoods for nurses' stations and other administrative-function areas; exam-room tables; and laboratory storage pieces. The initial product line takes full advantage of the decorative, low-maintenance, and rugged characteristics of plastic laminates. Cabinetry lays out on a standard module. Patient-room furniture comes in three price ranges (high-end Contact is shown, right) and has a contemporary, built-in look. Components have radiused corners and a defining, "chip-proof" polyurethane contact edge treatment. Patient-exam tables (far right) are adjustable, and can be specified in over 1,000 laminate patterns and colors. A solid red-oak band surrounds the padded top.



Constructed with interlocking work surfaces, supporting columns, and connecting infill panels, nurses' stations (bottom left) are fully wire-capable: voice, data, and power cabling can be brought to any point to accommodate remote patient monitors, computer terminals, and phone/fax equipment. The work surface is positioned at a height that allows for drawers and door-storage cabinets underneath (bottom right). 800/638-4111.

LUI Corporation, Baltimore. ■





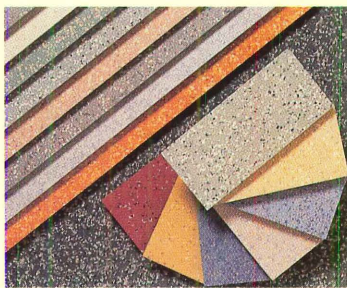
307. New-fangled rocker

A new model in the Laurelwood healthcare-seating line offers a rocking motion said to provide a therapeutic effect for both acute- and long-term-care patients. Available in two back heights in a lumbar-supporting curve, the Motion chair's wide wood armrests help the patient to stand up. 800/537-1530. Sauder Manufacturing Co., Archbold, Ohio.



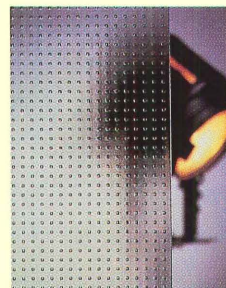
312. No-hands adjustable chair

For users performing intensive, two-handed tasks—whether chip assembly or brain surgery—a new task chair pneumatically alters height at the touch of a toe. The chair offers two seat-height adjustment ranges, and can be ordered as a stool, without the back. Metal parts are chrome plated; vinyl or cloth upholstery are options. 800/597-0246. BioFit Engineered Seating, Waterville, Ohio.



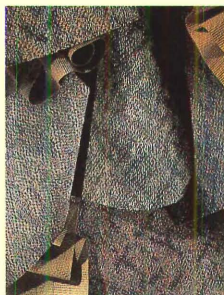
308. Static-dissipating flooring

A no-wax floor that is resistant to most oils and grease, Noraplan Mega AL mimics the random-fleck, three-dimensional appearance of Megapattern rubber flooring in an ESD-control system. Suitable for heavy-traffic areas as well as operating theaters and clean rooms; available in the eight colors shown. 800/332-NORA. Freudenberg Building Systems, Inc., Lawrence, Mass.



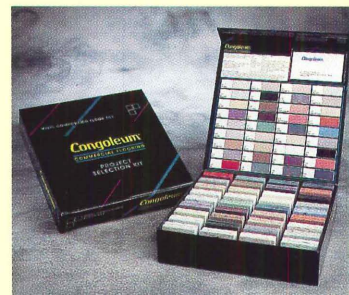
313. Patterned fire-rated glass

SuperLite II gel-filled glazing, available in safety-glass makeups with fire ratings as high as 90 minutes, is now available in decorative patterns that diffuse light and provide privacy. Pressed-in dots or stripes appear on a matte ground; one side is textured, the other smooth. Rated for doors, sidelights, windows, and wall partitions. 800/822-2088. SAFTI Div., O'Keeffe's, San Francisco.



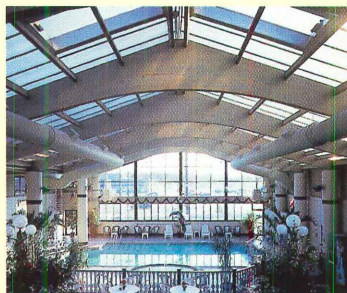
309. Soil-resistant carpeting

A tufted-loop broadloom made of 32-oz face weight Antron nylon for heavy-traffic sites, multicolored Caldera has a flame-like, non-directional pattern useful in hiding random spots; a DuraTech treatment provides stain resistance. Sample program is offered to designers; carpet coordinates with company's resilient floors. 800/241-2262. Mannington Commercial, Calhoun, Ga.



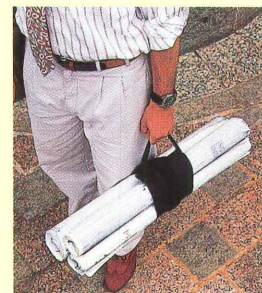
314. VCT selection kit

A new chip-box program contains five 2- by 2-in. samples of each color available in three commercial-vinyl lines—Choices, Alternatives, and Special Effects—enough for each member of a design team to have his or her own piece of the floor. A diagram on the lid calls out product data and colors, making ordering and kit refills easier. 800/934-3567. Congoleum Corporation, Mercerville, N.J.



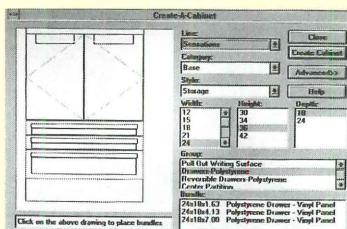
310. Translucent roof panels

A pool enclosure has a light-transmitting roof of flame-retardant Polycip II Bronze polycarbonate sheets. Maker claims that 2-ft.-wide panels clip together to form a leak-proof joint without gaskets; they fasten to the structure without special profiles or caps. The loading capacity of the 5/8-in.-thick hollow-core panels permits long clear spans. 608/757-1313. Polygal, U.S.A., Janesville, Wis.



315. Plan-holding helper

Designed by Dallas architect Greg Kent, the Third Hand is a fabric carrier intended to help transport single or multiple rolls of large documents. Adjusts up to 9-in. in dia., and holds plans snugly without crushing. It can be stuffed in a briefcase or pocket until needed. Price: \$17.50. 214/692-6160. GMK Industries, Dallas.



311. Medical-design software

A free DOS/Windows 3.1-based program, Visions includes 3-D Design, a parametric system for interior layouts; 3-D Room Layout, a point-and-click room planner pre-sorted by professional specialty; and an electronic catalog of all Midmark, Ritter, and Chick equipment. Also, a custom-cabinet module can design site-specific units. 800/MID-MARK. Midmark Corp., Versailles, Ohio.

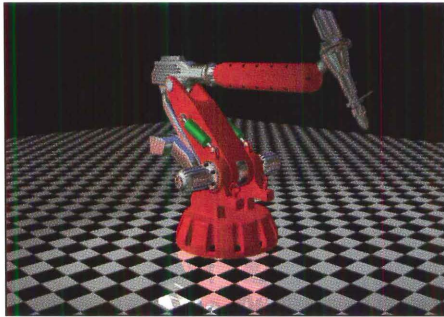
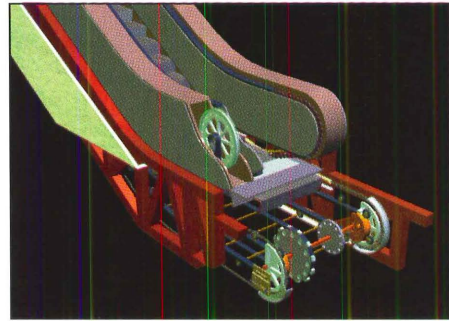


316. Operable block window

The Force 10 aluminum frame holds as many as 48 3 1/8-in. glass blocks, like Solaris Thinline, assembled as a glazing unit. Hardware permits European-style tilt or turn operation. Windows come in sizes rated for emergency egress; unit blocks noise and offers security while admitting daylight. Meets AAMA standards. 305/667-4471. Sholton Glass Block Systems, Coral Gables, Fla. ■

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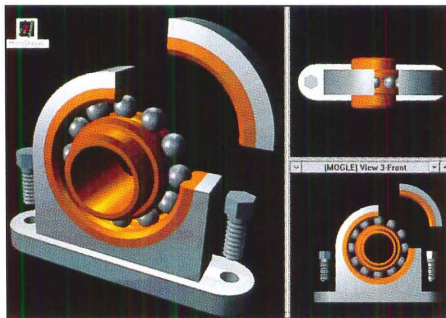
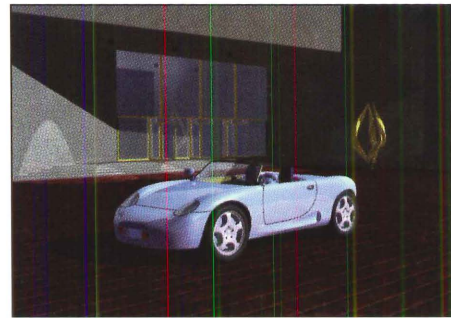


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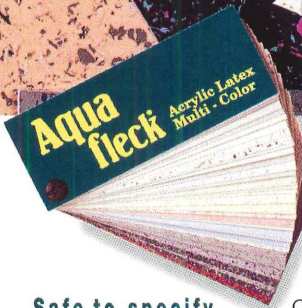
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- ◆ National television programming on innovative approaches to government-sponsored architecture in communities across the country is planned for late 1995.

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- ◆ Through the generosity of the McGraw-Hill Construction Information Group, support is being provided to AIA Atlanta via Accent on Architecture for the construction of architect-designed Habitat for Humanity houses during the 1995 AIA convention in Atlanta.

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Volume Outlook *continued from page 31*

• **Warehouses:** Activity has come on strong in growing regional hubs, particularly in the South Atlantic and South Central regions. For 1996, a declining amount of store construction will exert a slight negative pull.

Mixed outlook for institutional buildings

Education: School construction was hot in 1995, advancing 11 percent. Elementary schools continue to lead the expansion, but junior and senior highs are now showing substantial increases as well. Pressure for more classroom space remains strong. According to the National Center for Education Statistics, total enrollment of primary and secondary students will grow 9 percent by 2000. There is little growth, however, in colleges and universities.

Healthcare: Cost-containment has taken its toll on this category. While volume has hovered in the range of 70 to 75 million sq ft, outpatient clinics have offset a weakened volume of hospital construction. But the move to health-maintenance organizations and managed-care networks, and the recent flurry of takeovers, has accelerated over the past two years, leading to even lower hospital construction and moderate declines for the category as a whole. Contracting has been stable in clinic and nursing-home construction, the latter buoyed by growth of the elderly population.

Prisons: This is dominating the public-building category, climbing from 5 million sq ft in 1980 to 25 million sq ft in 1994.

Other categories: slipping

• **Manufacturing:** Slight declines in capacity utilization during the first half of 1995 translate into modest downward pressure on plant expansion in the quarters ahead. Other factors likely to exert a restraining influence on manufacturing construction include slower growth in corporate profits and slower growth in exports.

• **Public works:** The push to reduce federal spending implies that an even greater funding burden will be placed on state and local governments for public-works projects. Congressional delay in passing highway appropriations for fiscal 1996 are near-term negatives. Environmental legislation is still pending. This translates into diminished near-term support for sewers, water-supply systems, and hazardous-waste cleanup.

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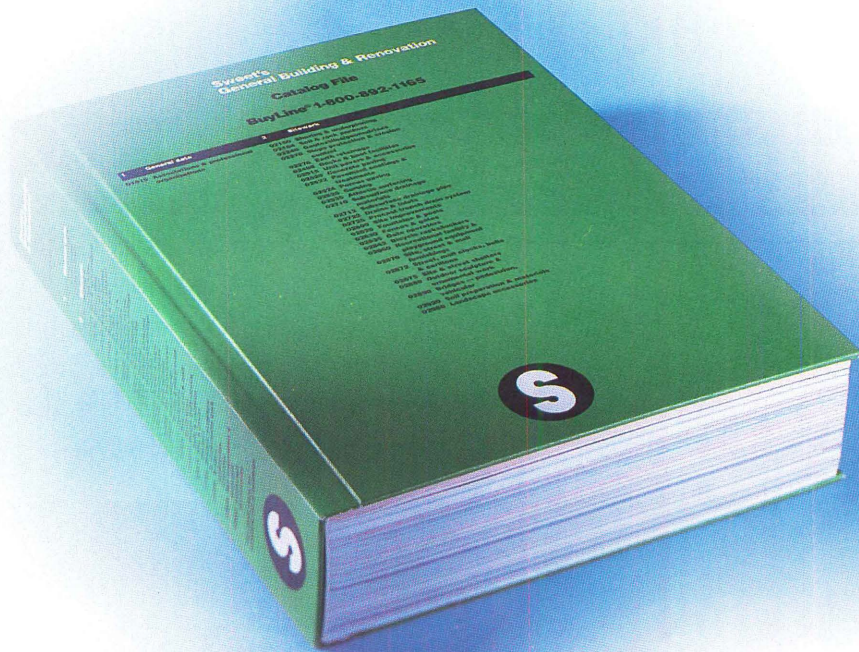
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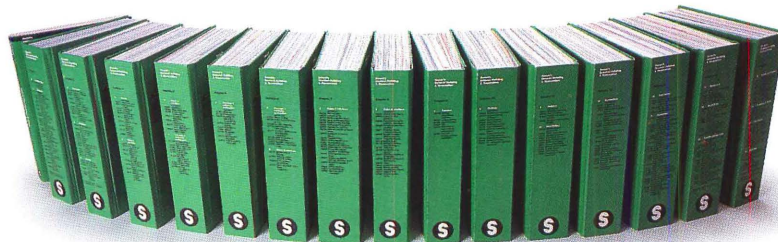
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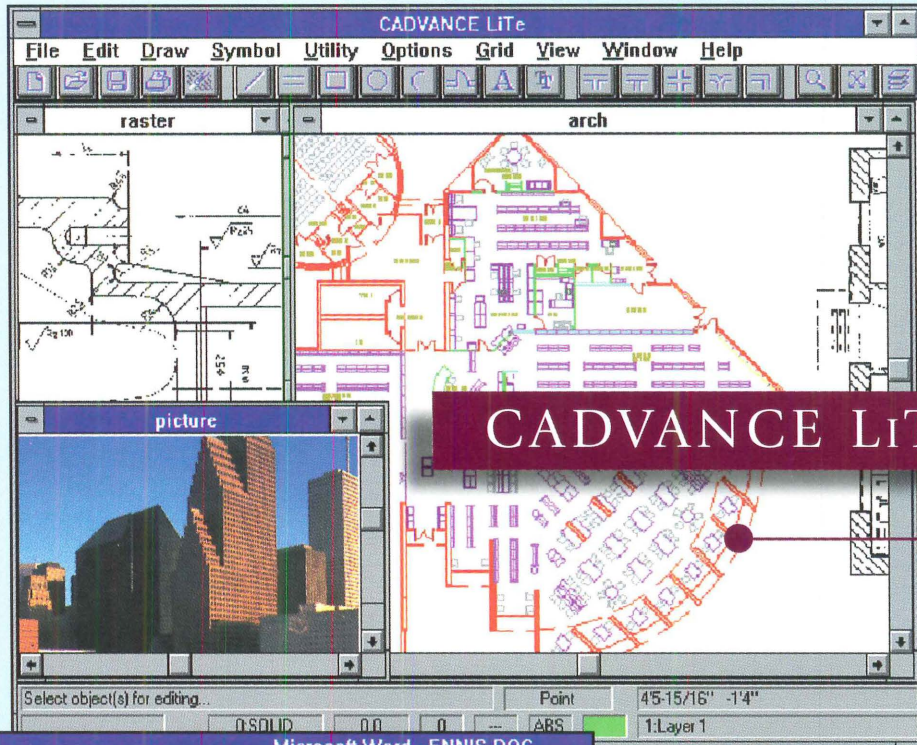


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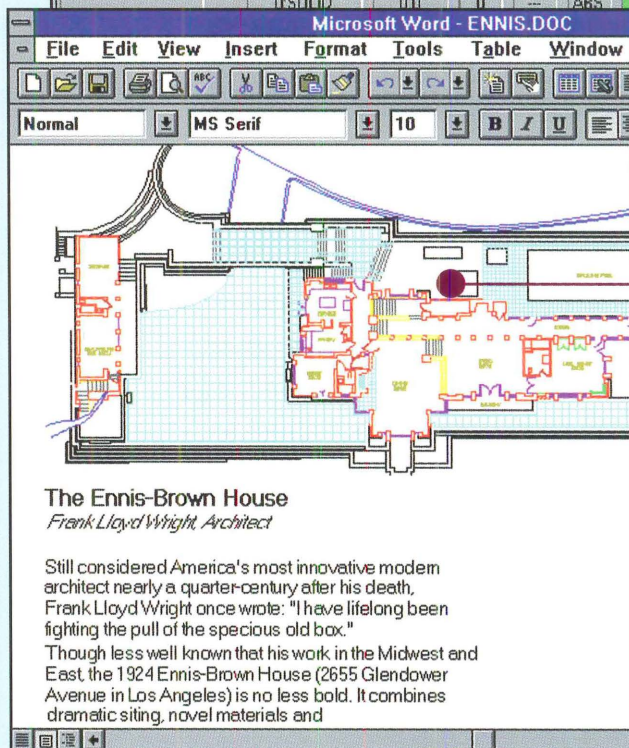
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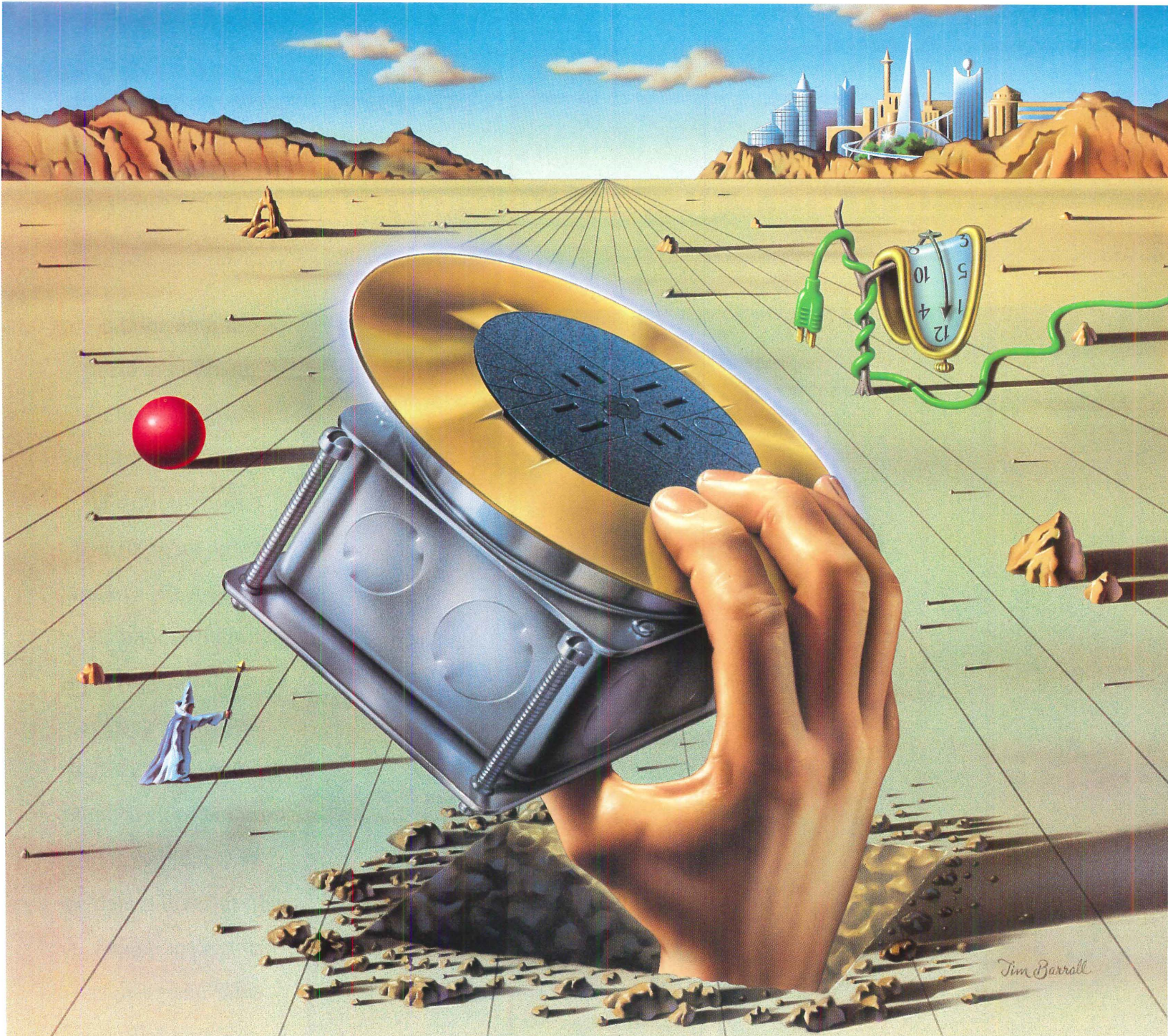


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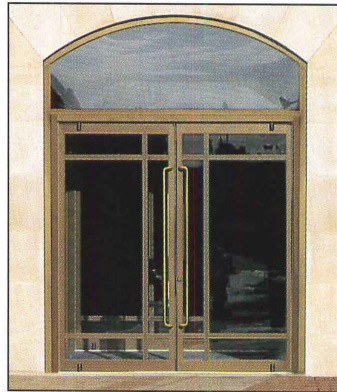
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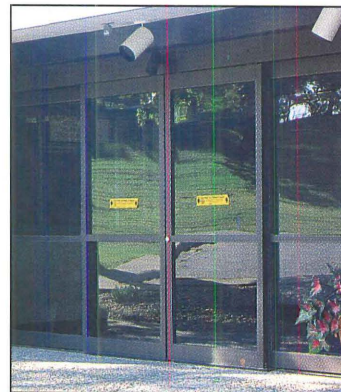
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Manual Balanced Doors



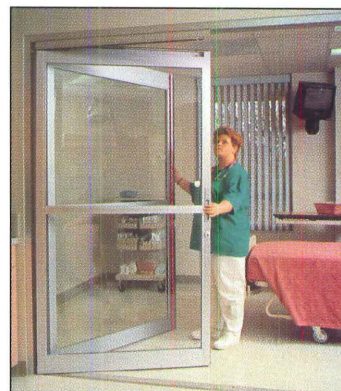
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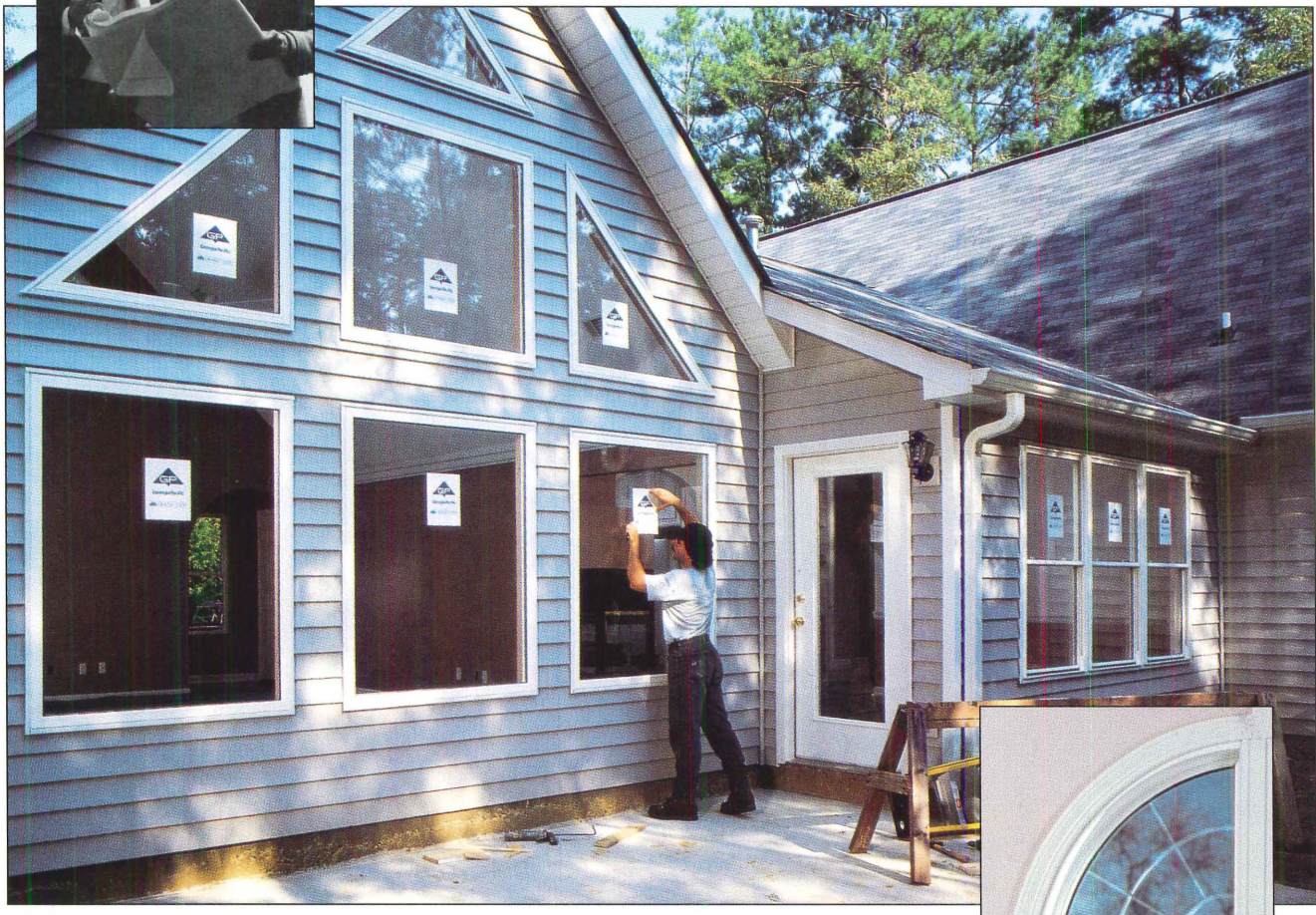
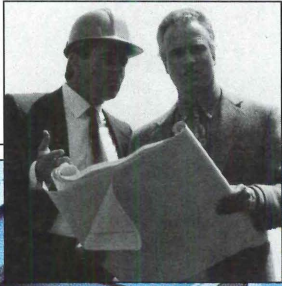
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What makes for a good museum? Architects and curators often have conflicting answers. This month we show three different approaches to containers and collections—the National Corvette Museum in Bowling Green, Kentucky, by Kenneth Neumann/Joel Smith and Associates (page 78); The Rock and Roll Hall of Fame and Museum in Cleveland, by I.M. Pei of Pei Cobb Freed & Partners (page 82); and Tadao Ando's Osaka Prefectural Chikatsu Asuka Museum (page 72); which is “devoted to,” says Japan correspondent Naomi R. Pollock, “*kofun*, keyhole-shaped burial mounds that proliferated during the fifth through seventh centuries A.D.” Each project raises its own issues about what's worth elevating to “art” and how a sense of interest and preciousness is best conveyed by architecture.

Meanwhile, Pei's partner, Henry Cobb, completed the Anderson Graduate School of Management/UCLA (page 88), showing once again the breadth of the firm's work.

BIBLIOGRAPHY

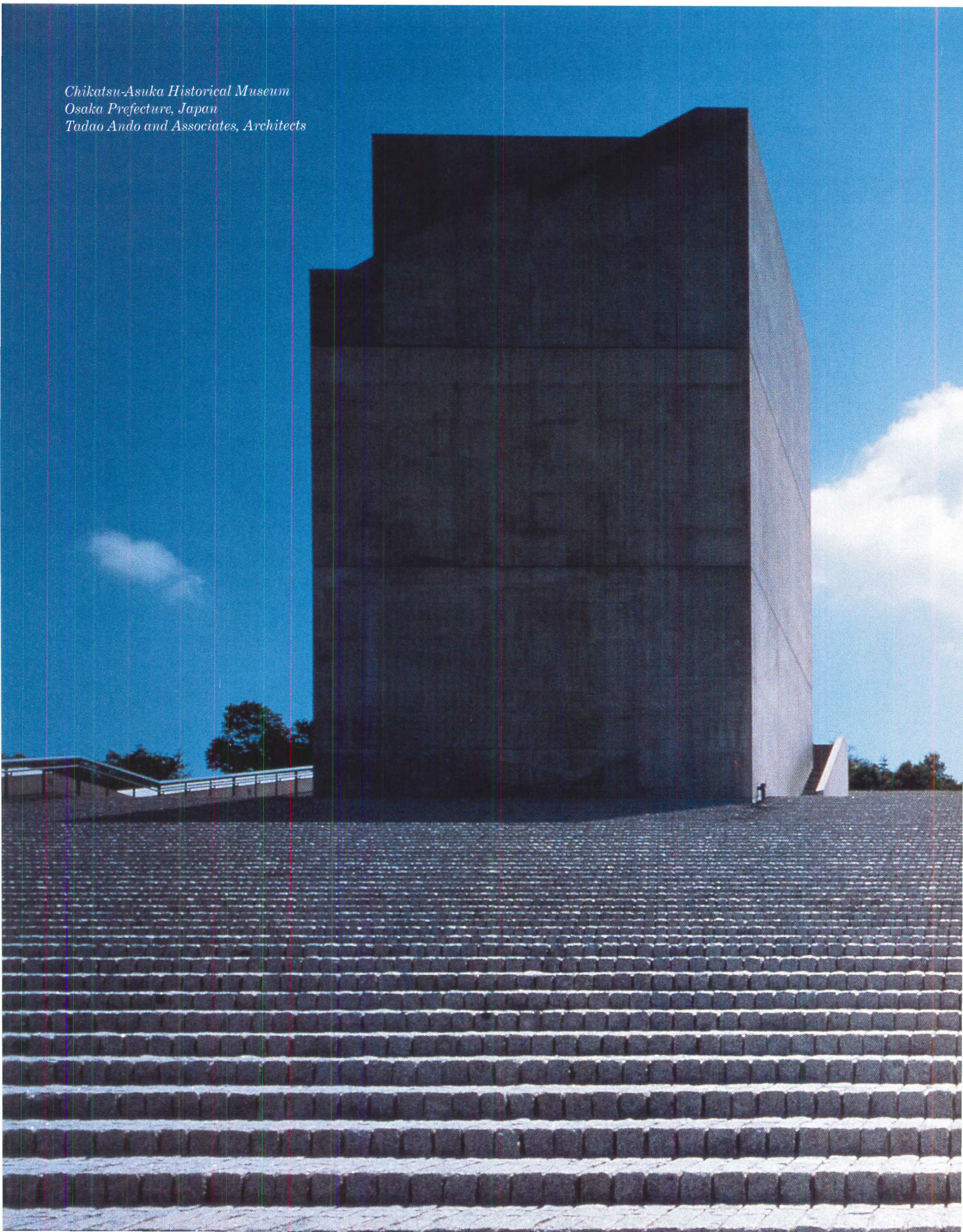
Issues of RECORD listed below contain significant articles related to the subject of this month's Building Types Study, healthcare facilities. Projects covered range from hospitals to clinics. Parentheses refer to page numbers.

July 1994 (36-41)
 May 1994 (98-109)
 February 1993 (98-105)
 October 1991 (120-127)
 June 1990 (87-101)
 April 1989 (78-89)
 October 1987 (101-115)
 June 1986 (115-131)

In this month's *Building Types Study* 732 on healthcare facilities, entitled “Are Big Hospitals Dinosaurs?” we explore the effects of hospital closings and Medicare and Medicaid cutbacks (page 98). Some of the new, smaller hospitals shown in the article intentionally look like hotels—offering a more domestic place in which to heal. *Karen D. Stein*

Manufacturers' Sources listed on page 120

*Chikatsu-Asuka Historical Museum
Osaka Prefecture, Japan
Tadao Ando and Associates, Architects*



Realms of the Living and Dead

*A stepped building joins park-
land to create a museum devoted
to ancient Japanese tombs.*



These days, Japan's Kansai region is better known for its state-of-the-art airport than for its rich history. But just an hour and a half from bustling Osaka, near the early imperial capital of Asuka, sits Tadao Ando's Osaka Prefectural Chikatsu Asuka Museum. Devoted to *kofun*, keyhole-shaped burial mounds that proliferated during the fifth through the seventh centuries A.D., the museum is a quiet homage to Japan's ancient past.

The 64,000-square-foot building forms the nucleus of an indoor-outdoor museum, where visitors can view excavated artifacts, as well as *kofun* in their original state. The surrounding Fudoki-no-Oka Historical Park is the burial site for some 200 graves, including those of four emperors. Embedded in the earth like an enormous tomb, the building conceals exhibition space below, and forms a man-made hill to survey the tomb-filled setting. In the form of a monumental stairway of 147 granite-paver steps, the building fans out into the landscape, and embraces the lush, natural scenery in one broad sweep.

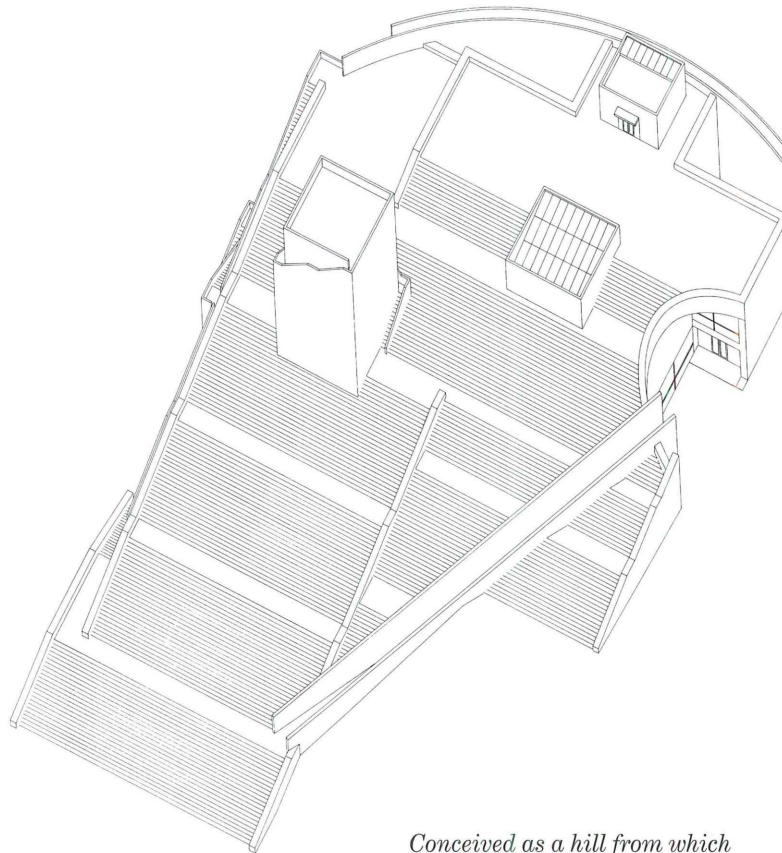
Slicing across the sloped roof is a narrow, open-air corridor that leads visitors to the front door on a tomb-like entry shaft that would seem to be guiding the deceased to their final resting place. Soaring a dramatic 26 feet, the shear concrete walls frame closely cropped snippets of sky, forest, and pond. "Blocking panoramic views and leaving just a little opening is a very traditional idea that enables viewers to see nature more clearly," explains Takaaki Mizutani of Ando's office.

Inside, the three-story building is divided into two parts; the first is the realm of the living, which uses skylights and picture windows to animate its entry lobby, resource center, and curatorial offices. The second part is the realm of the dead, where level changes, geometry, and the absence of light recreate the atmosphere inside *kofun* in the exhibition halls. Descending from the airy entrance into the sunken galleries, sunlight and exterior views are extinguished. In their stead, muted electric light dimly illuminates ritual objects and scale models.

Ultimately, all light is doused within the *yumi no to*, or "tower of the afterworld," hovering ominously above the permanent collection's *kofun*-shaped gallery. Though it doubles as a concrete-clad observation tower outside, offering sun-drenched views in every direction, the interior of the 82-foot-high void is filled with nothing but receding light, which is finally swallowed up by matte blackness. Forging a direct link between the subterranean and the heavens above, the gallery sequence culminates in a skylit triple-height sculpture court housing a replica of a nine-tiered tower from nearby Rokutanji Temple.

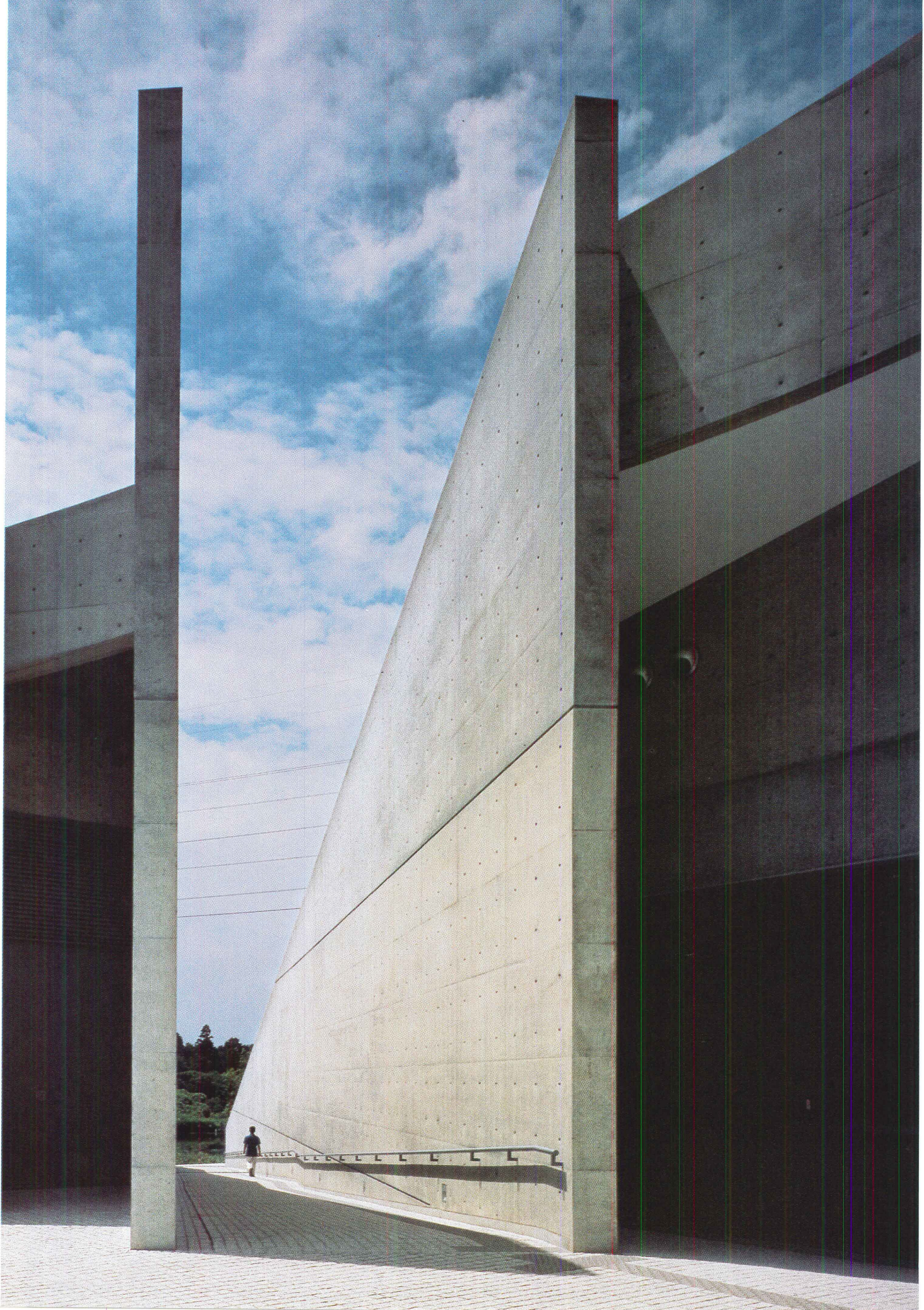
In keeping with the architect's desire to harmonize with the environment, natural materials are used throughout the steel and reinforced-concrete building. Blond wood floors and furnishings balance Ando's ubiquitous unfinished concrete walls, whose silky surfaces are the product of urethane-treated formwork. Devoid of ornament both inside and out, the building relies on the play of light and shadow to enliven its masonry walls.

An added benefit to submerging the building is its presumed stability in the event of an earthquake. Largely unscathed by the Hanshin earthquake, which jolted Kansai earlier this year, Ando's buildings have a very strong track record, and he is currently working on several potential projects for blighted Kobe. Thus, there may be many earthquake-safe Ando buildings to come. *Naomi R. Pollock*

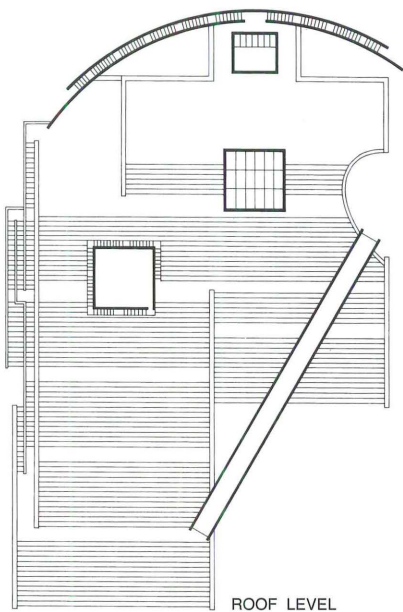


Conceived as a hill from which the tomb-filled park could be admired, the stepped building doubles as a venue for concerts and theatrical performances (above.) Sinuous concrete walls draw visitors in from the parking lot, and tie the building to the landscape (below). A narrow, walled passage leads visitors toward the main entrance (opposite).

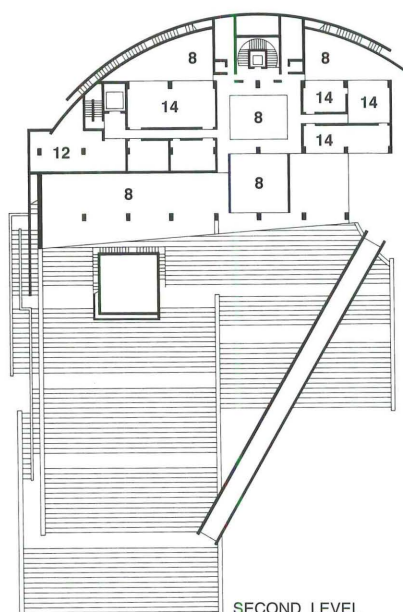




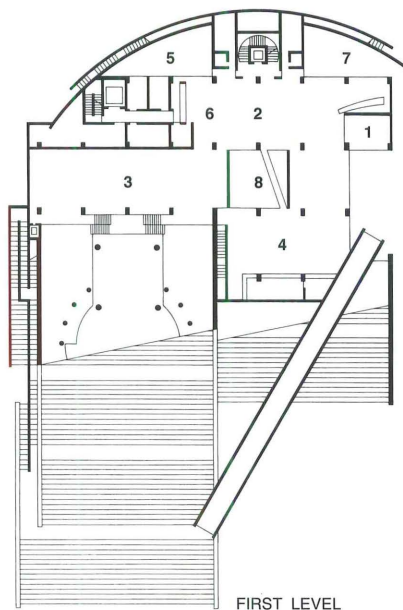




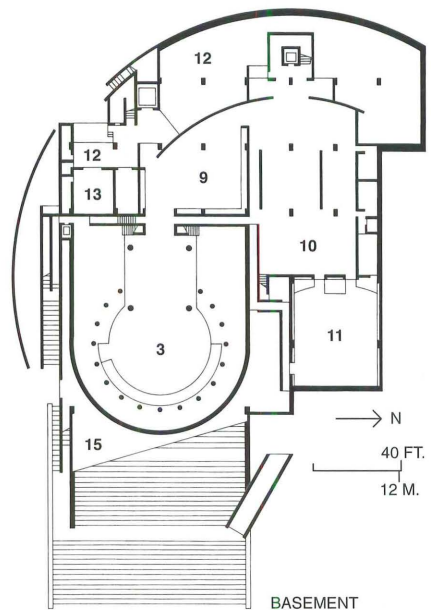
ROOF LEVEL



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FIRST LEVEL



BASEMENT

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|---------------------|---------------------|------------------|
| 1. Entrance | 6. Reception | 11. Auditorium |
| 2. Entrance hall | 7. Court | 12. Storage |
| 3. Exhibition space | 8. Void | 13. Photo studio |
| 4. Library/workshop | 9. Exhibition space | 14. Office |
| 5. Cafe | 10. Foyer | 15. Mechanical |

The stepped roof is punctured by an observation tower; an elevator shaft, and a skylight that crowns the sculpture court. The court visually links the base-level galleries with the entry level and resource center above (section and photo opposite).

Credits

Chikatsu-Asuka Historical Museum

Osaka Prefecture, Japan

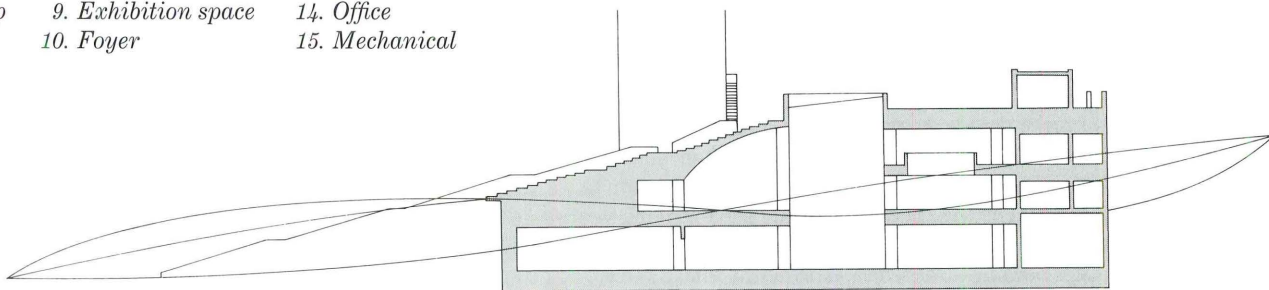
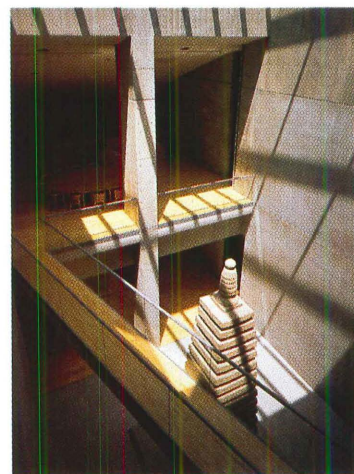
Owner: Osaka Prefecture

Architect: Tadao Ando and Associates

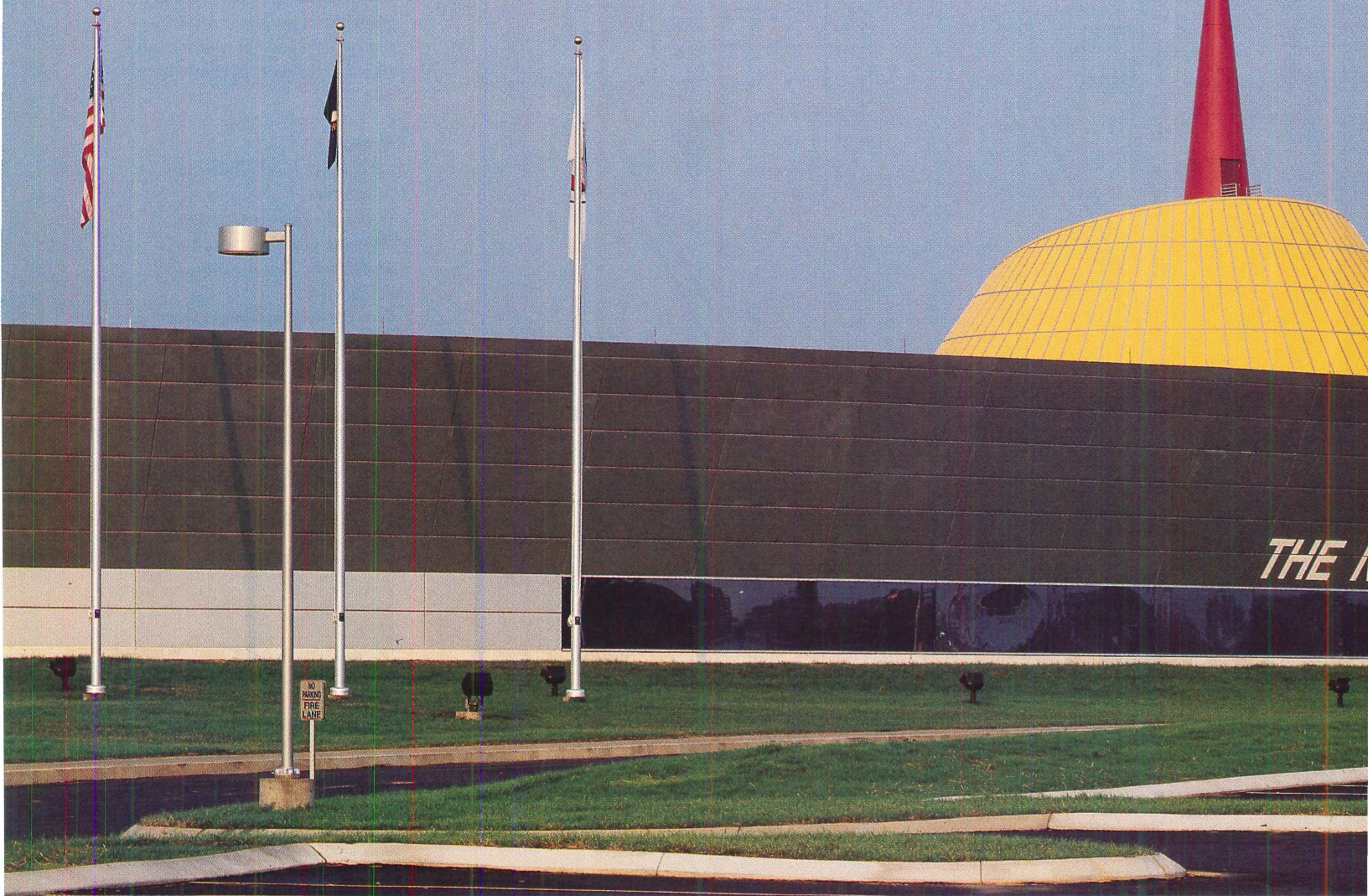
Structural Engineer: Ascoral Engineering Associates

Mechanical Engineer: Setubi Giken

General Contractor: Joint venture of Konolke Construction and Mitsubishi Construction



Concours de Corvettes



This year saw the inaugurations of museums devoted to such pop-culture icons as Route 66 and Rock and Roll (featured in this issue). But they were beaten to the punch when aficionados of the premier symbol of America's post-war infatuation with speed on the open road dedicated the National Corvette Museum in late 1994. Over 100,000 people showed up, including some 2,000 driving vintage Corvettes from the farthest states in the union. Enthusiasts compare their comradeship to a religion. When fan-club and individual donations stalled at \$4 million, museum president Dan Gale secured a bank loan of another \$4 million to build the 68,650-square-foot building (plus another \$3 million for start-up) by forecasting 500,000 paying visitors a year.

A "museum" might seem the wrong word to describe housing for working vehicles capable of easily exceeding 100 miles per hour. It was a problem that architects Joel Smith and Kenneth Neumann (a Corvette enthusiast himself) wrestled with during the four long years they worked with their nonprofit client on fund raising and development. Much of design became a search to express the energy the building would contain. The site is 30 acres in the middle of farmland halfway between Nashville and Louisville, just west of a major con-

necting highway. Not the least of the design mission, then, was to attract passing tourists. The designers took their cues from the cars themselves. The front facade (above) follows characteristically sinuous lines and ends in a pointed prow (overleaf) aimed straight at visitors entering the site. To the rear rises the "Skycone" housing the pantheon of classic Corvette designs, and taking its form and red-and-yellow colors from the marque's logos of the past. The 11-story red cone, which shoots through the glass roof, is the tallest structure outside the two cities; its pulsing tip of translucent plastic holding two phased strobes marks the building on the horizon for miles around.

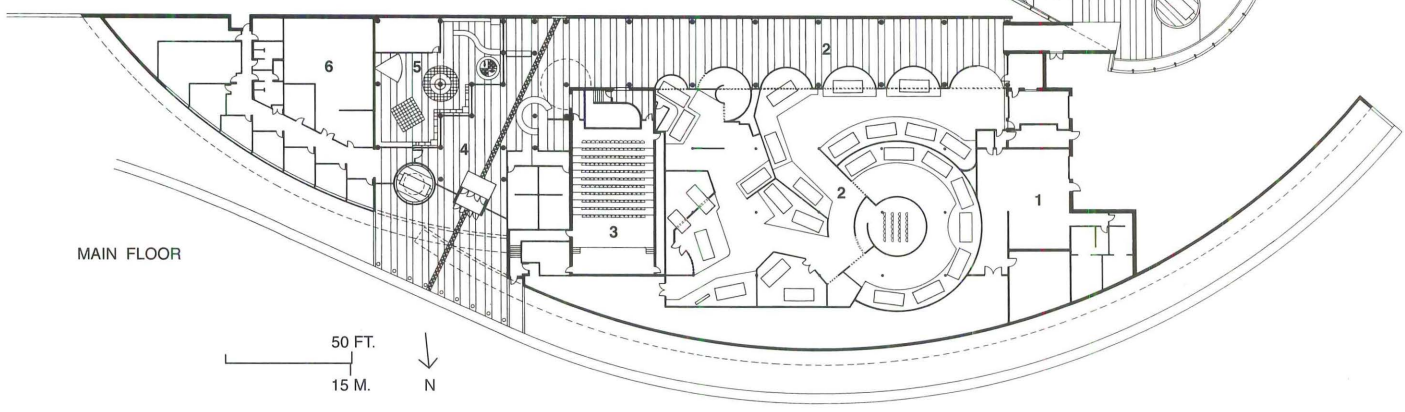
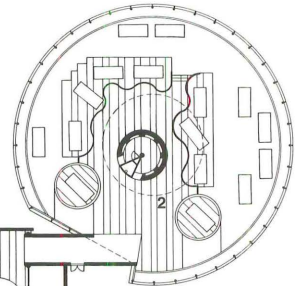
For all its drama, the museum is economically straightforward in construction and organization. The entrance to the steel-frame structure is defined by a cantilevered split in the angled, insulated metal-plank siding (lower left in plan opposite). Inside a revolving tempered-glass drum sits the millionth Corvette. Visitors pass into the theater for a 15-minute orientation movie and move on into the north exhibition space, which emphasizes the car's evolution and construction. The other two galleries, including the Skycone, display the finished product's magnetic popular appeal. *Charles K. Hoyt*

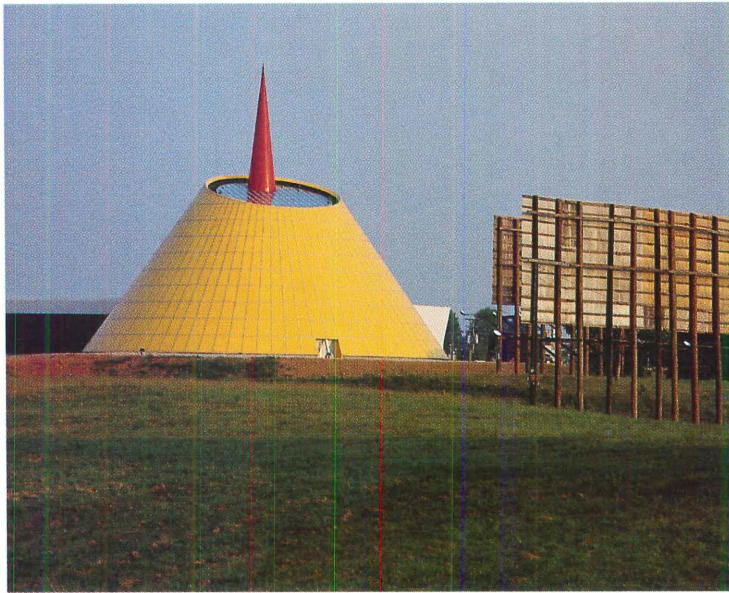
*National Corvette Museum
Bowling Green, Kentucky
Kenneth Neumann/Joel Smith and
Associates, Inc., Architect*



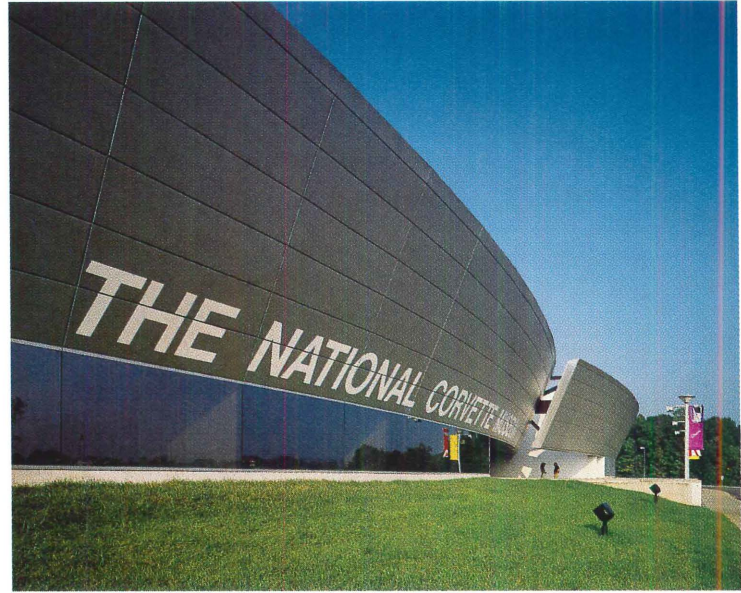
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- 1. Support
- 2. Exhibit
- 3. Theater
- 4. Lobby
- 5. Souvenir store
- 6. Offices

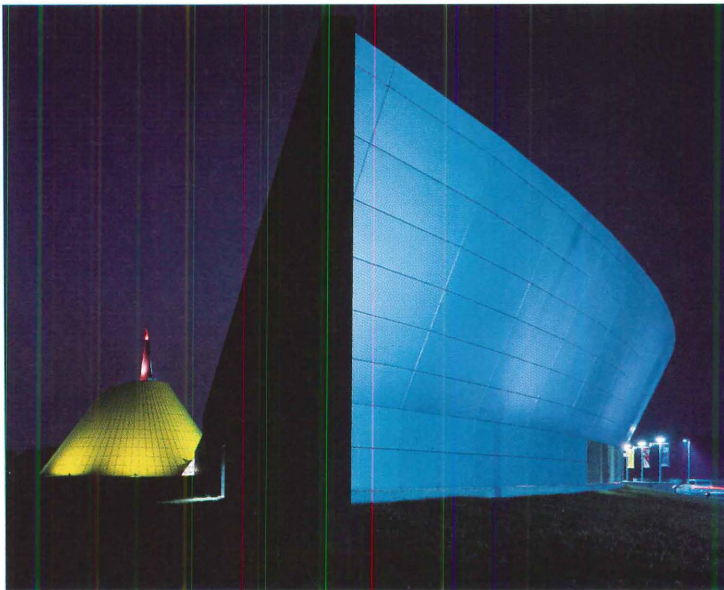




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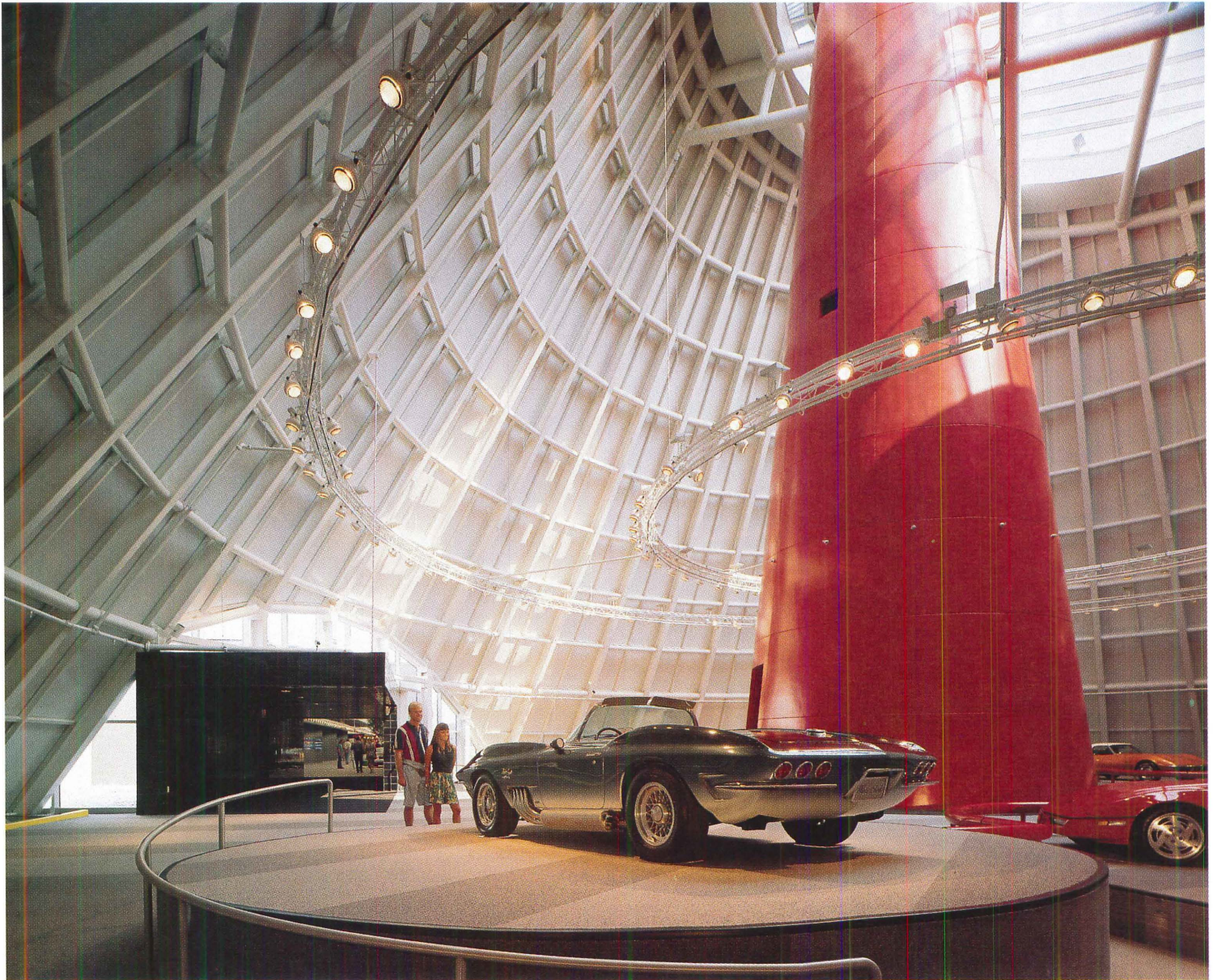
3



4

The design team worked closely with the museum board of directors to create both a fitting shrine for enthusiasts and an attraction for tourists. By day, the yellow "Skycone" (1) stands in startling contrast to surrounding green fields. By night, it glows like a beacon (3). Its baked-epoxy automotive finish is applied to metal panels in custom shapes unlike those on the rest of the building, which are standard matte-gray planks (2). Inside, exhibition spaces are designed to view each car from

at least three directions. The sloping concrete spiral floor inside the dome (5) allows views from different levels as well. Inside the main building, the linear southern gallery (4) presents a procession of real "vettes," and especially valuable models in cases contained in the curving walls separating this space from the north gallery. A combination of electric and daylighting is carefully controlled to enhance the cars' sleek lines. Contrasting wall textures emphasize the gleaming finishes.



5

Credits

*National Corvette Museum
Bowling Green, Kentucky*

Owner: *National Corvette
Museum Foundation*

Architect: *Kenneth
Neumann/Joel Smith &
Associates, Inc.—Kenneth
Neumann, Joel Smith,
principals-in-charge; David
Rose, Scott Bonney, project
designers; Pat Macoska, project
manager; Kathy Buck, Ed
Mackowiak, Peter Lichomski,
Mike Thompson, James Stock,
Liz Nyquist, Gene Carrol, Ross*

*Kaplan, Bernie Grant, Adam
Berkelhamer; project team*

Associated Architect:

William Finley

Exhibit Designer: *Exhibit
Works, Inc.*

Engineers: *DiClemente/Seigel
Engineering, Inc. (mechanical/
electrical); L & A, Inc.*

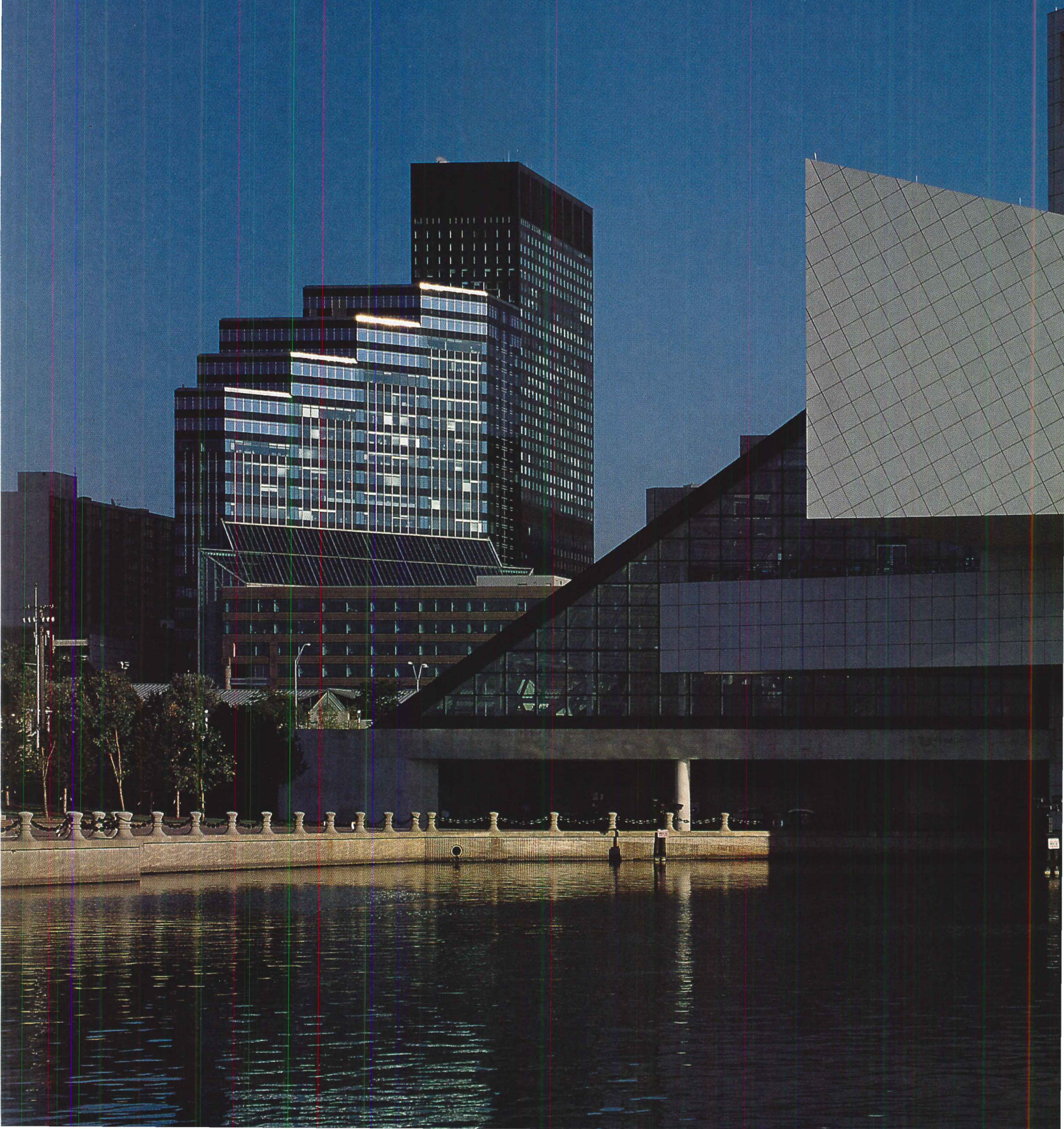
*(structural); Van Meter
Engineering, Inc. (civil)*

Landscape Architect:
Grissim/Metz Associates, Inc.

**Joint-Venture General
Contractors:** *Alliance Corpor-
ation; Turner Construction*

Cleveland Rocks

I.M. Pei's latest museum is, ironically, a symbol of his own power as a brand name.



*Rock and Roll Hall of Fame and Museum
Cleveland, Ohio
Pei Cobb Freed & Partners, Architect
Robert P. Madison International,
Associate Architect
The Burdick Group, Exhibition Planning
and Design*



M. Pei says he wrestled with the implications of the decision to move the Rock and Roll Hall of Fame and Museum from its original site. Intended for a downtown Cleveland parcel adjacent to Tower City, the project was relocated to the shores of Lake Erie. When a building site changes and the design is only slightly modified, we are given a rare insight into the architectural equivalent of the nature-versus-nurture debate. Rather than being a product of its environment, this building has emerged from a unique gene pool: the architect's personal vision.

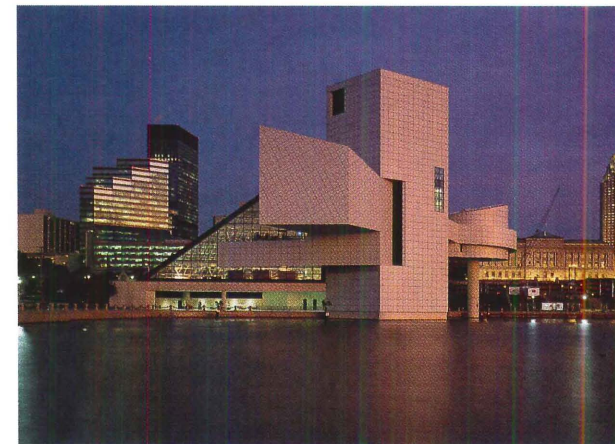
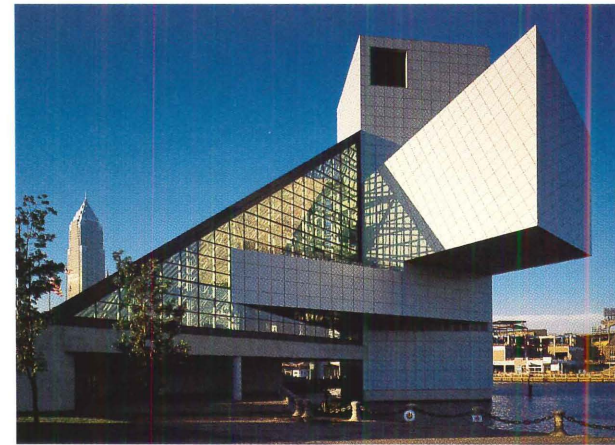
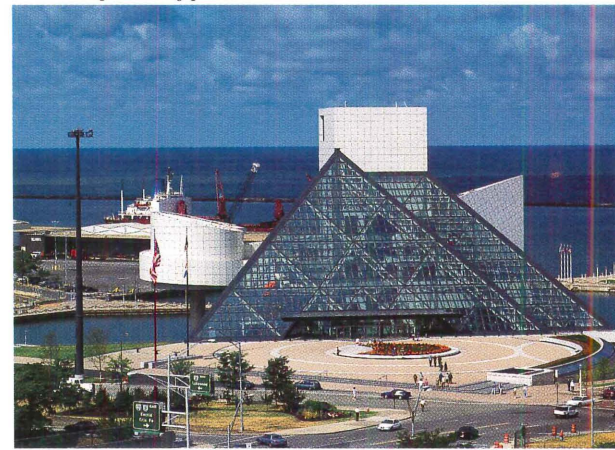
As a music form, rock and roll long ago achieved mass credibility—even the notoriously rock-shy Pei says he recently “got used to the Beatles”—but as the stuff of museums it needed the leap of faith that only someone of Pei's architectural stature and highly recognizable style could provide. At the dedication, Atlantic Records' Ahmet Ertegun, a major benefactor of the project, listed Pei's impressive building credentials and declared: “Pei was the only choice.”

At the Louvre [RECORD, May 1988, pages 142-149], Pei made a triangle of glass and steel—a pure geometric shape to contrast with the historic Cour Napoléon. The crystalline pyramid is now Pei's signature. Though he calls the form that fronts his Cleveland building a “glass tent” (at a dedication press conference he seemed surprised by one reporter's comparison of the Paris and Cleveland projects), it's a significant slice of the now-famous form. Pei, in fact, was hired not only for the instant symbols he makes, but also for the symbol he has become. Architect also of the Kennedy Library in Boston and the East Wing of the National Gallery of Art in Washington, D.C., he gave the Rock and Roll Hall of Fame Foundation what it wanted most: an imprimatur of high culture.

Rather than explore rock music's improvisational or rebellious side, Pei went straight for its commercial heart: the main space, a grand, multi-level lobby dominated by a museum shop and criss-crossed by people-watching escalators, is perhaps a fitting tribute to the current state of the music industry. The architectural space that Pei has provided displays little more than cars from a U-2 tour. Instead, a team of curators has assembled a mind-boggling array of memorabilia and rock-related artifacts—ranging in scale and importance from Jim Morrison's Cub Scout uniform to original lyric manuscripts of Neil Young songs—and displayed them in dimly lit, enclosed “black box” spaces a world away from Pei's elegantly crafted shell.

This twilight world, mostly beneath the main lobby, was the responsibility of Susan and Bruce Burdick, of The Burdick Group, exhibition planners and designers, and their multi-disciplinary team. Their goal was to frame changing content, which they did with a steel, aluminum, and glass kit of display parts, and energize spaces with sound, light, and bold graphics. Responding to an observation that the building is in fact two museums—one light, one dark—Susan Burdick says the split personality was “an opportunity, not a conflict.” A dominant feature is rock-star regalia shown on mannequins, a discordant wax-museum-like choice favored by curators for convenience—but a stodgy display method for an institution that invested heavily in richly layered interactive computer displays.

All this came at a hefty price: \$92 million in public and private funds, including a \$39-million loan from the state to be repaid by a surcharge on museum admission and a hotel tax (city estimates predict that out-of-town visitors to the complex will generate over \$70 million annually in additional spending). What did Cleveland get besides a welcome boost to its tourist trade? A photogenic symbol that flashes like a corporate logo on the city's skyline. *Karen D. Stein*



When asked about the Rock and Roll Hall of Fame and Museum's resemblance to a giant record player—with its round turntable plaza of brick pavers (top) and its stylus-like aluminum-clad auditorium suspended over Lake Erie (middle and bottom), Pei said the effect “was not intentional.” The south-facing “tent” lobby has low-E glass. “Frankly, the tent will be warm [on bright days], but people will be moving,” says Pei.



Structural steel and concrete slabs support six stories above grade and one below (section below), for a total of 143,000 square feet. Exhibits by the San Francisco-based Burdick Group were inserted into a 25-foot column grid. Included in the 30,000-square-foot main exhibit area below the lobby is the graphic/video "Don't Knock the Rock" (1), video and clothing excerpts from various Rolling Stones tours (2), music and rock history on CD-ROM (3), steel "platforms" devoted to individual artists (4), and the "Mystery Train" theater (5).

The material palette is mostly neutral grays with copper and purple fabric panels as accents. Ductwork is left exposed. The luminescent Hall of Fame (6) on the top floor has edge-lit glass panels carved with the signatures of inductees and tiny video screens inset into the glass that project their images. The wall will fill up with signatures as new members are added. The "video tree" (below), meant to highlight the influence of music video, consists of 25 stripped-down monitors.

Credits

Rock and Roll Hall of Fame and Museum
Cleveland, Ohio

Architect: Pei Cobb Freed &

Partners—I.M. Pei, Leonard Jacobson, Michael D. Flynn, Richard Diamond, Jennifer Sage, Winslow Kosior, Richard Gorman, Marianne Lau, Hope Dana, Steven Derasmo, David Dwight, Mahasti Fakourbayat, Kevin Johns, Sandra Lutes, Christine Mahoney, Gianni Neri, Krista Williams, project team

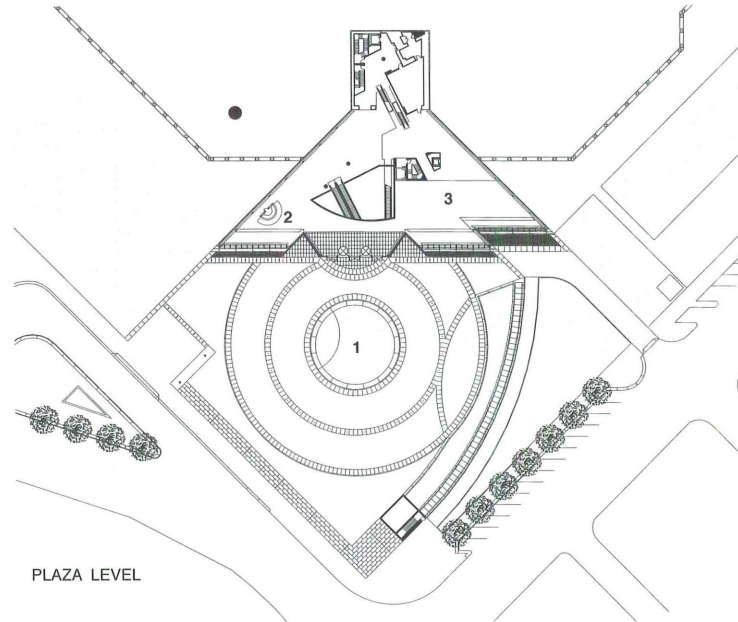
Associate Architect: Robert P. Madison International—Robert Madison, Khai Lim, Richard Franta, project team

Exhibition Planning/Design: The Burdick Group—Bruce Burdick, Susan Burdick, Bruce Lightbody, Christian Anthony, Aaron Caplan, Johnson Chow, Jerome Goh, Cameron Imani, Stuart McKee, and Jeff Walker, project team

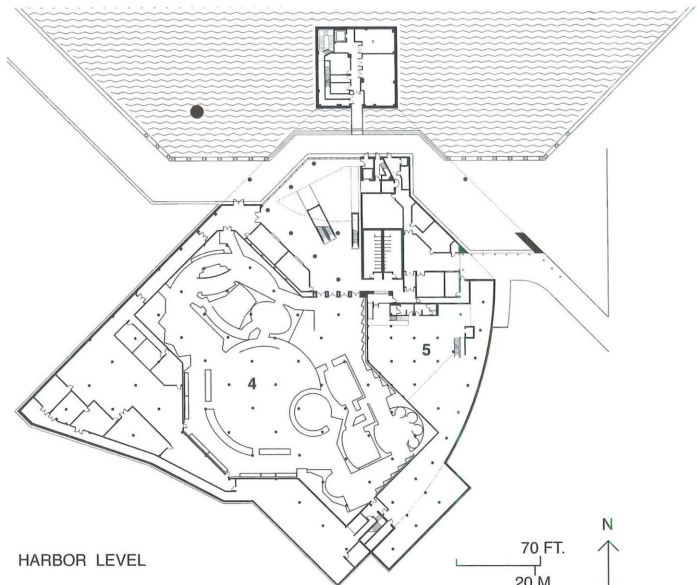
Engineers: Leslie E. Robertson Associates (structural); Altieri Sebor Wieber Consulting (M/E/P); E.G. Hirsch & Associates (structural/exhibits)

Consultants: Fisher Marantz Renfro Stone (lighting), Architectural Lighting Design (exhibit lighting); Shen Milsom & Wilke (acoustical); Charles M. Salter Associates (exhibit acoustics); Boyce Nemea (audio visual); Alexander Isley/Calori & Vanden Eynden (graphics)

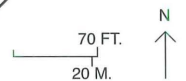
General Contractor: Turner Construction Co. in association with Colejon Corp., Choice Construction Co., and Bradley Construction Co.



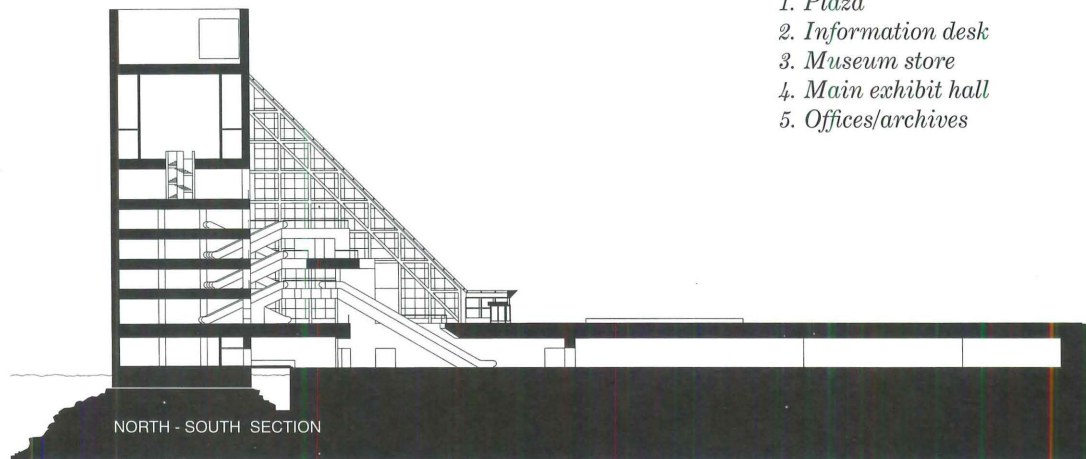
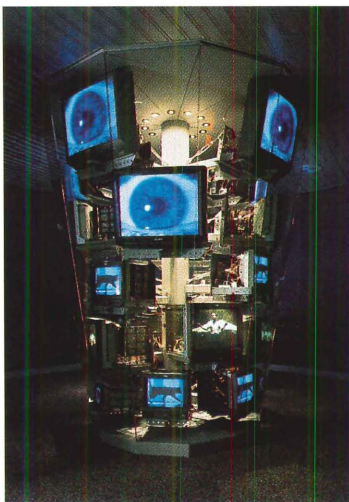
PLAZA LEVEL

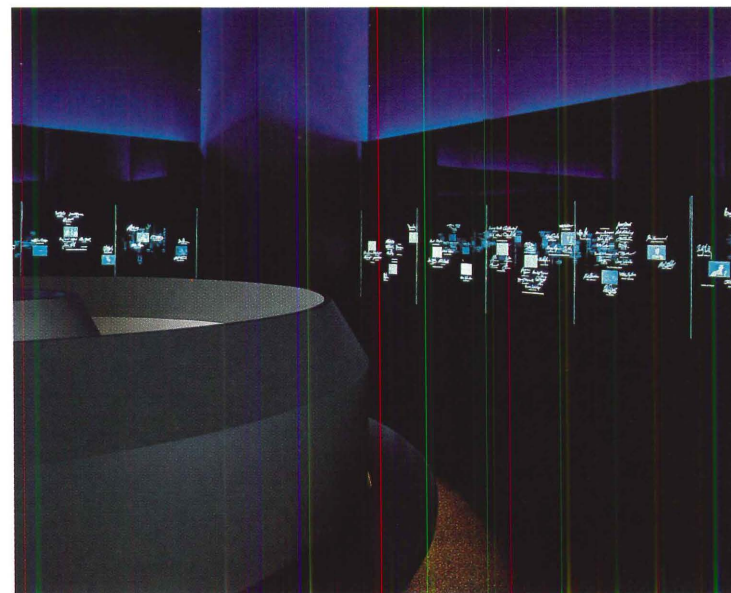
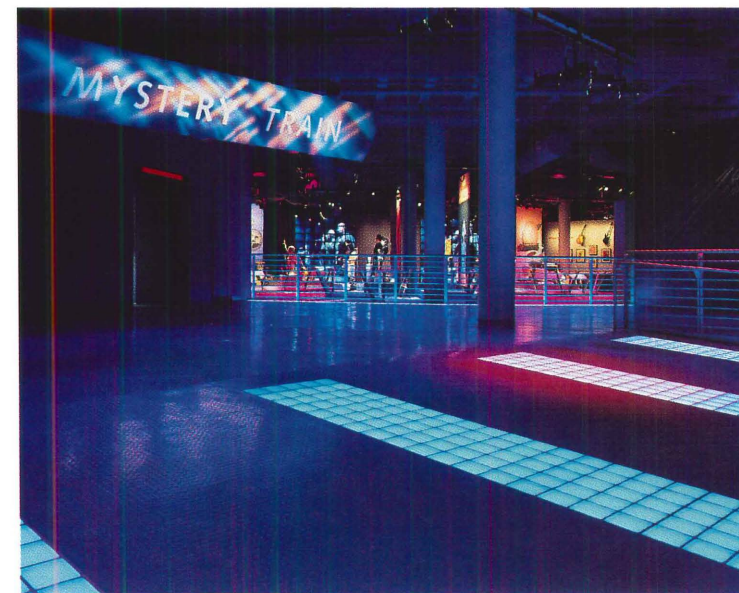
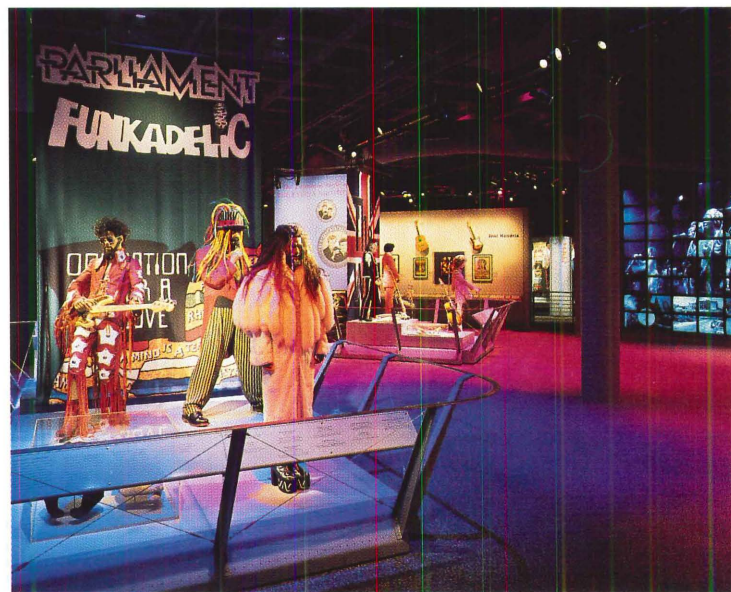


HARBOR LEVEL



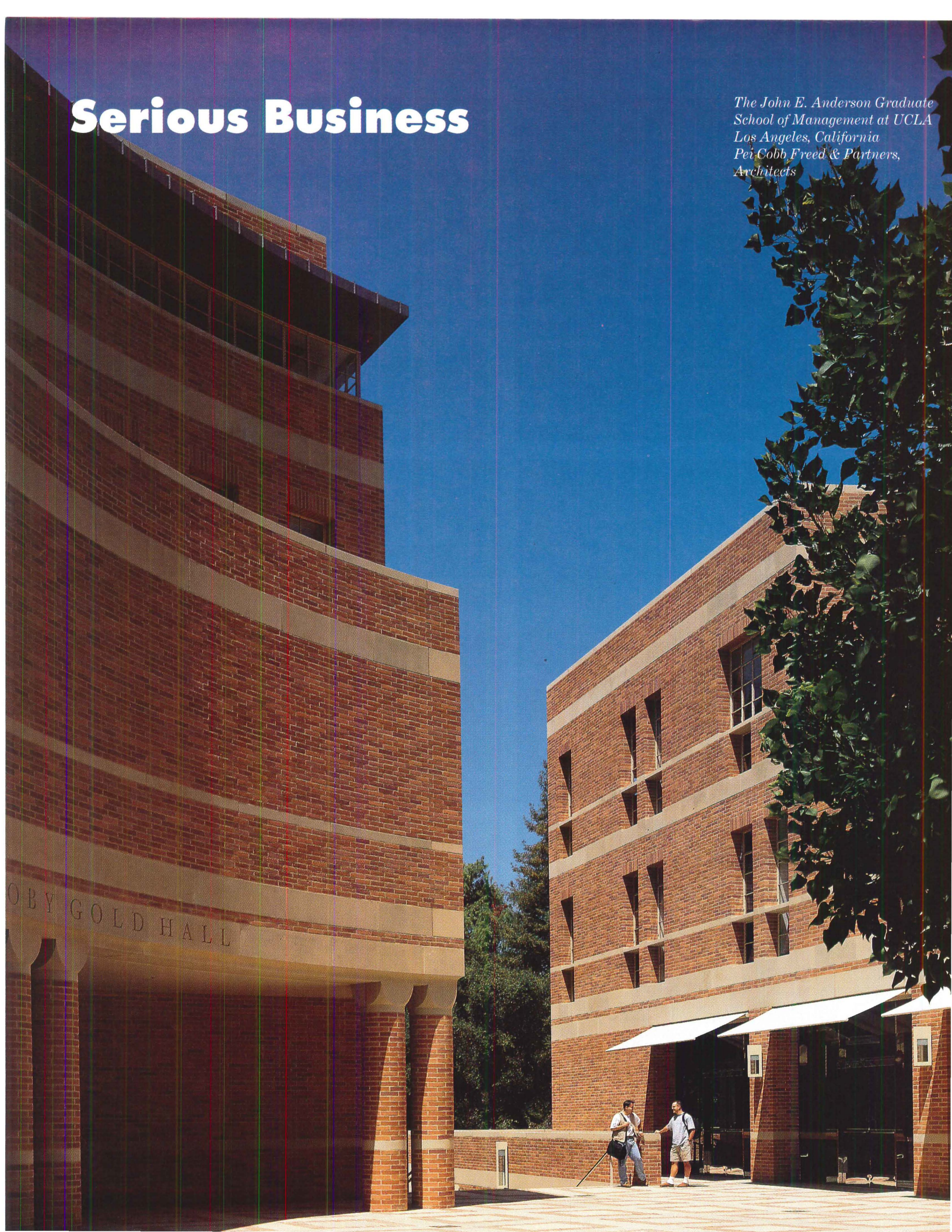
- 1. Plaza
- 2. Information desk
- 3. Museum store
- 4. Main exhibit hall
- 5. Offices/archives





Serious Business

*The John E. Anderson Graduate
School of Management at UCLA
Los Angeles, California
Pei Cobb Freed & Partners,
Architects*



JOHN E. ANDERSON
GOLD HALL

uccess,” declares John E. Anderson, successful businessman, “is a road that is constantly under construction.” Anderson is donor of the largest share of the private contributions that paid for nearly half of the \$75 million it took to build the Graduate School of Management/UCLA which carries his name and opened this fall.

Quest for success was at the core of the philosophy that shaped the program of the school, determined its site, controlled its planning, and gave it its special architectural character. Paramount, according to dean emeritus J. Clayburn La Force, under whose tenure the building was conceived, funded, and built, was the need to connect the academic and corporate worlds of business. Traditionally, UCLA, along with such business schools as Yale, Stanford, and Chicago, had as a key mission teaching future teachers. All this changed as planning for a new school got under way in 1988, and there emerged an educational philosophy that would seek to incorporate bright, rising young executives into its teaching programs, backed by an emphasis on team effort and as sophisticated an electronic information-support system as money could buy.

The scheme worked out by Pei Cobb Freed & Partners design principal Henry Cobb succeeded in providing such a context despite serious challenges. For example, the enormous, 280,000-sq ft space program (not even counting parking, which makes it UCLA's largest building after its medical school) had to be accommodated in a low-rise arrangement that didn't dwarf campus favorites such as neo-Romanesque Royce Hall. The complex also had to fit into one of the few remaining bits of real estate on campus, a hilly site bordered by Sunset Boulevard, a busy thoroughfare that was too close and would have to be moved, and bucolic tree-covered Stony Canyon Creek.

In an ingenious approach that viewed the site, which had a level differential of 60 feet, as an opportunity and not a limitation, Cobb and his design team divided the space program into six semi-detached pavilions and a convocation hall, arranged about a round court with access from four directions. The resulting mini-campus comprises three MBA teaching buildings, a large library, a commons building also used for administration, and an outrigger building crucial to the school's mission—the executive education center. The pull between providing a strong physical locus for the school and the desire to use the complex to unite the north and south campuses is resolved through a seamless integration of the ensemble's five levels into the 60-foot sloping site, with the heart of the complex not an architectural object, but a public plaza that has become the symbolic heart of the school. The multi-building scheme also manages to combine urban and architectural values with economic facts of life: the campaign to raise the \$35 million needed from private donations was made easier by having more buildings for potential donors to fund and lend their name to.

The result is the academic village Cobb sought. It isn't quite Jefferson's concept for the University of Virginia campus, to which Cobb likens his scheme. The intimate round “void,” which Cobb created as the school's nexus, differs markedly from Jefferson's large, formal, open-ended solution at Virginia. But with its sense of scale and consistent use of materials and colors, its breakdown of barriers between students and faculty, and a pervasive but largely transparent insertion into the built fabric of state-of-the-art communications technology, the school feels it's ready to prepare the nation's corporate captains for the uncertain demands of the 21st century.

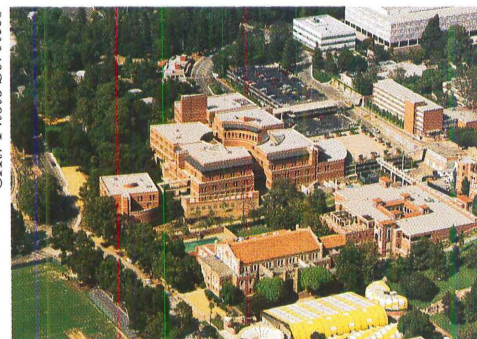
Stephen A. Kliment

Up Close

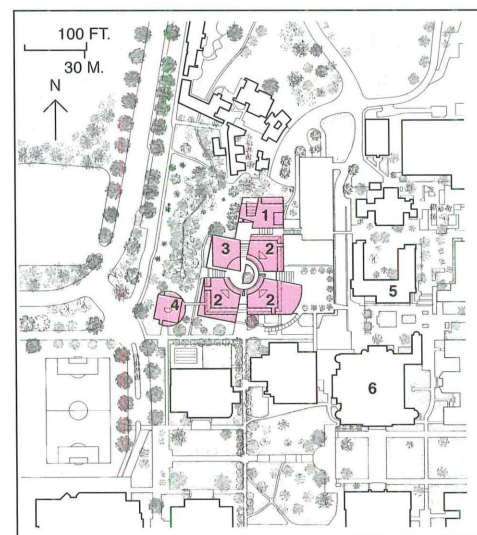
Academic village. By inserting the school's buildings into the sloping site and linking the school to the entire campus, respecting such well-loved pathways and places as Sycamore Alley and Stone Canyon Creek, the architects made a virtue out of necessity. The concept of the academic village, coined by Thomas Jefferson, was adapted by Cobb to the school. The round court, which functions as a public square, is reached by an array of open passageways ending in four major stairs, two leading down from the library to the north and the main campus to the east, and two rising from Stone Canyon Creek to the west (opposite) and Sycamore Alley to the south. In contrast to older Royce and Rolfe Halls, which defer to the space between them, newer UCLA buildings have a scale, in Cobb's words, that is “hostile and somewhat destructive to the rest of the campus. They are big boxes surrounded by left-over space.”

Continued on next page

© Air Photo Services



1. Library
2. MBA buildings
3. Commons
4. Executive education building
5. Rolfe Hall
6. Royce Hall



Rerouted Sunset Boulevard and Stone Canyon Creek, to left of photo and site plan, mark one edge of the school's mini-campus. Convocation hall juts out at the southeast of the four buildings that form the round “public square.”

© Joshua White Photography photo



© Eric Schiller photo



© Eric Schiller photo



Up Close continued from previous page

In the earlier [Royce Hall] tradition, larger buildings were shaped so that space was the center of the stage, not the building as object.”

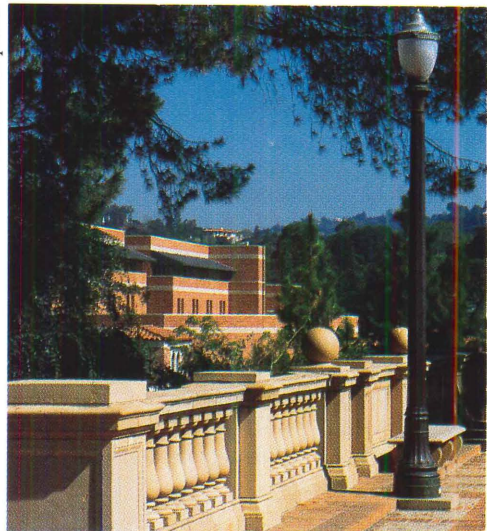
The building used by the School before Anderson was an “object,” a six-story box of 1961 vintage that defied chance encounters between faculty or students working on different floors. Referring to the way the new complex has enriched the spatial and social fabric of the entire campus, Cobb refers to the “multiple readings, paths, ways of experiencing the complex. Even if you have no destination there, you can still enjoy the richness of the building.”

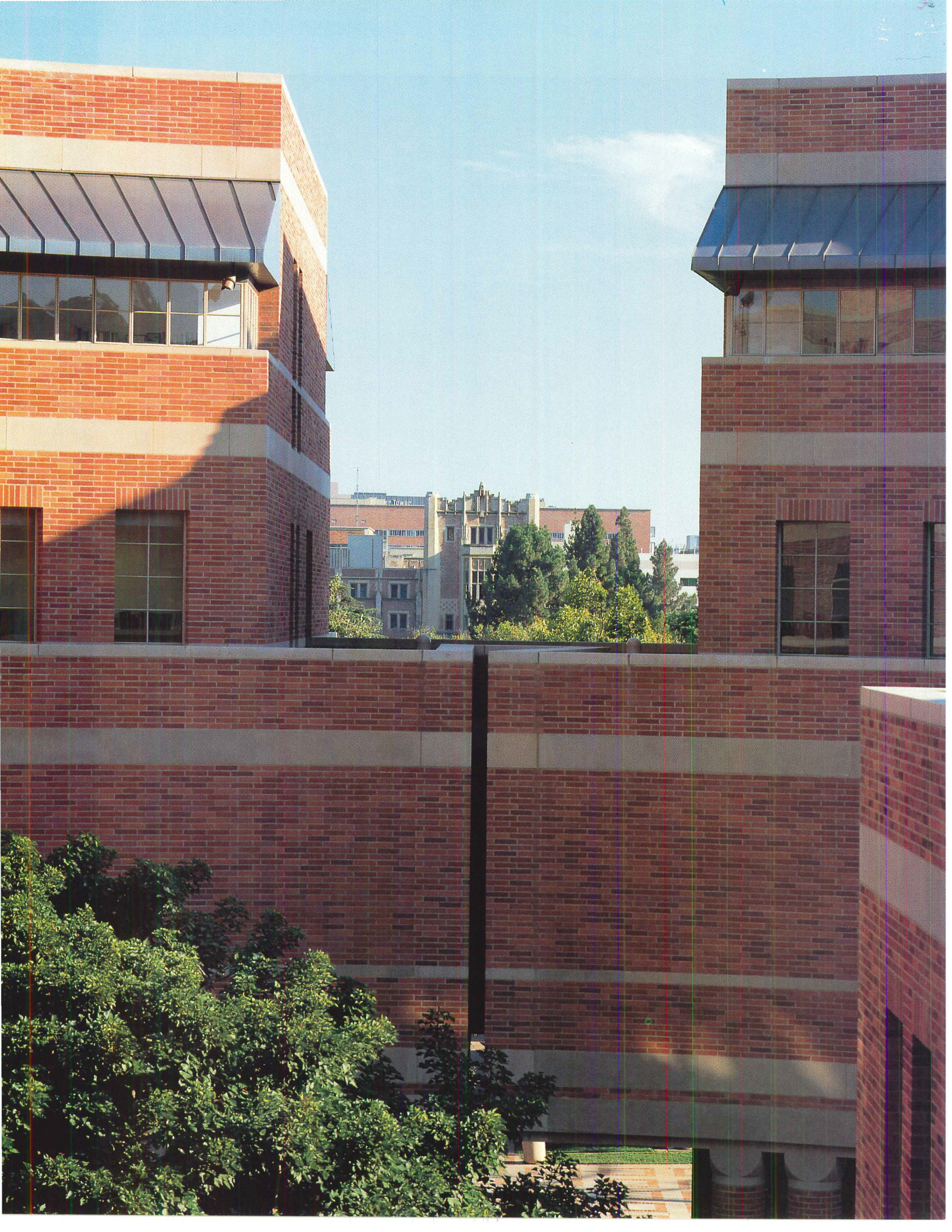
The 60-ft. change in grade combined with the play of levels allows the community to circulate throughout the complex’s five major components without going outside; at level 3 there’s continuous circulation linking the main buildings and library.

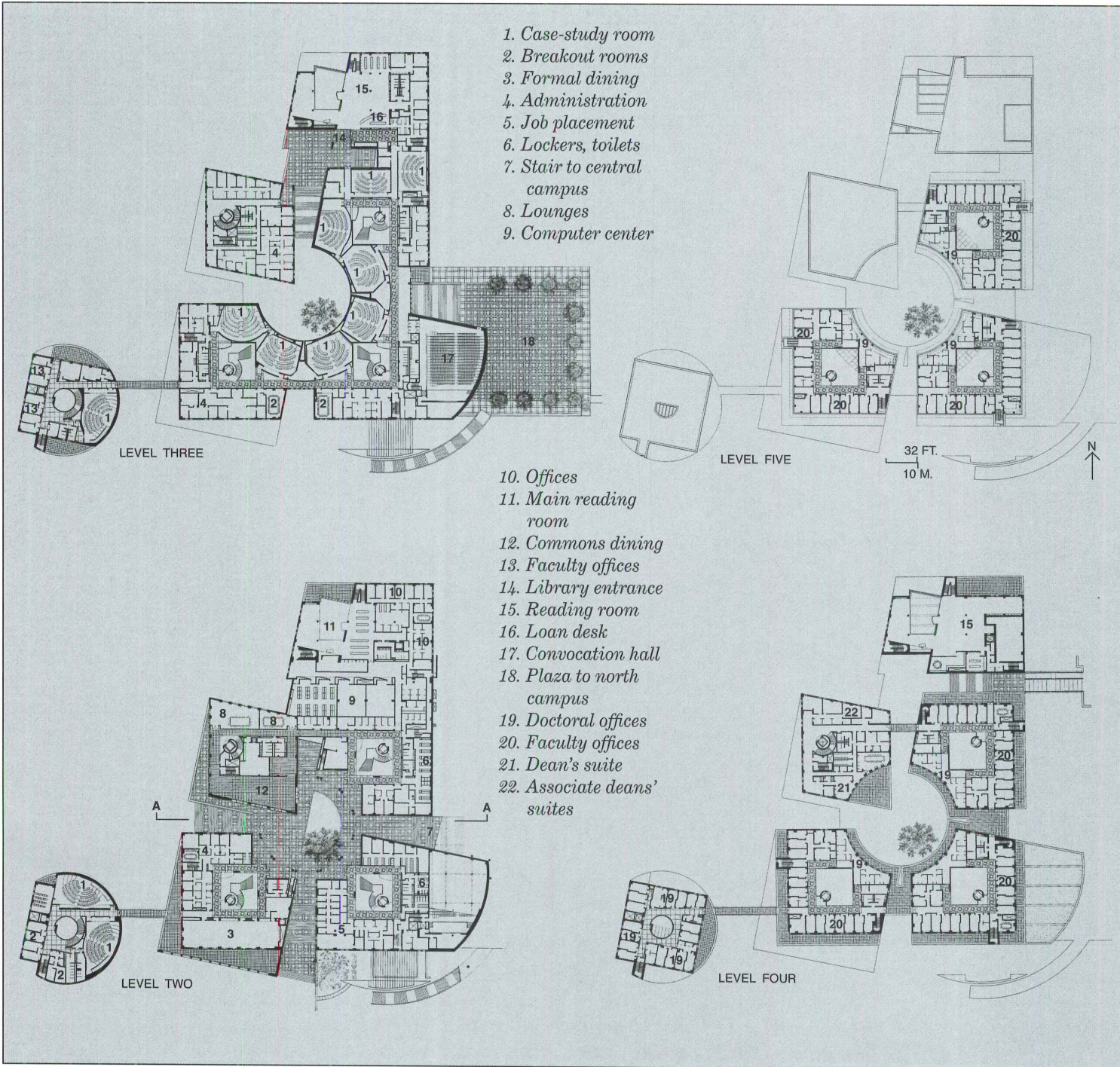
Seen from outside, the buildings present a set of rich but simple, soothing textures and colors and a sense of scale that recalls neighbor Royce Hall. Materials are limited to courses of pink, 12-in. brick separated by bands of smoothly finished cast stone panels. Penthouse floors are set back (middle and bottom left, and opposite page) and come with horizontal strip windows and aluminum overhangs. This helps keep the brick walls fronting the public square from appearing too high. Vertical slots mark the transition between buildings.

The modest height of the School can be seen (below) from the Royce Hall plaza. The campus flooring pattern is carried through faithfully into the new complex (middle left).

© Eric Schiller photo







- 1. Case-study room
- 2. Breakout rooms
- 3. Formal dining
- 4. Administration
- 5. Job placement
- 6. Lockers, toilets
- 7. Stair to central campus
- 8. Lounges
- 9. Computer center

- 10. Offices
- 11. Main reading room
- 12. Commons dining
- 13. Faculty offices
- 14. Library entrance
- 15. Reading room
- 16. Loan desk
- 17. Convocation hall
- 18. Plaza to north campus
- 19. Doctoral offices
- 20. Faculty offices
- 21. Dean's suite
- 22. Associate deans' suites

32 FT.
10 M.
N ↑

Floor Plans

The School of Management is organized on five levels that conform to the steep site. Level 1 (not shown) contains building and mail services. Each building is identified by its "signature" color integrated into the terrazzo, carpet, seating, and wall fabrics.

Details

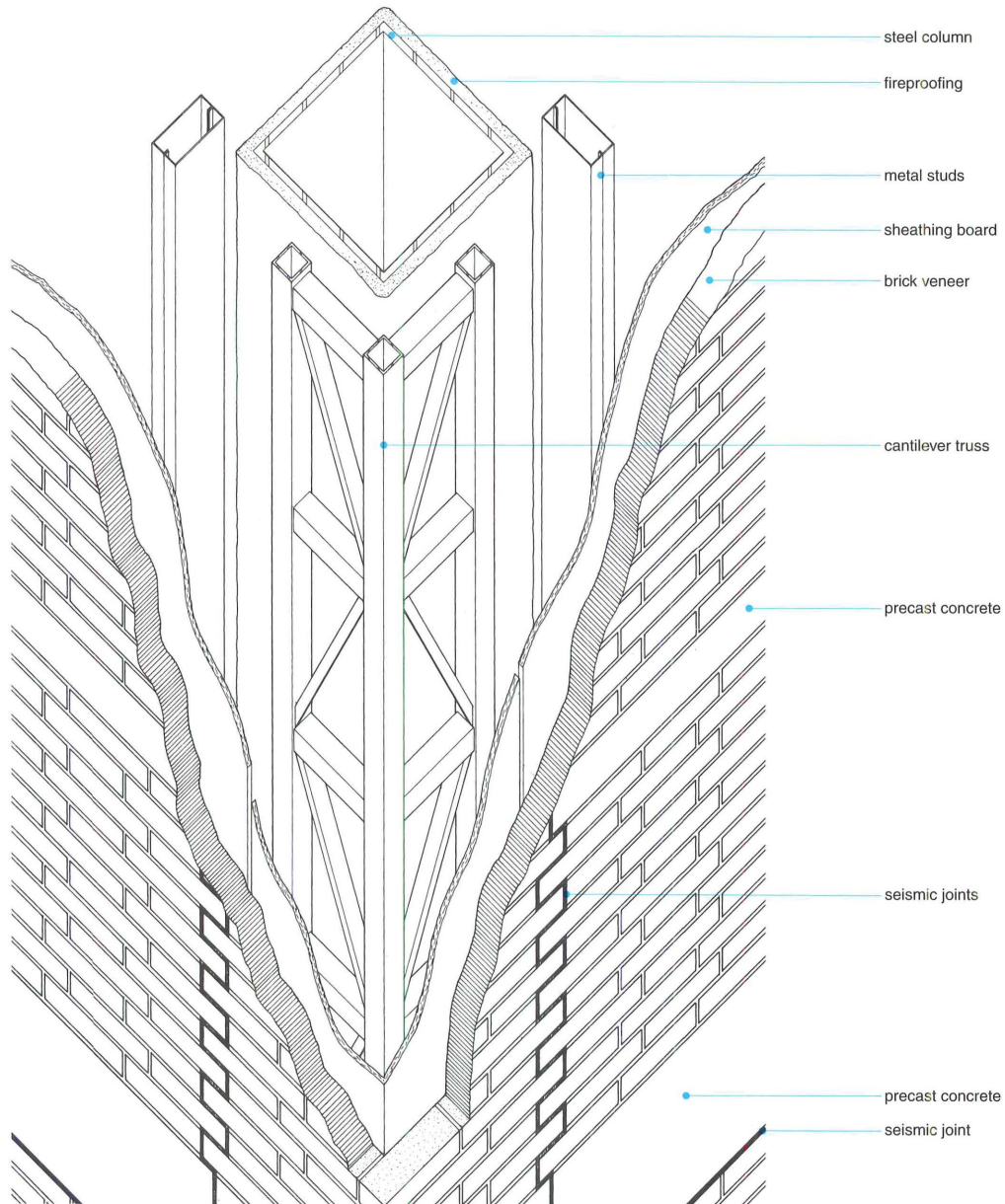
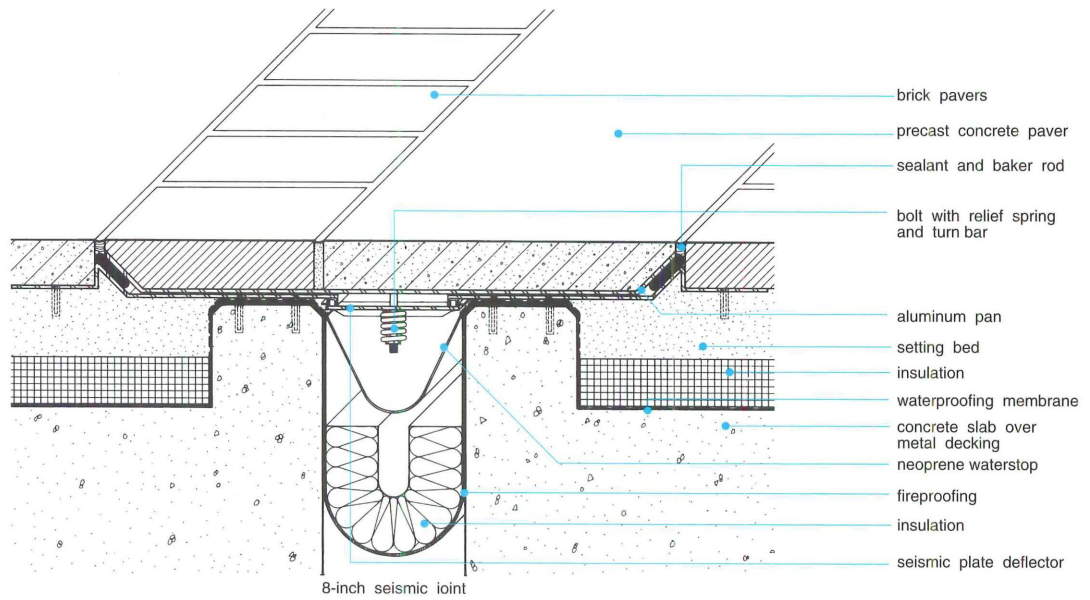
The "pop-out panel" detail (above right) was conceived by Pei Cobb Freed partner Michael Flynn and his team to accommodate horizontal movement.

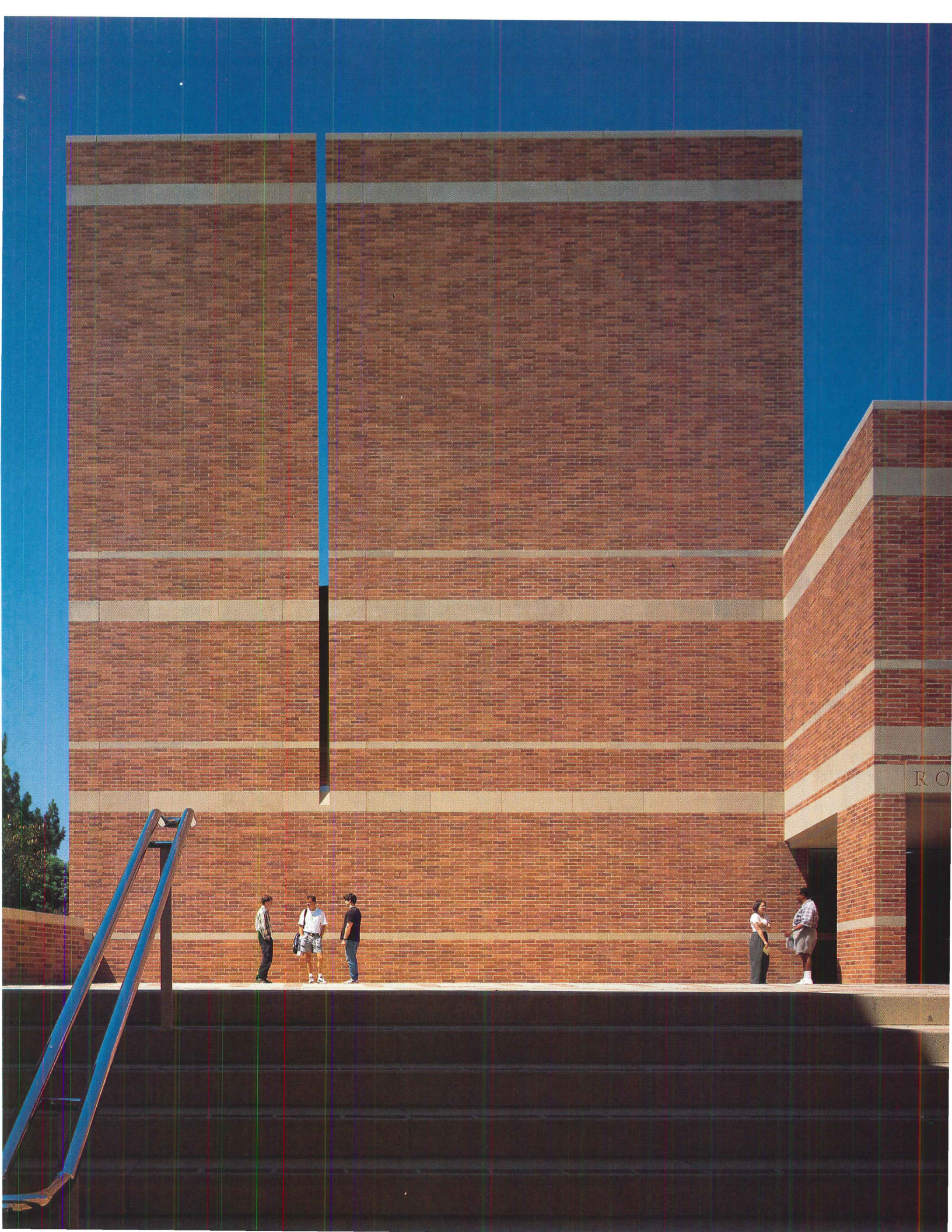
When slabs move toward each other in an earthquake, a spring-loaded, scissors-like device pushes the joint cover up, allowing the adjacent floors to move unimpeded. When the slabs return to place, the spring draws the joint cover back.

A similar detail was used to accommodate lateral motion by vertical surfaces, except that the panel is hinged and pops out on one side only. The detail is activated by earthquake activity in the range of 5 on the Richter scale. One building in the complex had been completed before the Northridge earthquake, and, unlike other campus structures such as Royce Hall, survived largely unscathed.

The corner detail (below right) accommodates lateral movement through a separation of floors. A truss is cantilevered upward from each floor slab but doesn't engage the floor above. Thus, each floor becomes a "tray" that can move relative to the floors above and below it. The light-gauge framing reacts to outside wind forces. Gravity loads are transmitted through a standard structural system.

Because of the low ratio of window openings in the building envelope, the complex conforms to title 24 of the rigorous California Energy Code.





The four-level library, with its transparent wall (1) and monumental light-filled atrium (2), is both a traditional library and a state-of-the-art computer-aided resource. It's also the most independent of the buildings. Situated on a north-south axis, you come upon the wall only after climbing a previous stair(3) to reach the round courtyard, at which point it faces you, with its slot, at the top of another stair (opposite).

"The library tower is a complete inversion of the convention of towers, where the object is all important," comments Cobb. "It represents part of [our firm's] polemic about space being more important than object. We cut a slot into a broad surface. What catches your eye is not the object but the space cut into the object."

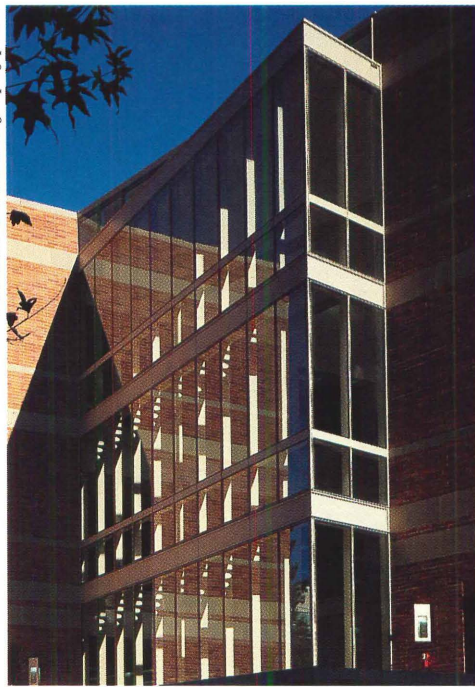
The library is one component in a school-wide electronic community, which reflects its agenda of group process, corporate renewal, and entrepreneurship. Every seat in the 11 case-study rooms, the many breakout rooms, and offices is wired for notebook computers and networked. Some, and eventually all classes of students, are given "notebooks" upon enrolling.

Classrooms, in addition to the now usual array of computers and A/V gear, will have ports for laser disks and other digital devices. Instructors can hand out class materials electronically in real time, and receive work from students the same way.

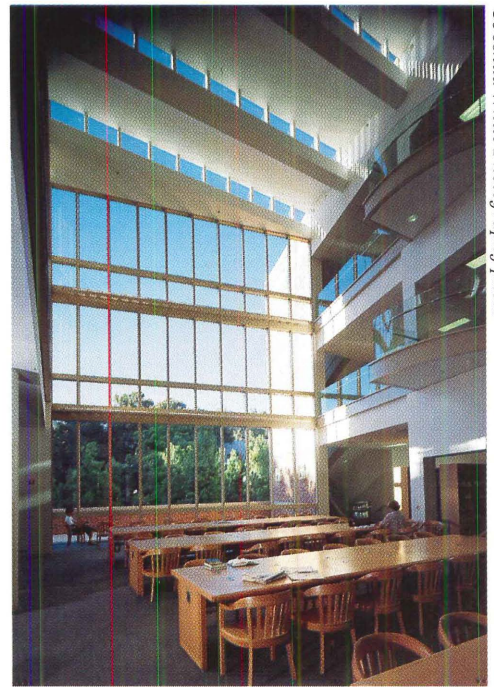
In the breakout rooms, chalk and marker boards give way to electronic "white boards." The library's on-line research services can be accessed from every port in the school.

The executive-education center (4) is connected to the complex by a footbridge (not visible).

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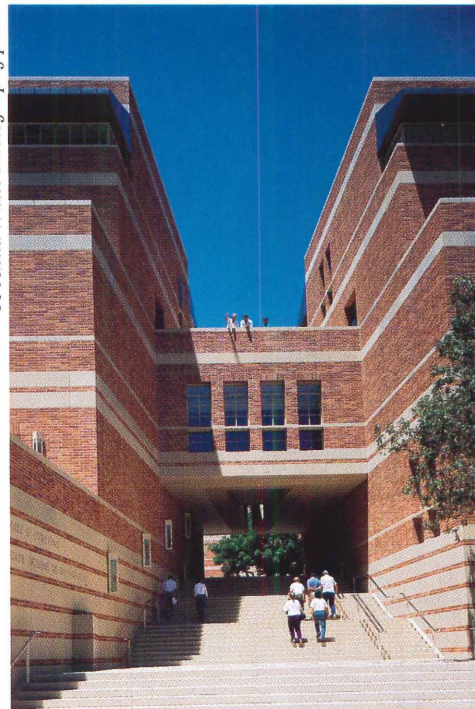
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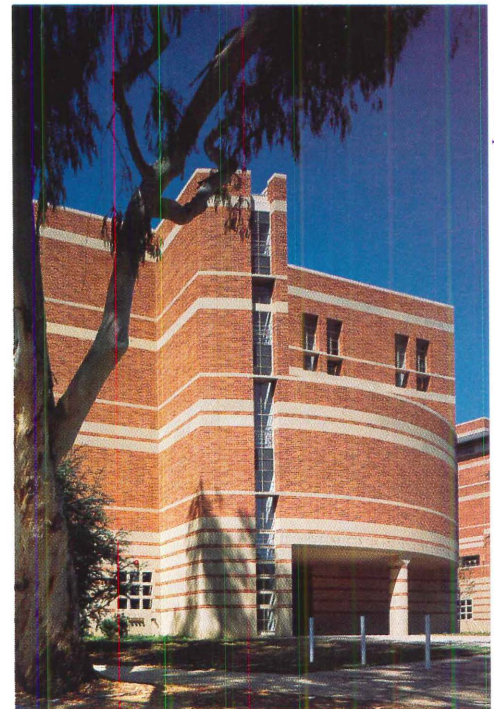
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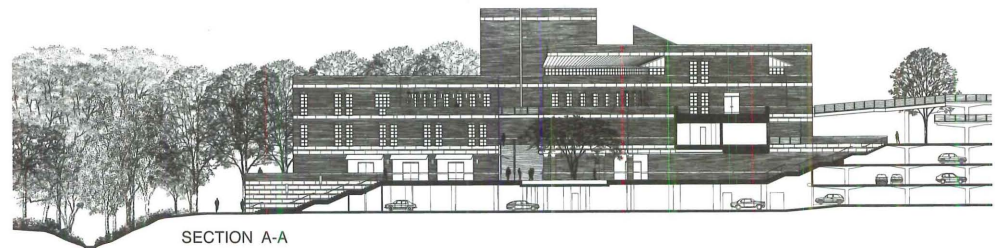


3



4

©Eric Schiller photo



SECTION A-A



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Atria are topped by skylights (executive training center, above left, and a classroom building, opposite page). Edges of stairs and floors are GFRP and express structural shapes of the beams behind. A case-study room (left) is wired for electronic teaching and learning. Offices (level 5, below left; level 4, below) are sumptuous, with red-oak furniture and networked workstations.

Credits

*The John E. Anderson Graduate School of Management at UCLA
Los Angeles, California*

Client: *The Regents of the University of California*

Architect: *Pei Cobb Freed & Partners—Henry N. Cobb, partner/design; Werner Wandelmaier, partner/management; Michael Flynn, partner/technology; Ian Bader, associate partner/project architect; Lloyd Ware, associate partner/project management; Deborah Campbell, senior associate/project management; Winslow Kosior, senior associate/curtain wall, Abby Suckle, senior associate/interiors; Leonard Marsh, associate/job captain; Gianni Neri, associate/construction administration*

Executive Architect:

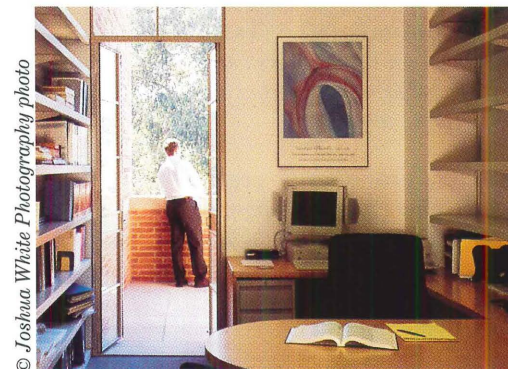
Leidenfrost/Horowitz & Associates

Engineers: *CBM Engineers, Inc. (structural); Hayakawa Associates (mechanical); Rogoway/Borkovetz Associates (civil)*

Consultants: *Fisher Marantz Renfro Stone (lighting); Emmet L. Wemple & Associates (landscape); Travers Associates (traffic); Federman Construction Consulting, Inc. (cost); Rolf Jensen and Associates, Inc. (life safety); Raymond Searby (specifications); McKay, Conat Brook, Inc. (acoustics/AV); International Parking Design (parking); Kaneko Design (library interiors); Salestrom Design (architectural graphics); Reginald Hough (architectural concrete)*

Construction Manager: *Lehrer, McGovern, Bovis, Inc.*

General Contractor: *PCL Construction Services, Inc.*



© Joshua White Photography photo



Are Big Hospitals Dinosaurs?

What a difference a year makes! In 1994 the great debate focused on expanding health coverage to the 41 million Americans without insurance. Today the talk is all about closing hospitals, cutting back on Medicare and Medicaid, and denying care to illegal immigrants. In New York City, a mayoral commission has recommended that the city sell or lease its 11 public hospitals. In Los Angeles County, the Board of Supervisors voted to slash nearly in half the \$2.5-billion budget for the county's system of public hospitals and clinics. According to an article in *The New York Times*, some experts now predict that in the next 10 years 20 percent of the nation's hospitals and perhaps as many as 40 percent of its public hospitals will close.

So are large metropolitan and regional hospitals just too big and too expensive to adapt to a rapidly changing healthcare environment?

"The hospitals of today are dinosaurs," states Erich Burkhart, a principal of Lee, Burkhart, Liu, a Los Angeles-based architecture firm with a long track record of designing healthcare facilities. "They're too expensive to build, they take too long to design and construct, and they're too inflexible," explains Burkhart. "The industry we're designing for is changing faster than the designs themselves."

First-hand experience has shown Burkhart just how fast the healthcare terrain can shift. In 1990, his firm was selected to design a \$1.2-billion replacement building for the Los Angeles County-University of Southern California Medical Center (LAC-USC), America's largest public hospital (below). Then this summer, the county's Board of Supervisors proposed closing the entire complex, making a new building—and indeed all of the old ones—unnecessary. After much hand-wringing about the hospital's role in providing care for the poor and its importance as a regional trauma center, the board decided to save the hospital, but close all six of the county's comprehensive health centers and 29 of its 39 community clinics—exactly the kind of smaller, satellite facilities that most experts say represent the future of

healthcare. "They're robbing Peter to pay Paul," says Burkhart, who agrees, though, that it will be easier to reestablish the satellite facilities in the future than it would be to reopen the hospital.

In response to the budget crisis, the new hospital has been cut from 960 beds to about 700 beds. (The original complex had 1,500.) Most outpatient services and all of the educational component are being cut as well, but the new design will allow them to be added in the future.

Designs that reduce operating costs

"Hospitals will have to be very nimble in the future," says Burkhart. To ensure that the new 2-million-square-foot LAC-USC is light on its feet, the architects designed it for flexibility—standardizing department designs and minimizing unique configurations. Not only did this speed up the design process, but it will provide space that is more adaptable to changing needs. "Instead of designing to the 99th percentile, we designed to the 85th," explains Burkhart. And since it is a series of buildings, rather than one mega-structure, the project allows components to grow at different rates without interfering with each other. By planning departments more efficiently, better organizing the flow of departments, and moving some support functions off-site, the design may cut operating costs by as much as 10 percent—saving enough money over the life of the hospital to pay for construction. Standardization and modular design will allow the complex to be built in six to eight years, compared to 10 years for hospitals in the past.

Competing forces are at work in healthcare these days, states Wayne Ruga, president of the Center for Health Design. While he sees many large hospitals being swept away as healthcare providers merge and consolidate, Ruga predicts they will be replaced with a combination of smaller community-based facilities and a few very large complexes. More people will take advantage of "self-care" and a variety of services provided at satellite facilities. "The hospital of the future," says Ruga, "will no longer be a building, but a constellation of services."

F.W. Dodge Contract Award Data Healthcare Facilities

In millions of sq. ft.

	Hospitals	Other health facilities	Total health facilities
1980	27.8	27.1	54.9
1985	26.4	46.7	73.1
1990	24.4	44.8	69.2
1991	27.3	44.4	71.7
1992	37.0	39.8	76.8
1993	29.6	44.9	74.5
1994	26.2	45.4	71.6
1995*	14.0	29.6	43.6

* January-August only



Lee, Burkhart, Liu's original design (above) for a new Los Angeles County-University of Southern California Medical

Center has been scaled back due to budget cuts. First planned for last summer, construction is now set to begin next year.

With government cutting back on healthcare financing and the private sector in a consolidation frenzy, what is the future of the large hospital?

At the same time, Ruga points to the new Tokyo Metropolitan Health Plaza, a 900,000-square-foot, high-rise comprehensive-health center completed two years ago, as another model for the future (photos below). Called "Hygeia," the 18-story-high twin-towered facility was designed by the Japanese firm Nihon Sekkei and includes the Metropolitan Okubo Hospital, a metropolitan health information center, private-health facilities, a sports club, a health museum, offices, and stores. Designed around a soaring indoor atrium that evokes the image of a shopping mall rather than a hospital, the complex is a place for both the sick and the healthy. And because it is located in the heart of downtown, it can be an integral part of everyday life, not just an emergency destination.

While hospitals with more than 1,000 beds are white elephants today, large, research-and-education hospitals still have an important role to play, says Donald Blair, principal at Perkins & Will's New York City office. "You need a certain critical mass to support research and education functions," states Blair. "It's just not feasible to farm out these functions to smaller community hospitals." The number of giant medical complexes, though, will certainly be reduced, as the health-care system relies increasingly on neighborhood facilities. "Twenty years ago, the bulk of our healthcare work was with large academic hospital centers," says Blair. "Now it's community hospitals."

Changing the mix of hospital components

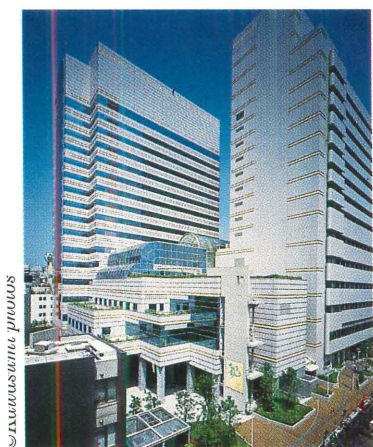
Certain trends are affecting hospitals of all sizes. For example, inpatient care is being reduced, while outpatient services and special-care units such as birthing and cancer centers are growing. Community hospitals that might have had 200 beds a few years ago now have closer to 100. But the overall size of these facilities is staying about the same, as outpatient departments and doctors' offices grow. "In the past, you would build an inpatient hospital and then add other components," explains Blair. "Now you start with a women's health center or a pediatrics component to attract patients and build on that."

Operational efficiency is another driving force behind all healthcare design these days. Since a typical hospital spends about 60 percent of its budget on labor costs, a design that reduces staffing needs can have a major impact on the bottom line. Designs that speed processing, help orient and direct visitors, reduce distances between related departments, and allow doctors and nurses to work more efficiently are now demanded of architects.

Because time is money, healthcare providers are also trying to speed up the process of designing and building facilities. One way to do this is to use designs that can be repeated, either at one facility or at a number of locations. "Templates and standards" that can be replicated "come in and out of favor every few years," states Perkins & Will's Blair. His firm has worked on template designs, but Blair has reservations about the approach. "The initial heavy investment in templates makes the client less willing to change them even as the field changes," says Blair. While the Veterans Administration abandoned their program of standards about seven years ago, says Blair, "some private providers have been able to make standards work fairly well."

One such provider is Kaiser Permanente, which hired ADP Fluor Daniel to develop a template system for 55 different departments in both large and small medical facilities. The templates were designed so they can be stacked, flipped, mirrored, and rotated to accommodate a variety of configurations. Three hospitals in California were completed this year using the system, including a 250,000-square-foot medical center in Roseville (below). By standardizing the design of departments, rather than the hospital as a whole, the system retains a greater degree of flexibility and can adapt to individual sites and contexts, says Scott Lockard, the project designer for ADP Fluor Daniel.

While the politicians debate, the marketplace is changing the face of healthcare. In such an environment, survival will require hospitals to be more flexible and efficient than ever before. *Clifford A. Pearson*



A joint public-private project, the Tokyo Metropolitan Health Plaza, or "Hygeia," is a new kind of healthcare facility that



combines a 304-bed public hospital and a health-promotion center with private facilities such as a fitness center and shops.



The Roseville Medical Center in California is a 250,000-square-foot Kaiser Permanente hospital designed by ADP Fluor Daniel

using repeatable templates for various departments. Two other new Kaiser hospitals in California also use the same templates.

Columbus Regional Hospital

Columbus, Indiana

Robert A.M. Stern Architects

The Falick/Klein Partnership, Associate Architect

Although it originally planned on just adding a new birthing center and a cancer-care facility, the Bartholomew County Hospital in Columbus, Indiana, realized that such piecemeal growth would not prepare it for a rapidly changing future. With hospitals competing with one another as never before and medical technology changing at a fast pace, a totally new approach to growth was necessary. So with the help of Robert

A.M. Stern Architects and associated architects Falick/Klein Partnership, the hospital reinvented itself—devising a new masterplan for growth, establishing a unified image, carving out an aggressive marketing strategy to attract patients from a wider area, even adopting a new name for itself. Reborn as the Columbus Regional Hospital, the transformed facility now draws patients successfully from as far



© Peter Aaron/Esto photos



away as Indianapolis and Louisville. Although Stern had never designed a hospital before, the firm was on a list of architects recommended by the Cummins Engine Foundation, which has been supporting quality design in Columbus for 40 years by paying the fees of top architects working on public projects [RECORD, January 1990, pages 64-67]. After working on the masterplan for a year, the architects devel-

oped a scheme that would reorient the hospital toward the park-like center of its site, give it a new entry drive and entrance, and begin a building program that could be executed in phases and then expanded in the future. "The hospital had painted itself into a corner," says Graham Wyatt, the partner-in-charge of the project for Stern, referring to the southeast portion of the site where the hospital's original

1917 building had sprouted tentacles of varying ages, styles, and size. The result of this ad-hoc growth was a hodgepodge of 17 buildings concentrated on only 6 acres of a 34-acre site. So the architects turned west, adding an entry drive from this direction and orienting new construction to views of Haw Creek. Through a combination of new construction, renovation, recladding, and demolition, the

hospital transformed itself into a series of buildings with a unified architectural expression. Critical of giant-floor-plate hospitals that distance so many rooms from daylight and air, the architects researched 18th- and 19th-century hospitals where patient pavilions looked onto open courtyards. They learned that this pavilion model not only allowed light and air into all patient rooms, but was adaptable to



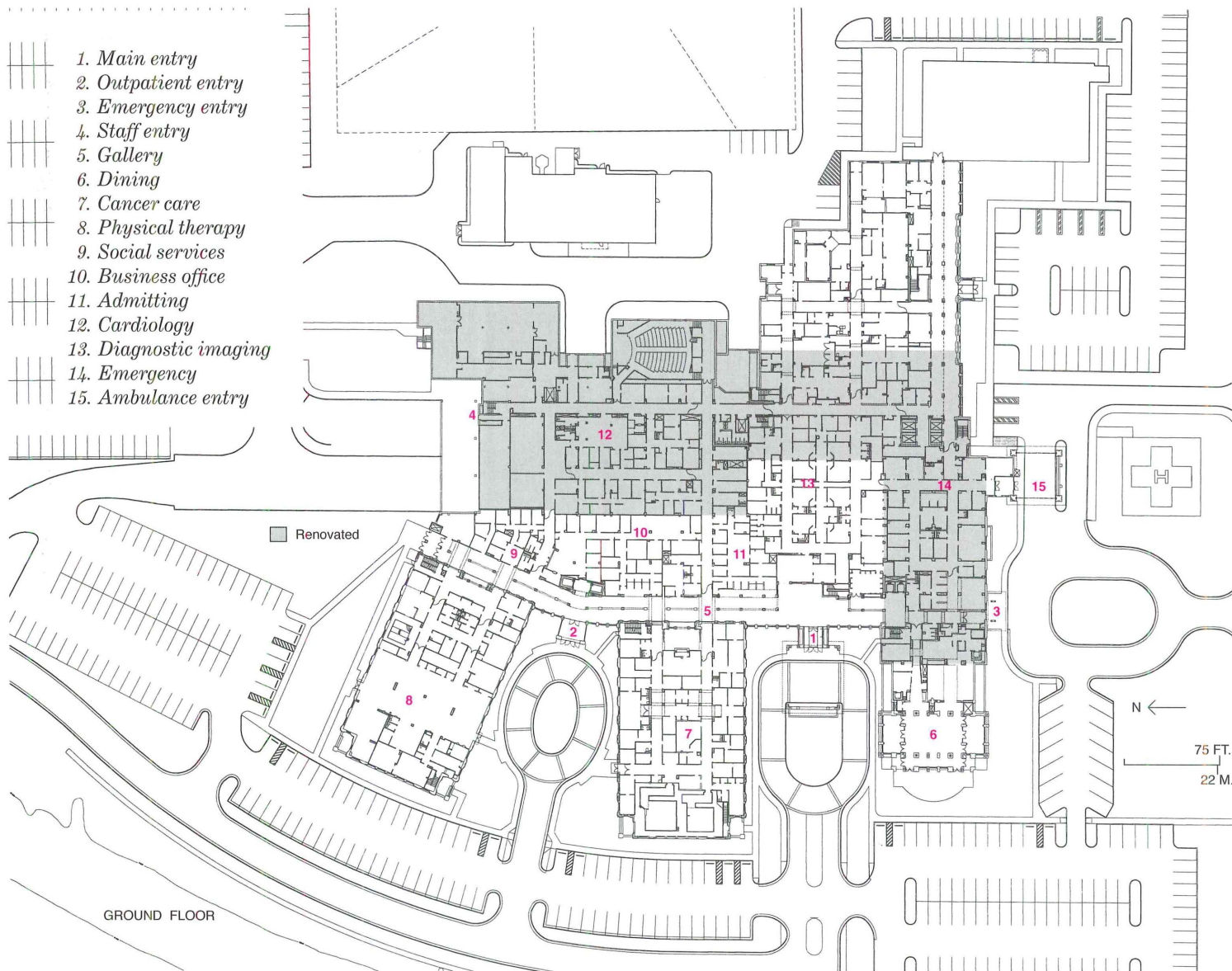
The hospital today is about the same size, 382,000 square feet, as when the current overhaul began in 1988. But the demolition and construction of 182,000 square feet and the renovation of the rest of the complex has created the image of a totally new hospital (above). By adding a patient floor and a mechanical attic to the in-patient facility (left), the architects created a tower that recalls those found on other important buildings in Columbus, such as Eliel Saarinen's First Christian Church. The restaurant and its outdoor dining terrace (opposite bottom) help present the hospital as a friendly place.

changing needs due to its straightforward, repetitive plan. "They showed us hospitals from the 1800s that were still in use, but had additions from the 1950s that had already been mothballed," recalls John McGinty, Jr., president of Columbus Regional Hospital. So the architects developed a plan in which a series of new pavilions, linked by a two-story-high gallery, are

plugged into the hospital's existing core of surgical suites. The pavilions are concrete-frame structures organized into simple 24-foot-by-24-foot modules that can accommodate a variety of interior layouts. If needs change in the future, a pavilion or one floor of a pavilion can be shut down for renovation, without interfering with the operation of the hospital, says Wyatt. The

first phase of construction included two pavilions, as well as an addition to and complete renovation of an existing in-patient block. But instead of growing horizontally, the block received two extra floors: one for patient rooms and another to serve as a mechanical attic. To better fit with the new pavilions and gallery, the expanded patient block was reclad (from the top

down) with the same buff brick as the new construction. Inside the hospital, the curving two-story gallery helps orient visitors and patients. Each of the pavilions and major departments greets visitors walking down the gallery with its own information counter and waiting room. Generous glazing along the gallery's west facade helps connect the interiors with the site. This rela-



Taking cues from hotel architecture, the architects created interiors in which daylight and natural materials play lead roles. The restaurant (4, opposite) is prominently located at the front of the hospital. Medical

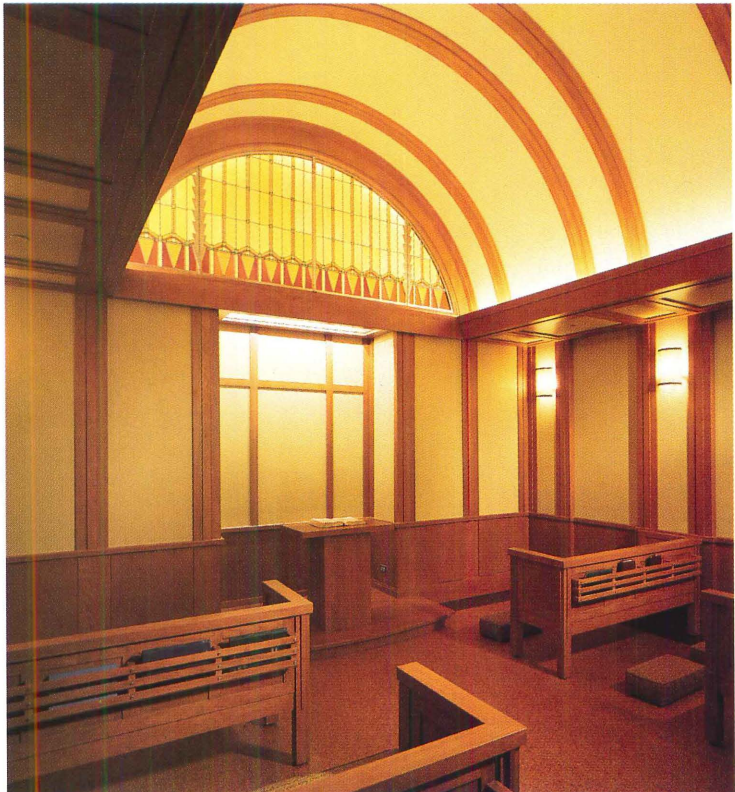
equipment in a patient room is kept out of sight (3). Pavilions have their own waiting rooms and front on the two-story gallery (2). A chapel recalls a Frank Lloyd Wright interior (1).

tionship is enhanced by a two-story dining pavilion that opens onto a paved terrace. Public spaces are furnished with a commercially available line of Stern-designed chairs and tables, as well as some custom-designed items. "We wanted to give the hospital the feeling of a big lodge or hotel," says Wyatt, "not a healthcare factory." *C.A.P.*

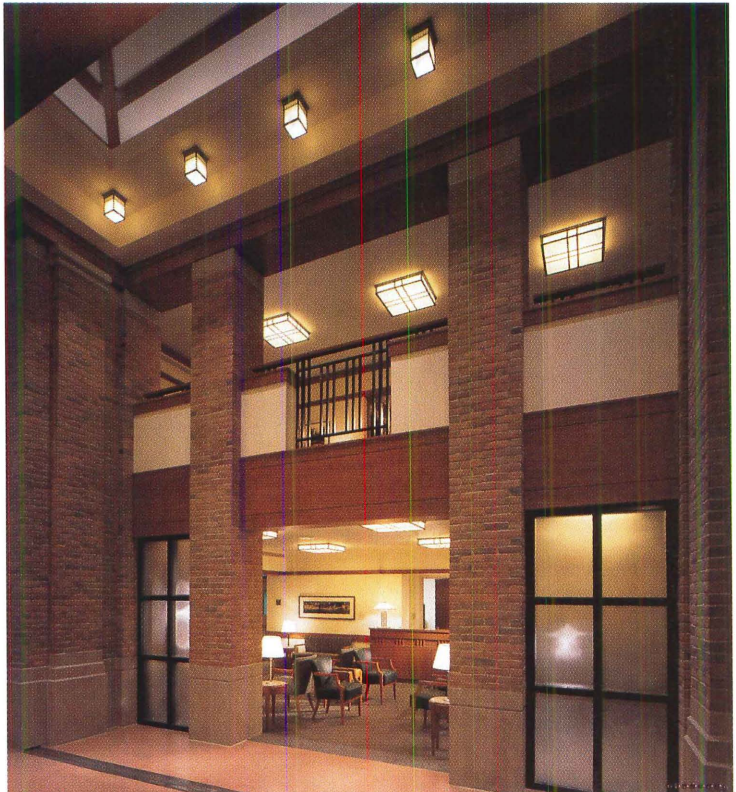
Credits
Columbus Regional Hospital Columbus, Indiana
Architect: Robert A.M. Stern Architects—Graham S. Wyatt, architect-in-charge; Austin Brown, Diane Scott, project managers; Ferenc Annus, Thomas Gay, Preston J. Gunberich, Timothy E. Lenahan, Sandra L. Parsons, Eva Pohlen, Mary Ellen Stenger;

Elizabeth Thompson, Paul Thompson, Pat Tiné, project assistants; Robert Ermerins, landscape associate; Charlotte M. Frieze, William C. Skelsey, landscape assistants; Lisa Maurer; interior design associate; Alice Yiu, Patricia Burns, interior design assistants
Associate Architect: The Falick/Klein Partnership—Edward E. Huckaby, healthcare

planner; Edward Gonzales, project architect
Engineers: Walter P. Moore and Associates (structural); Rotz Engineers (mechanical/electrical/plumbing)
Consultants: Cline, Bettridge, Bernstein Lighting Design (lighting); Mulhauser/McCleary Associates (food service)
Construction Manager: Barton-Malow Company



1



2



3



4

Pacific Medical Center Tower

Seattle, Washington
Zimmer Gunsul Frasca Partnership,
Architects

Detached from much of the Seattle community because of its focus on a narrow patient clientele, and ordered to bring its structure up to current code requirements, Pacific Medical Center (PMC) decided to radically restructure itself. The renovation meant PMC could extend its reach to a wider community and, at the same time, meet the demands of Seattle's building department. An Art Deco

structure of late 1920s vintage, the 14-story PMC tower had a seismically deficient structural frame that could be fixed in one of two ways—upgrading the structural frame or inserting a brand new structure that would serve as a buttress to resist lateral movement. By taking the buttress route, PMC was not only able to build without seriously disrupting activities in the existing building, but also con-



©Strode Eckert Photographic photos

- 1. Parking garage
- 2. Offices

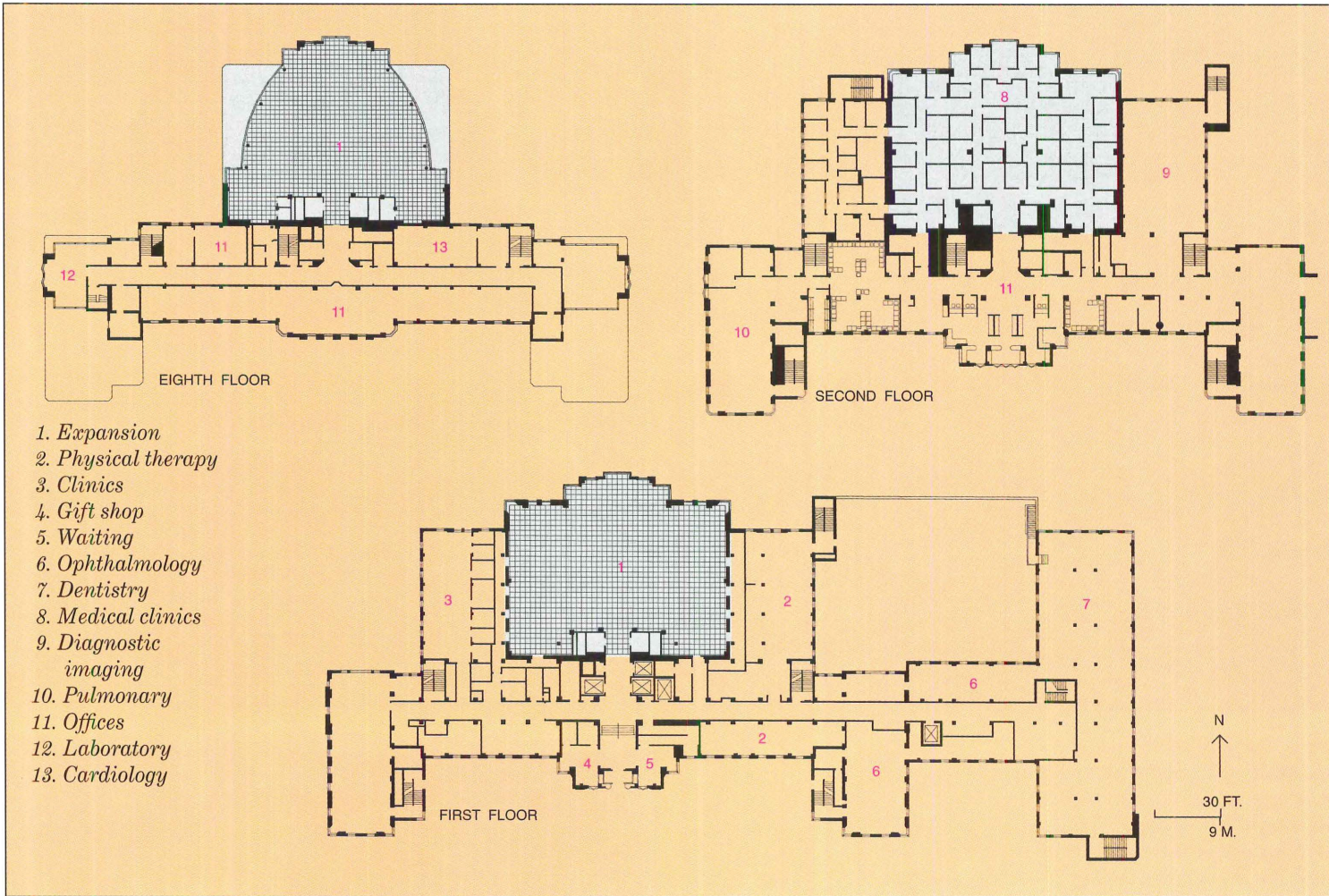


rived to extend its floor plate from a miserly 45 feet from outside wall to outside wall to larger, deeper space (see floor plan, below). The physical recasting went hand in hand with a major turnaround in PMC's patronage base. Founded as an acute-care hospital to serve sailors in the merchant marine, PMC decided to redirect its focus toward ambulatory care to bring it in line with emerging trends in

health care. By doing so, it transformed itself into a gregarious institution serving a diverse regional population. The elegantly detailed and proportioned facade gives a new face to the tower, a popular landmark visible from Mt. Rainier to downtown Seattle. S.A.K.

Credits
Pacific Medical Center Tower
Seattle, Washington
Architects: *Zimmer Gunsul Frasca Partnership—Daniel Huberty, partner in charge; Gregory Baldwin, principal designer; Stanley Zintel, associate partner/project manager; William Auld, project architect*
Engineers: *Andersen Bjornstad Kane Jacobs, Inc. (structural);*

CDI (mechanical); Path Engineering, Inc. (electrical); Rosewater Engineering (civil); Shannon & Wilson (geotechnical)
Consultant: *Osborne Pacific Group Inc. (landscape architecture)*
General Contractor: *SDL Corporation*



The 75,000-sq-ft, \$8.2-million, 12-story addition was inserted on the north side, facing downtown Seattle (opposite top) and visible to motorists plying Interstate 5 (opposite bottom). The addition will accommodate all clinical facilities required by the new outpatient mode. Clinical departments will be consolidated on the lower five floors, with room for expansion for very active departments such as radi-

ology/imaging, ophthalmology, and general surgery. Existing spaces are being renovated and reconfigured into smaller, specialty-care clinics.

The upper floors are designed to be leased to compatible activities, such as research programs from the University of Washington. Shafts have been inserted should fume hoods be required at a later date.

Shiprock Comprehensive Care Facility

*Shiprock, New Mexico
ADP Fluor Daniel, Architects*

Shiprock may be the ultimate in outpatient care. Located within the Navajo Nation, the 215,000-square-foot facility serves both Navajos and Utes in a far-flung territory stretching over adjacent parts of New Mexico, Colorado, Arizona, and Utah. (It is one of only five such federal facilities built by the Office of Engineering Services—the architect's client—for the Southernmost Indian Health Service.)

Many of the health-care facility's patients would prefer not to be there at all. They would rather be outdoors and rely on the traditional healing practices of their tribes. Often they come on foot when their needs are acute and leave as quickly as possible. Shiprock is one of the few hospitals in the U. S. where the staff's parking spaces outnumber the patients' and the main waiting area is *outside* the front door.

© Nick Merrick, Hedrich-Blessing photos



From the public-entrance side, the building's profile takes on the character of nearby Shiprock mountain (background, left). Waiting areas outside the front door are defined by circular curtain walls with positive symbolic meaning to the Navajos (4). The wide public-entrance canopy provides shelter in bad weather.

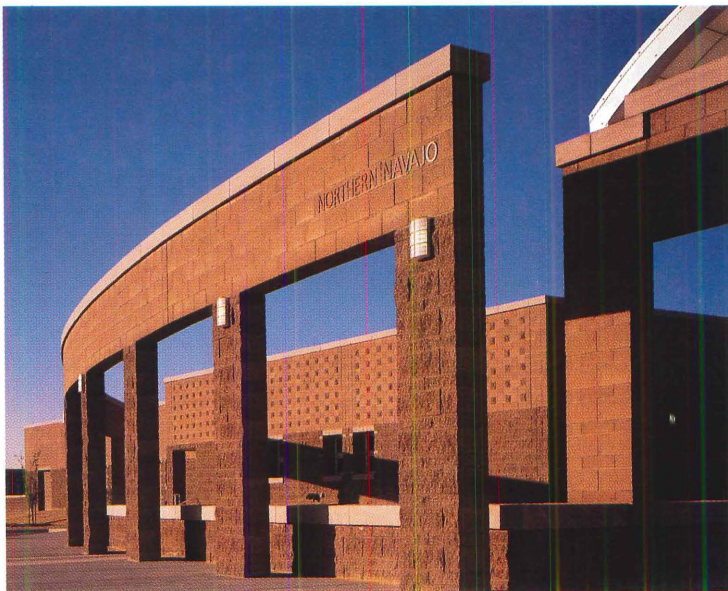
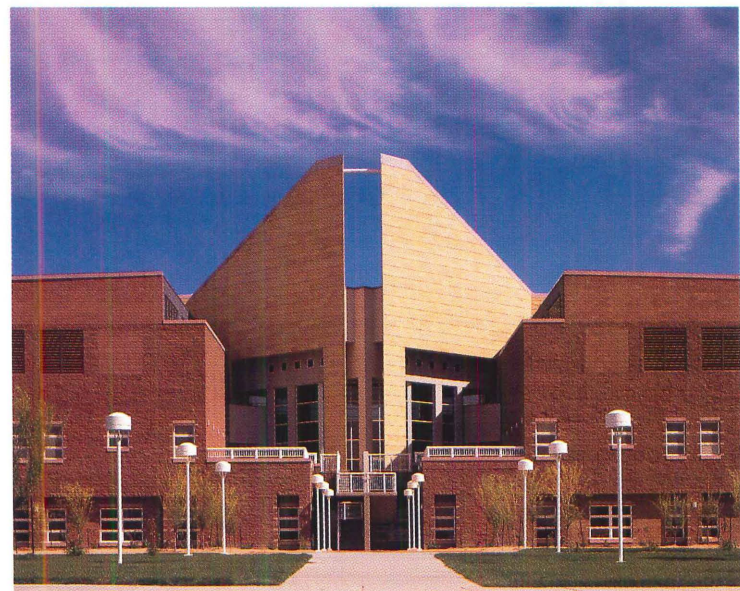


Loudspeakers call the names of those about to be treated. They enter, pick up their records, proceed to the appropriate clinic with the help of graphic icons, and receive their medicine on the way out. Despite the facility's large size, there are only 75 beds; many nonambulatory patients prefer to recuperate in the familiar surroundings of a separate hogan to be built and run on site by tribal medicine men.

The Office of Engineering Services chose ADP Fluor Daniel to be the architect because of its experience in health care and its sensitivity to these particular users. One of the designers' primary concerns was the Navajo and Ute's desire for direct contact with the earth and natural elements. Efficiencies of construction and internal communication dictated a two-story building at Shiprock. (Current

medical programming for a facility like this stacks treatment and diagnostic areas for each specialty one above the other.) But the need for user proximity to the ground dictated one story. Utilizing the site's natural slope, project director Vernon Rosamond and his design team accomplished both goals by reversing the normal plan. Patients enter clinics on the upper level directly from the

higher grade on the east (1, 2, 4, plans overleaf). Staff enters the lower-level diagnostic and serious-treatment areas from the west (3). Only patients coming in on grade to the maternity and emergency services on the lower level see a two-story building. Another user concern was bringing daylight, especially from the rising sun, into as many internal spaces as possible. Clerestories (1) reach up to capture eastern

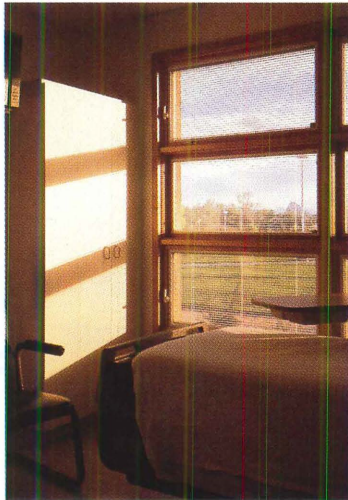


light and bring it deep inside the building. Materials, building form, and artwork all contribute to making the building as user friendly as possible. Shiprock is named after the standing core of an extinct volcano that rises dramatically from the desert 12 miles away (1, previous page, in background). Rosamond and his team associate its mythic significance to the Navajo with their building by following its profile.

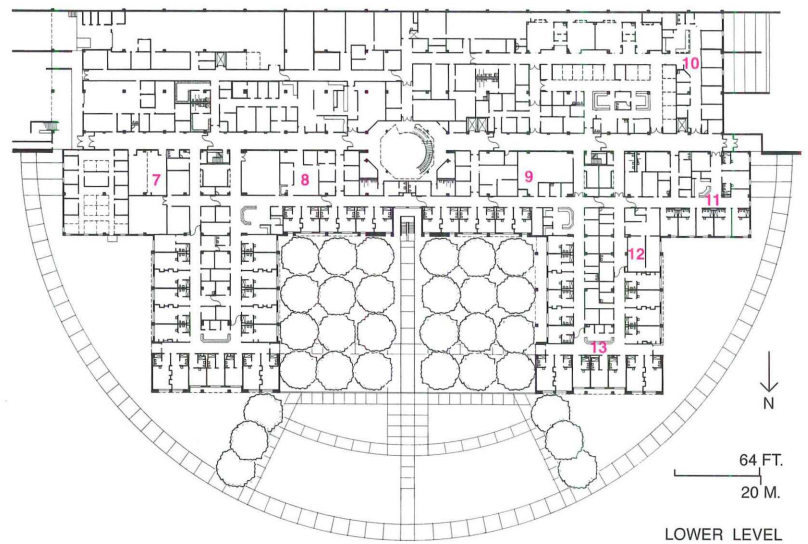
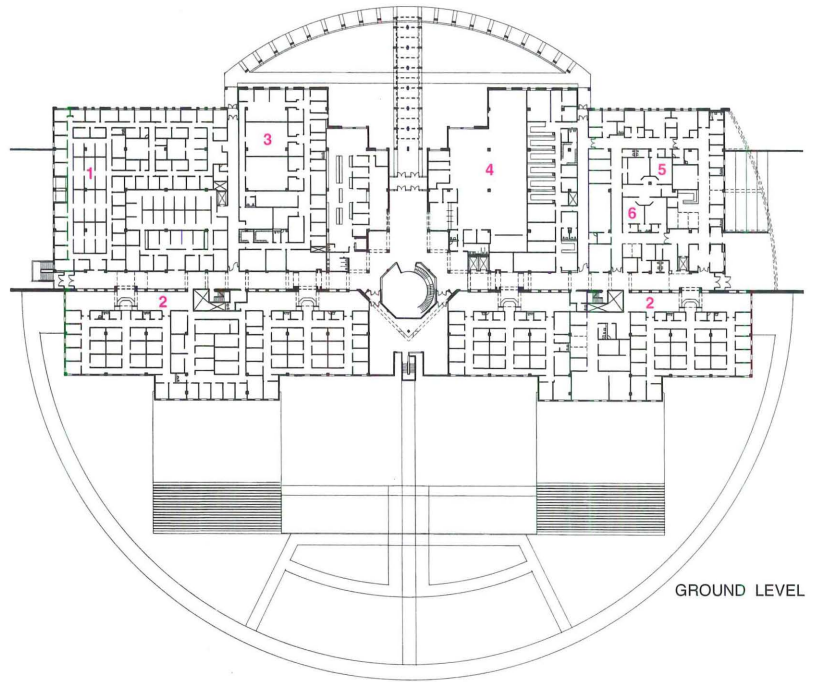
The pointed “crown” over the central atrium and the slope of the wings mimic the cone and its flanks. Much of the steel-frame building is sheathed with smooth and split-faced concrete block for economy. This is laid in patterns based on those used in native rugs and pottery. Surfaces that patients may touch, including the high-standing longitudinal wall that extends down through the building as a lateral circulation

guide, are sheathed in stone as an affirmation of natural elements. A \$175,000 budget for artwork is being spent not on the soothing abstract works present in most current medical facilities, but on highly realistic murals and sculpture, some by native Americans, that confirm their faith. James King, grandson of sheep farmer Hattie Tom, painted the first mural. Some 20-ft long, it depicts his

grandmother in the snow coaxing a newborn sheep to walk before waiting coyotes can prey on it. Sculpture will include a 10-ft limestone medicine man blessing a mother and child by Oreland Joe of Kirtland.
Charles K. Hoyt



- 1. Administration
- 2. Dentistry
- 3. Clinics
- 4. Records
- 5. Radiology
- 6. Emergency
- 7. Internal operations
- 8. Surgery
- 9. Pediatrics
- 10. Intensive care
- 11. Delivery
- 12. Nursery
- 13. Obstetrics



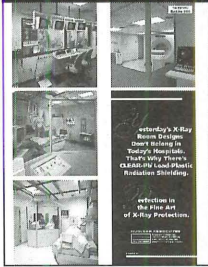
The only interior location where the public is aware of being in a two-story building is the central rotunda. Here, stairs lead down from the main-entry level to diagnostic and critical-care facilities directly related to the various clinics on the floor above. Daylight is a key component in patients' recovery and is introduced through numerous clerestories.

Credits

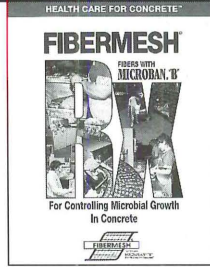
Shiprock Comprehensive Care Facility, Shiprock, New Mexico
Owner: Public Health Service, Regional Office VI, Dallas, Texas
Architect and Engineer: ADP Fluor Daniel (formerly Anderson, DeBartolo Pan)—Vernon Rosamond, project director; Tom Evans, Richard Hall, Joe Pignetti, Ron Schneider, Rob Skinner, Warren Witkowski, project team; Gary

Brainard, Linda Brainard, Brian Higie, Al Masi, field team
Civil Engineer: ASCG, Inc.
Consultants: Jeff Sherman & Associates (landscape); Dr. Johnson Bia (Navajo societal issues); Dave Keaggy (food service); Keze SEDG (signage)
General Contractor: Centex-Bateson, Inc.

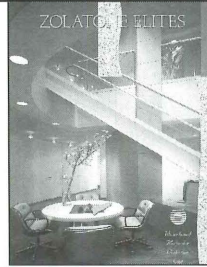




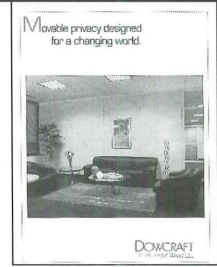
400. Medical-radiation shields
A design guide illustrates how clear, shatter-resistant lead-plastic panels help create a spacious procedure/diagnostic facility that is comfortable for both patient and medical personnel. Modular, mobile, or overhead X-ray barriers save floor space, and may be specified in just the lead equivalency needed. 516/741-6360. Nuclear Associates, Carle Place, N.Y.



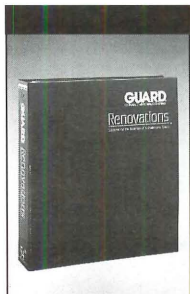
401. Anti microbial concrete
A brochure describes concrete-reinforcement fibers that impair the growth of thin-walled micro-organisms such as bacteria, yeast, and fungi. The polypropylene fibers stay actively bacteriostatic for the life of the concrete itself, adding extra germ control to facilities such as hospitals, prisons, and food-prep plants. Fiber-mesh, Chattanooga, Tenn.



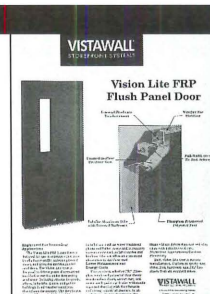
402. Multicolor paint system
A scrubbable, water-based and low-VOC wall finish, Zolatone Elites is suitable for any healthcare setting from operating room to visitor reception. A folder supplies actual samples of 48 colorations of the spray-applied, Class A-fire-rated decoration. 800/544-4046. Surface Protection Industries, Los Angeles.



403. Movable wall systems
A color brochure explains the ergonomic benefits of the "productive privacy" supplied by prefabricated, prewired walls that install over floor covering and under ceiling tile. Office space can be reconfigured overnight without dust, debris, or disruption. Options shown include to-the-ceiling glass and wood-veneer walls. 800/990-9255. Dowercraft Corp., Falconer, N.Y.



404. Vinyl wallcoverings
Guard Contract Wallcoverings are made in a range of vinyl weights for the wear requirements of different applications. The collection includes Renovations, "Solutions for the Redesign of Challenging Space." Wallcoverings are Class A rated, and offer an "early warning" to the presence of fire. 800/521-5250. Columbus Coated Fabrics, Columbus, Ohio.



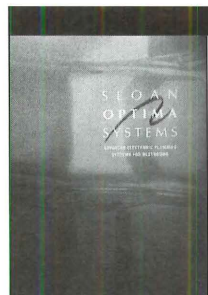
405. FRP flush-panel doors
Catalog inserts on entrance and storefront systems include data on the Vision Lite FRP door; designed as an alternative to stainless steel in environments with heavy traffic, extreme physical abuse, and corrosion. Vision lights can be specified in four rectangular and five curved configurations. Vistawall Architectural Products, Terrell, Tex.



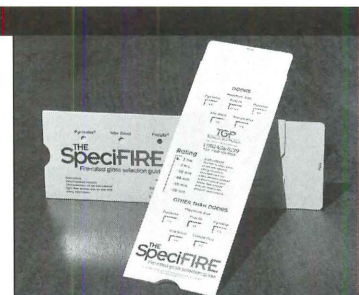
406. Commercial resilient
A new book helps designers consider different ways to use Azrock resilient flooring, such as borders, directional stripes, or a colorful, free-form shape. Each illustrated idea—plaids, pin-wheels, or rug motif—comes with a pattern chart that shows how many tiles were used and where they went. 800/558-2240. Domco Industries, Ltd., San Antonio, Tex.



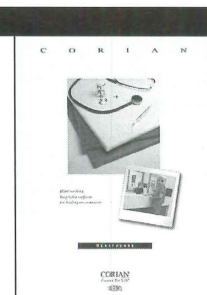
407. Washroom ADA compliance
A catalog on Handy Shield safety covers shows how the insulated vinyl devices protect wheelchair users from scalds when near exposed valves, drains, and water-supply lines. Covers attach with Velcro, not adhesive, and have a tamper-proof locking strap. Available in popular colors. 619/322-1772. Plumberex Specialty Products, Cathedral City, Calif.



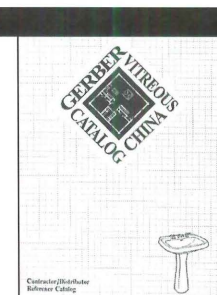
408. Restroom traffic patterns
An eight-page brochure on Optima toilet flushometers, faucets, and sinks explains how using electronic water controls enhances a building's image through improved hygiene, reduced odor, and water conservation. It describes a way to identify specific washroom traffic patterns and matches them to plumbing products. Sloan Valve Co., Franklin Park, Ill.



409. Fire-rated glazing guide
A glass-product-specific slide chart, the SpecIFIRE helps architects learn about fire-rated glazing options with labels ranging from 20 minutes to 3 hours. Gives test data, impact resistance, allowable sizes, and ratings for Pyroswiss, FireLite, FireLite Plus, Pyrostop, and wire-glass products. No charge. 800/426-0279. Technical Glass Products, Kirkland, Wash.



410. Stain-resist surface
Healthcare portfolio shows Corian solid surfacing used in patient rooms, operating theaters, maternity wards, heavy-use corridors, and laboratories. Stresses the decorative value and impact resistance of the non-porous material, explaining how seamless installations are easier to clean. New sample box available. 800/4CORIAN. DuPont Co., Wilmington, Del. *



411. Water-saving water closet
A 10-page catalog describes the Ultra-Flush low-consumption toilet, a 1.6 gpf model that meets stringent Los Angeles water-use and sanitary standards. Part of a full commercial and institutional line, the Ultra-Flush comes in nine vitreous-china colors. 708/675-6570. Gerber Plumbing Fixtures, Lincolnwood, Ill.
Continued on page 121

* Product Data on CAD disk

TCS[®] a long-term
value

"...the most permanent,
maintenance-free roofing material
available."

Permanence and durability of exterior materials were major considerations in the design of the Virginia Farm Bureau Building in Goochland County, near Richmond. Carneal and Johnston, Inc., Project Architects, convinced the owners that TCS, terne-coated stainless steel, was the most prudent choice for the roof because it represented a long-term value. TCS is, according to Ken Bunch, Principal Architect, "...the most permanent, maintenance-free roofing material available."

Weathering to a warm, natural gray, TCS will blend perfectly with the beautiful and harmonious setting in which the building sits. TCS will never need painting and its longevity will be measured in generations rather than years.

Follansbee will be happy to send you substantiating evidence.

The four level, 156,000 square foot Headquarters of the Virginia Farm Bureau is set in a 20-acre site on the shore of a 40-acre lake in Goochland County, near Richmond.



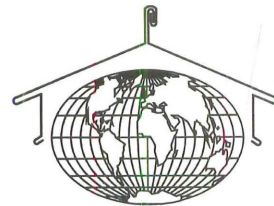
Project Architects: Carneal and Johnston, Inc.
General Contractor: Kjellstrom and Lee, Inc.
Roofing Contractor: N. W. Martin Brothers, Inc.

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TCS®...beauty by mother nature

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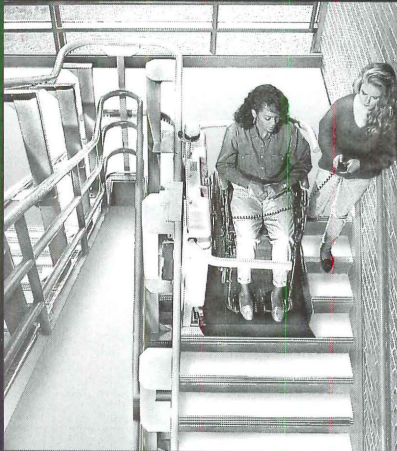
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Outlook continued from page 33

Appropriators did provide nearly the same amount for 1996 as the year before for State Department overseas facilities, but shut the wallet for new embassy projects. The new embassy in Berlin, though, is supposed to be financed from the sale of federal real estate in Germany and elsewhere, not from appropriations. And there are projects at other agencies. One of the biggest is an estimated \$380-million addition to the National Institutes of Health's clinical center in Bethesda, Md. Six design teams are competing for that job. NIH expects to award the design contract in mid-December, says George Williams, NIH associate director for special projects.

Two significant tax credits

The low-income housing tax credit was made permanent in 1993, but the House Ways and Means Committee wants to end it, with some exceptions, after December 31, 1997. This would raise an estimated \$3.5 billion for the Treasury from 1996 to 2002, but as recently as 1993 a whopping 60 percent of multi-family housing used the credit [RECORD, January 1994, pages 30-35]. It's still about 40 percent or 70,000 units annually, according to Ron Whitten of M/PF research. Repealing the credit would be among the tax provisions to be included in the House version of budget reconciliation legislation.

The credit has well-placed friends. The National Association of Home Builders wants to see the credit remain in place, says Leon Peace, NAHB tax counsel. "We're finally getting full use out of it." Peace doesn't think repeal is in the Senate Finance Committee's current version.

Introduced with little fanfare last May, a commercial-revitalization tax credit promoted by the AIA is targeted at urban empowerment zones and enterprise communities. The legislation in mid-October had attracted only eight co-sponsors in the House and 12 in the Senate. AIA's Eisenberg says its gaining support, but sees prospects for adoption this year "difficult."

Looking past 1996, AIA's Binstock warns, "Any predictions beyond this year would be entirely speculative given the 1996 presidential and congressional races." But he says it wouldn't be surprising to see federal markets hold at current levels or fall, "given budget-crunch considerations that will not go away in the near future." ■

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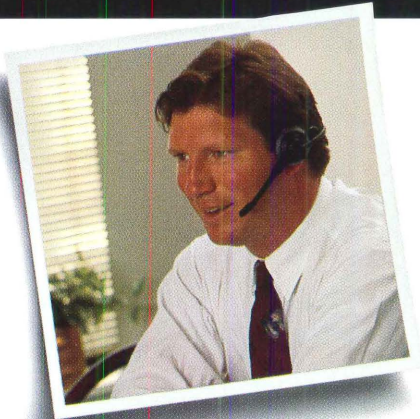
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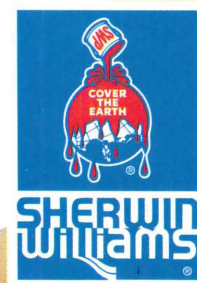
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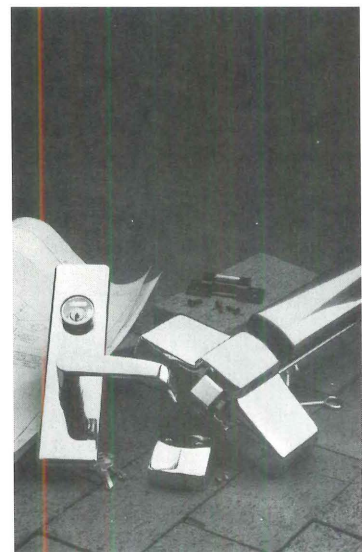
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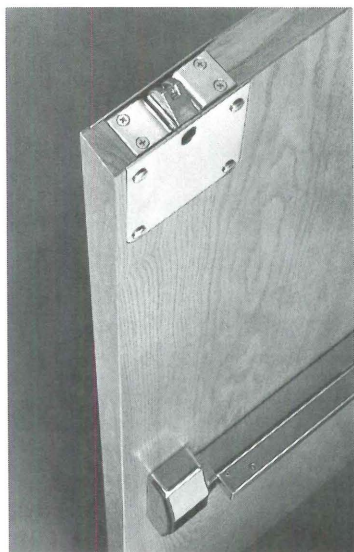
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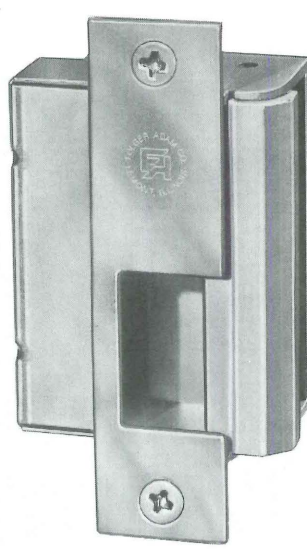
New Products/Exit Devices



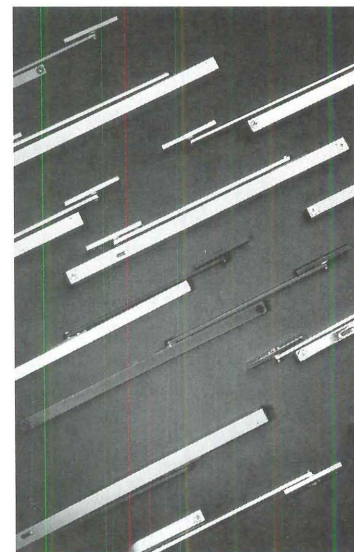
317. Stainless-steel hardware
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318. Concealed vertical latch
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319. Remotely operated strike
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320. Limit-stops and holders
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Continued on page 119

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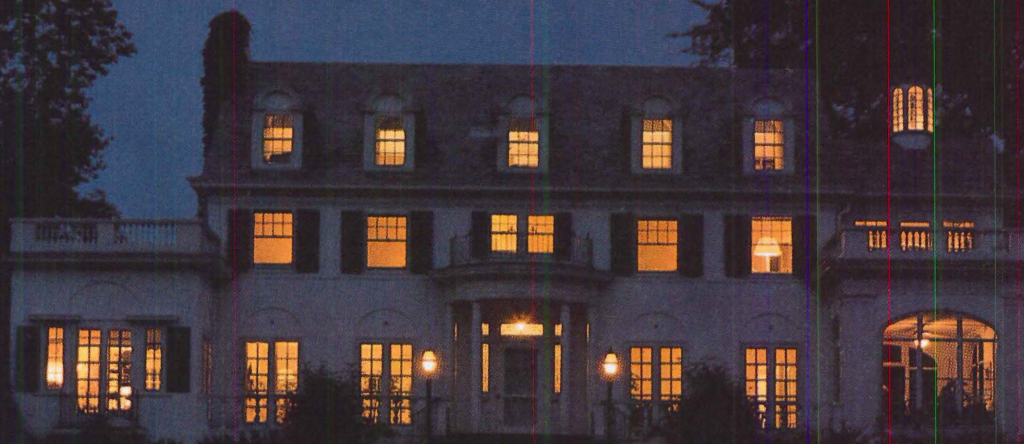
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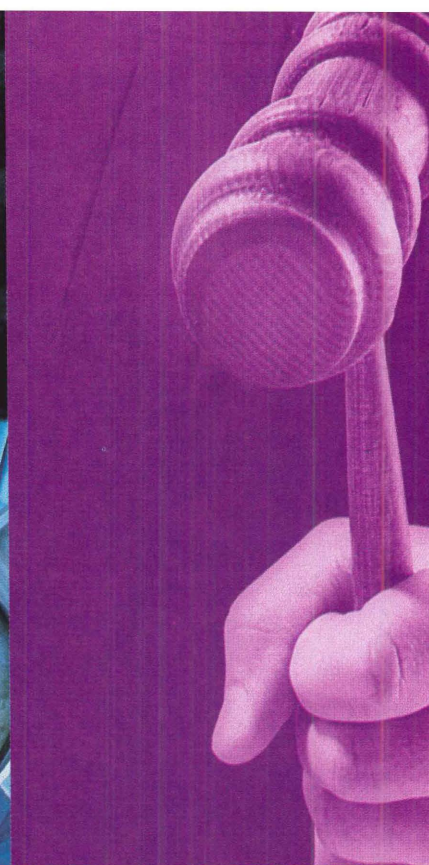


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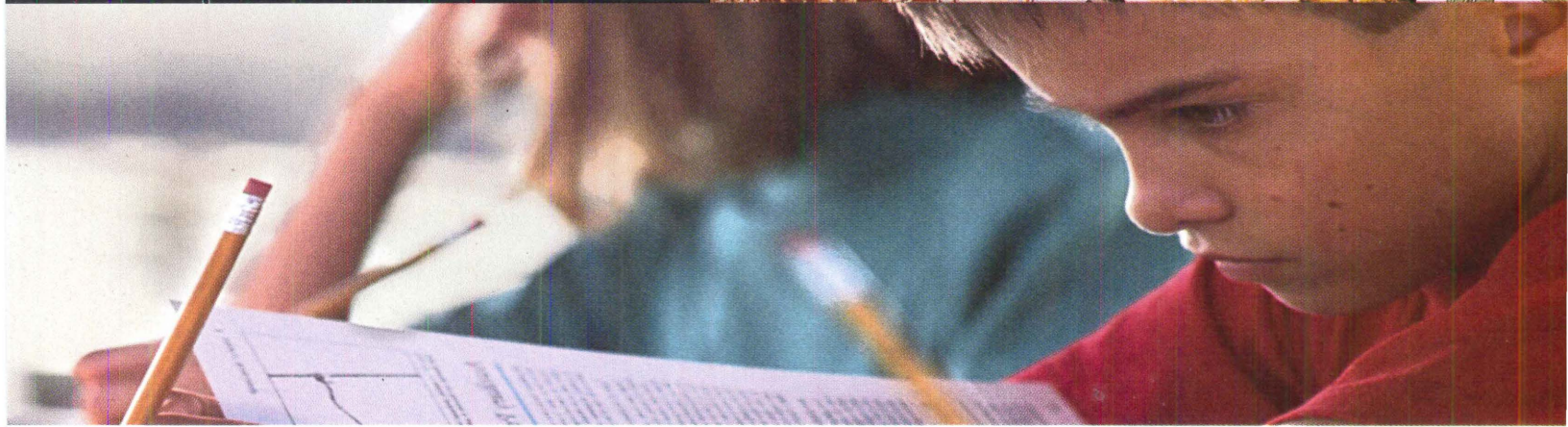
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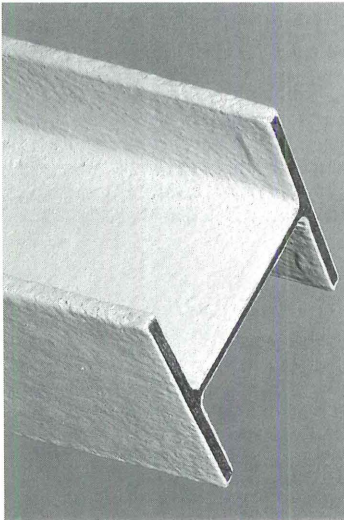
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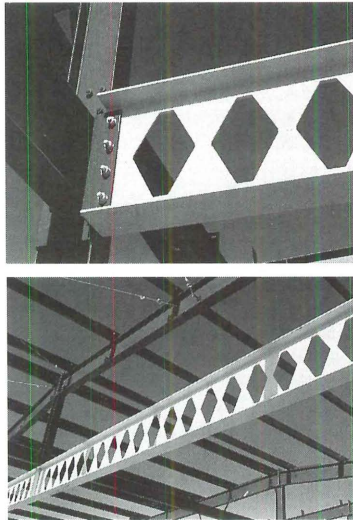
335. Electronic measurement
Calculators save time and pencil-lead for architects, contractors, and others who need to obtain fast and accurate dimensions, volumes, and areas from built conditions. The ProMeasure+, above, ultrasonically measures room dimensions, including heights, at the push of a button, and displays data in both English and metric; it uses them to calculate material requirements such as paint or tile. 310/517-7810. Seiko Instruments USA, Inc., Torrance, Calif.



336. Accessible water fountain
A single-level, pushbar-operated SwirFlo cooler meets ADA requirements as well as the most stringent lead-contamination regulations. The bubbler flexes on impact to prevent accidental mouth injuries, and has been located so as to stay in compliance when installed in a recess. Unit is available in stainless-steel and bronzetone finishes. 708/574-8484. Elkay Manufacturing Co., Oak Brook, Ill.



337. Intumescent fireproofing
Albi Clad 900 is a hammer-hard, thin-film fireproofing for use on interior exposed structural steel. UL-tested to 3 1/2 hours as per ASTM E-119, the mastic offers the same protection as other intumescent fireproofing at as little as half the thickness; it is sprayed on and conforms to the contours of the steel. Serving as a final architectural finish, it will not dust, flake, or delaminate. 203/563-2024. Albi Mfg., Div. of StanChem, Inc., East Berlin, Conn.



338. Structural and decorative
Developed in Great Britain, castellated beams are now being made in Texas. To make these distinctive beams, a hot-rolled beam is cut longitudinally with plasma-arc torches, and the halves are separated, staggered, and robotically welded together. Beams are economical, with a high strength-to-weight ratio; available in spans up to 60 ft, they meet all AISC specifications. Castelite Steel Products, Midlothian, Tex.

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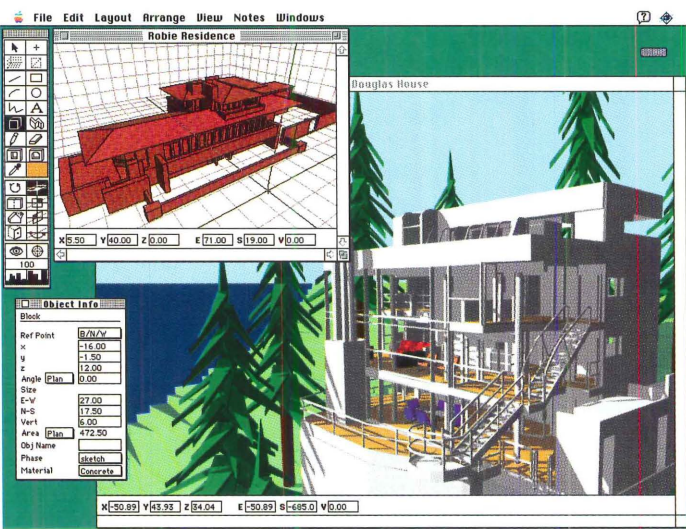
—MacWEEK, 4-25-94

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—MacUser UK, 5-27-94

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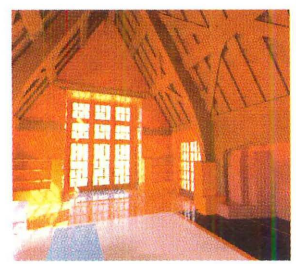
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Pages 78-81

National Corvette Museum
Kenneth Neumann/Joel Smith and Associates, Inc., Architect
Metal-composite cladding: Alply, Inc. (yellow); Lin-El, Inc.; Robertson. CMU: Silkstone Unit Masonry. Sloped glazing: Lin-El, Inc. Glass: Viracon. Curved glass: Glass Temp. Entrances: Vistawall Architectural Products. Translucent panels: Skylights, Inc. Metal ceiling: Hunter-Douglas Architectural Products. Acoustic ceilings: USG Interiors, Inc. Wall tile: Buchtal. Laminate surfaces: Abet Laminati. Custom casework: Ro-Vic Wood Products, Inc. Paints: Sherwin-Williams. Exterior lighting: Osram/Sylvania.

Pages 82-87

Rock and Roll Hall of Fame and Museum
Pei Cobb Freed & Partners, Architect
Robert P. Madison International, Associate Architect
Exhibit floors wall fabric: Carnegie.

Glass-block floor system: Circle Redmont. Rubber flooring: Endura. Seating upholstery: Designtex. Exhibit lighting: Nulux; Lighting Services, Inc. Dimming: Colortran. Wall fabric, Hall of Fame: Knoll. Hall of Fame glass: PPG Industries, Glass Group. Paints: Surface Protection Industries (Zolatone). Escalators: Schindler.

Pages 88-97

The John E. Anderson Graduate School of Management, UCLA
Pei Cobb Freed & Partners, Architect
Leidenfrost/Horowitz & Associates, Executive Architect
Brick and pavers: Pacific Clay Brick Products. Cast stone and terrace pavers: Rockwin Corp. Concrete colorant: Davis. Curtain wall and glass entrances: Apex Curtain Wall Group. Skylights: Carmel Architectural Sales. Metal roofing: C.M.F. Inc. Glass doors: ACI Glass Products, Classic Door Div. Stainless-steel pulls: Blumcraft of Pittsburgh. Recessed windows: Wausau Specialty Products. Awnings: A. Hoegee & Sons. Exterior lighting: custom by architects, fabricated by Michael's Lighting. Terrazzo: Roman Mosaic. Reading tables: custom by architect, fabricated by Vanarch Woodwork,

installation by Hodkinson Torbensen Associates. Carpet (throughout): Atlas Carpet Mills. Glass and stainless-steel handrails: Washington Iron. Seating: Thonet. Classroom linear-parabolic fixtures: Neo-Ray Products. Doors: Eggers Industries; Calinco. Fabric wallpanels: Elljay; Knoll Textiles. Custom desks: fabricated by Calinco. Chalkboards: Tri-Adco; Greensteel. Faculty-office and classroom seating: Keilhauer Industries, Ltd. Pendant fluorescent fixtures: Lightolier, Inc. Upholstery: Pallas Textiles. Office furniture system: Knoll International, Jhane Barnes fabric. Ceiling tile: Armstrong World Industries. Grid: Gordon, Inc.

Pages 100-103

Columbus Regional Hospital
Robert A.M. Stern, Architects
The Fallick/Klein Partnership, Associate Architect
Custom-color aluminum windows: Wausau Metals. Stone: Indiana Limestone. Glazed-clay roof tile: International Roofing Products. Glazing: Viracon. Entrances: EFCCO. Sliding doors: Besam. Rolling fire door: Won-Dor Corp. Cherry millwork: Trend Millwork. Acoustic ceilings: Armstrong World Industries. Terrazzo: Santa Rosa Terrazzo.

Carpeting: Interface. Elevators: Schindler. Custom luminaires: Michael's Lighting.

Pages 104-105

Pacific Medical Center Tower
Zimmer Gunsul Frasca Partnership, Architects
EPDM roofing: Firestone Building Products. Limestone and other masonry: Mutual Materials. Resilient flooring and acoustic ceilings: Armstrong World Industries.

Pages 106-109

Shiprock Comprehensive Care Facility
ADP Fluor Daniel, Architects
Curtain wall and entrances: Tubelite Architectural Products. CMU: Brown Navajo Masonry. Brick pavers: Higgins Brick Co. Translucent panels: Kalwall Corp. Clad-wood windows: Pella Corp. Metal roof: AARA/Berridge. Glazing: Guardian Industries. Glass block: Pittsburgh-Corning. Fire-rated glazing: Technical Glass Products. Accordion partitions: Won-Dor Corp. Ceiling grid: Chicago Metallic. Multicolor coating: Triarch Industries. Paints: Benjamin Moore. Resilient flooring and ceilings: Armstrong World Industries. Custom sconces: Ultralights. Elevators: Montgomery. ■

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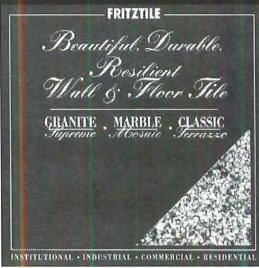
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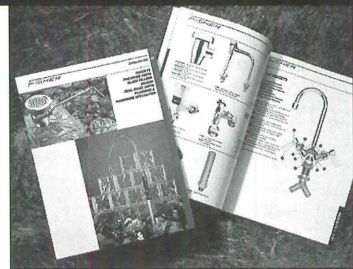


412. Granite-tile flooring

A new pattern, Granite Supreme 5000 is made with natural stone in a resilient matrix; installed tiles appear monolithic. Flexible, yet non-porous and stain-resistant, flooring needs minimal maintenance and meets ADA slip-resistance criteria. Brochure illustrates all current granite, marble, and terrazzo patterns. 800/955-1323. Fritz Industries, Dallas.

413. Custom-perforated metals

A 22-page catalog describes perforated and expanded metals in both commodity and custom configurations. A new custom service, precision-drilled plate produces smaller holes in thicker material than punching. Most products are made of aluminum and galvanized, plain, and stainless steel. 800/237-3820. McNichols Co., Tampa, Fla.

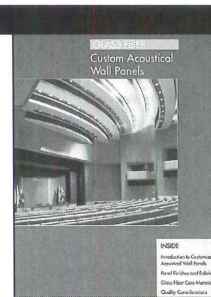
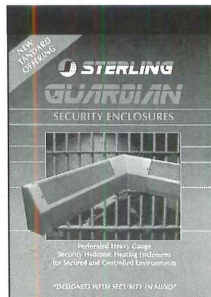


414. ADA fire-alarm station

The PullPlus station adapter lets existing alarm pull stations from many manufacturers meet the accessible-height parameters required by ADA guidelines. Easy to install, the retrofit needs no electrical wiring, and is UL listed for ADA compliance. 718/899-6100. Firecom, Inc., Woodside, N.Y.

415. Commercial fittings

A Plumbing and Hardware Specialties Catalog covers faucets, potfillers, and other equipment for foodservice operations. Products are diagrammed with dimensions, and presented especially for the designer and specifier. 800/421-6162. Fisher Manufacturing Co., Tulare, Calif.



416. Secure hydronic baseboard

Designed to meet the stringent tamper-resistant requirements of detention homes, sports facilities, and psychiatric centers, Guardian finned-tube enclosures deny access to the unit's heating element and mechanical piping. Wrap-around configuration allows full engagement at the wall. 413/568-9571. Sterling Heating Equipment, Westfield, Mass.

417. Acoustical-treatment guide

Written for the architect, a guide to glass-fiber custom acoustical wall panels offers technical help in selecting the most effective material for each application, and covers special considerations such as flammability, acoustical transparency, and choosing the appropriate fabric or other surface. Ceilings & Interior Systems Construction Assn., Elmhurst, Ill. ■

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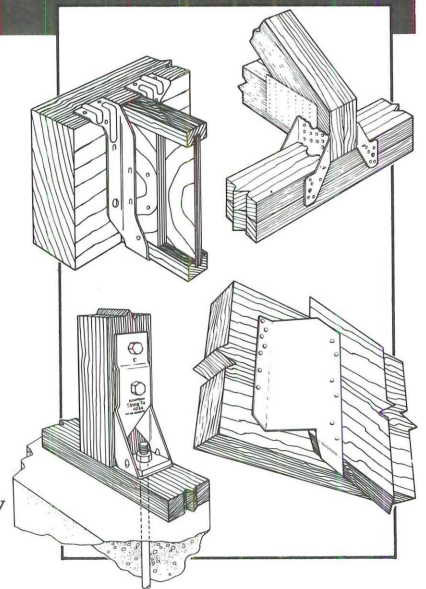
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Manufacturers' Spotlight

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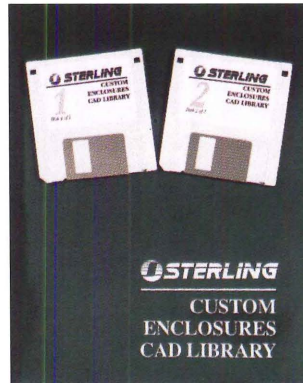


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Sterling Custom Enclosures CAD Library

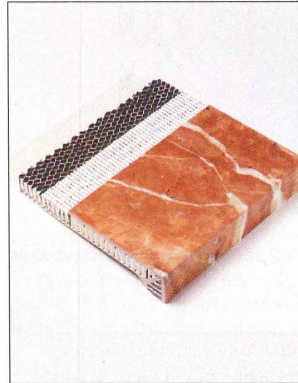


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Architectural Woodcarvings

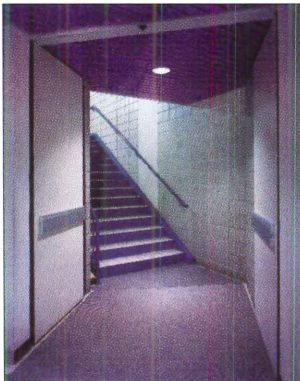


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TOTAL DOOR® SYSTEMS by OPENINGS®

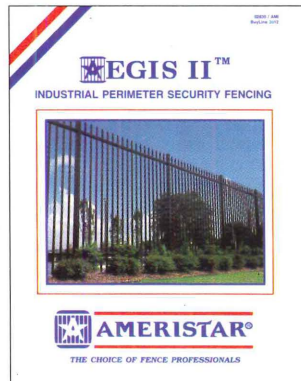


The TOTAL DOOR® SYSTEM is an architect-designed integrated door assembly. It includes prefinished door panels and all hardware. Fire rated pairs do not require coordinators, vertical rods, astragals, flush bolts or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and metal faces available to 3 hours. Lifetime limited warranty on locks and panics. OPENINGS, 40 West Howard, Pontiac, MI 48342, 1-800-852-6660.

OPENINGS.

Circle 46 on Inquiry card

EGIS II™

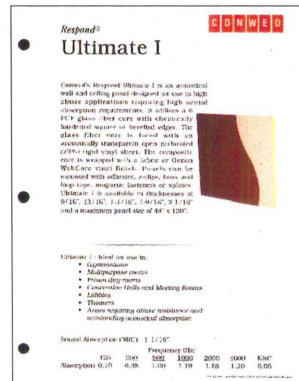


Aegis ornamental fence systems feature strong Forerunner™ rails, internal retaining rods, & specially designed panel brackets. Aegis II industrial ornamental fence offers the strongest security ornamental fence available in today's market. Aegis holds the distinction of having its fence systems specified by more architects & builders than any other in the market. Both industrial & residential brochures are available upon request & include data on structure, design, & options available. Panel design is a component system for easy shipping. For additional information & a free 8-page brochure, call (800) 321-8724. P.O. Box 581000, Tulsa, OK 74158-1000. Fax# (918) 835-0899



Circle 47 on Inquiry card

Conwed Respond Ultimate I Panel

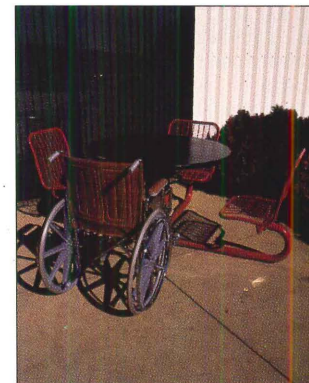


Conwed Respond Ultimate I is an acoustical wall and ceiling panel designed for use in areas requiring abuse resistance and acoustical absorption. It utilizes a glass fiber core faced with an acoustically transparent open perforated rigid vinyl sheet and wrapped with fabric or vinyl. Ideal for use in: gymnasiums, theatres, and multi-purpose rooms. Conwed, 1205 Worden Ave., East, Ladysmith, WI 54848, (800) 932-2383 or FAX (800) 833-4798.

Conwed

Circle 48 on Inquiry card

Outdoor Smoking Area



- For today's smoke-free workplace
- A complete line of tables, benches and ash urns
- Durable materials deliver years of use

1-800-633-2394, ext 5262

Ultrum by GameTime, Inc.
P.O. Box 121
Fort Payne, AL 35967

GameTime, Inc.

Circle 49 on Inquiry card

Chadsworth Columns

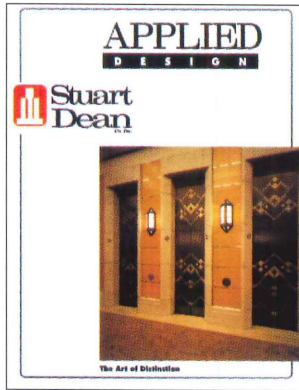


Color brochures feature wood, fiberglass, polyester, E.P.S., stone and marble columns. Variety of sizes and styles. Round, square or octagonal with plain or fluted shafts. Loads-bearing for exterior or interior applications. Job site delivery. Largest selection anywhere. For catalog (800) 394-5177. Sales (404) 876-5410. Free brochures.

Chadsworth Columns

Circle 50 on Inquiry card

Applied Design by Stuart Dean



When a new architectural design technique is impressive enough to be used by firms like Pei, Cobb, Freed & Partners and Frank Williams and Associates, at only half the price of etching, it catches everyone's attention. Stuart-Dean's Applied Design is a versatile method for decorating and refinishing elevator doors, metal, wood or glass. It can often be applied on site, overnight. You can choose stock patterns or custom artwork. 1-800-322-3180.

Stuart Dean

Circle 51 on Inquiry card

Fence Systems

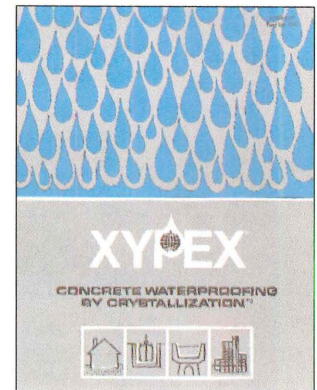


This new aesthetically appealing Euro-design fence system combines see-thru good looks with strength and durability of 6-gauge galvanized steel mesh. Powder-coated in a large variety of colors to suit any design and enhance the appearance and security of any property it surrounds, this fence system is virtually unclimbable, rugged, maintenance-free and easy to install. OMEGA FENCE SYSTEMS, Laval, Quebec. 1-800-836-6342.

Omega Fence Systems

Circle 52 on Inquiry card

Concrete Waterproofing by Crystallization

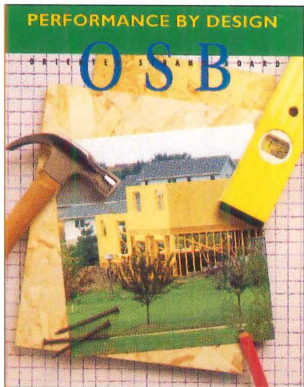


Applied as a slurry coating, Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that 'plugs' the pores of the structure preventing water seepage. Xypex is ideal for use on the 'inside' of wet underground structures.

Xypex Chemical Co.

Circle 53 on Inquiry card

OSB: Performance by Design

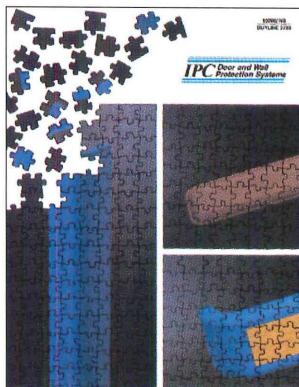


Get the latest word on oriented strand board, the engineered structural panel. Range of panel size and thickness means fewer design constraints and less waste. Applications include: wall sheathing, roof sheathing, subfloors, single-layer floors, and I-beams. Plus, OSB is approved by all major model building codes. Call the Structural Board Association (416) 730-9090 or fax (416) 730-9013.

Structural Board Assn.

Circle 54 on Inquiry card

Door and Wall Protection Systems

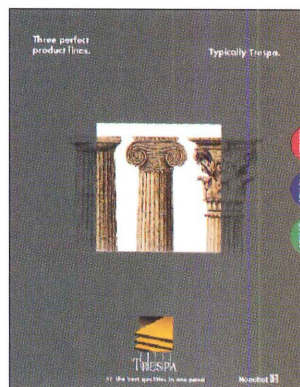


IPC - Institutional Products Corporation is a manufacturer of high impact door, corner and wall protection systems. Our catalog illustrates a product line that includes Handrails, Corner Guards, Wall Guards, Kickplates and Wallcovering. Our durable vinyl products, offered in 50 designer colors, provide an attractive way to protect interior finishes from damage.

Institutional Prods. Corp.

Circle 55 on Inquiry card

Trespa® Solid Composite Panels Three Product Lines

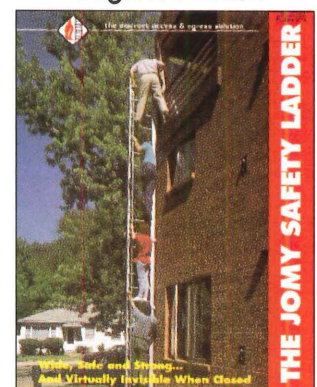


Toplab® chemically resistant laboratory grade panels for benchtops, work surfaces, shelves. Athlon® sanitary grades for toilet partitions, lockers, vanities. Meteon® UV colorfast grade for exterior cladding, soffits, fascias, balcony panels. All grades are durable, available in colors, and proven performers in these applications. 1-800-4-TRESPA.

Hoehst Celanese Corp.

Circle 56 on Inquiry card

The Discrete Access & Egress Solution



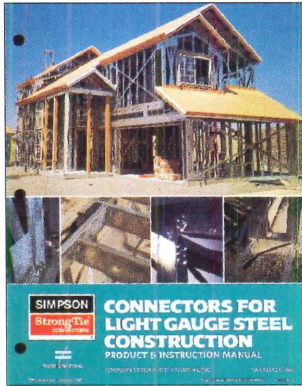
Security requirements, space constraints and aesthetic considerations are a few of the problem-solving applications for the JOMY Safety Ladder. The ladder's discrete appearance makes it an ideal solution for access and egress requirements. The ladder looks like a drainpipe when closed, but opens to a heavy-duty ladder with slip-resistant rungs and a safety rail. Jomy Safety Ladder Co., 1728 18th St., Ste. 201, Boulder, CO 80302. Phone 800-255-2591.

Jomy Safety Ladder

Circle 57 on Inquiry card

Manufacturers' Spotlight

Connectors for Steel Stud Construction

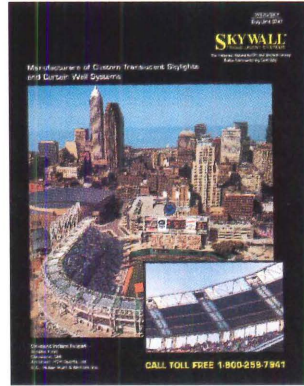


This catalog of Strong-Tie® connectors engineered for performance-tested for steel stud framing includes loads, fastener schedules and detailed installation drawings. From anchors and holdowns to tension ties, hangers, angles and hurricane ties, over 60 products and sizes are included in this 16-page reference manual for light gauge steel construction. Write for catalog **C-95S-1**.

Simpson Strong-Tie® Co., Inc.

Circle 58 on Inquiry card

Energy-Saving Translucent Skylights

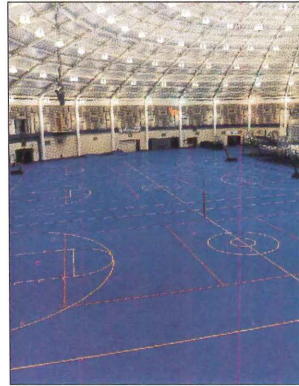


Skywall Translucent Systems offer problem-free installation, durability and light weight. It's an ideal way to design with diffused light in many ways not possible with other systems. Complete technical assistance, and enhanced manufacturing and support capabilities because we are now a part of the Vistawall, Naturalite/EPI, Skywall Group, backed by Butler Manufacturing Co. For new brochure, 800-259-7941.

Skywall Translucent Systems

Circle 59 on Inquiry card

Elasti-Plus for All Seasons & Reasons

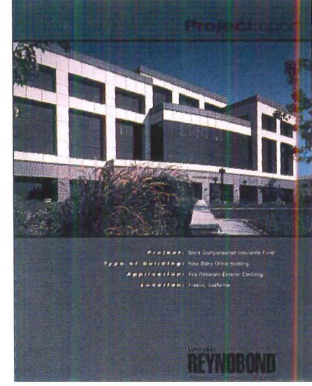


The renovation of more than 52,000 square feet at the Notre Dame University's Athletic and Convocation Center featured gymnasium and practice running track surfaces to meet the needs and expectations of many audiences, ease of maintenance, durability, functionality for sports, esthetic qualities and competitive prices. Project Architect, Randy Bolduc of Minneapolis-based Ellerbe-Becket noted, "The range of activities to be performed throughout the year was tremendous. To meet Notre Dame's goals, we worked with Connor • AGA and the University officials to ultimately specify Elasti-Plus, providing a resilient, soft surface for various sports and recreational activities such as basketball, volleyball, badminton and even 4,000 baton competitors, yet withstanding the rigors of tradeshow, forklift traffic and banquets." For more Elasti-Plus information call 800-633-7144.

Connor • AGA

Circle 60 on Inquiry card

REYNOBOND Project Report



Fire resistant REYNOBOND® Aluminum Composite Material is featured in a project report of the State Compensation Insurance Fund office building in Fresno, CA. Containing details and comments by the design and contracting principals, the report is available with a complete REYNOBOND® Architectural Brochure and standard color chart. Contact Reynolds Metal Co.; Construction Products Div.; P.O. Box 27003; Richmond, VA 23261. Telephone (804) 281-3629; FAX (804) 281-3602.

Reynolds Metals Co.

Circle 61 on Inquiry card

Rinnai's Complete Line of Heating Products

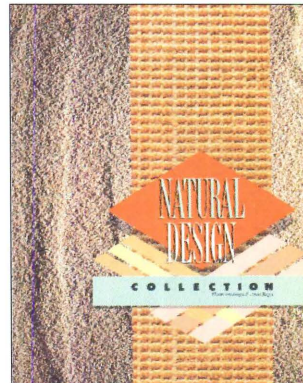


Rinnai brings you their complete line of vent-free gas heaters and direct vent gas furnaces. Models shown are the infra-red, blue-flame and the revolutionary 506 convection heater available for LP or Natural Gas. All Rinnai products have numerous features including an Oxygen Depletion Sensor, convenient controls and the outstanding Rinnai Warranty. Rinnai Americas, 1662 Lukken Industrial Drive West, LaGrange, GA 30240 (800) 621-9419.

Rinnai America

Circle 62 on Inquiry card

Natural Design Collection

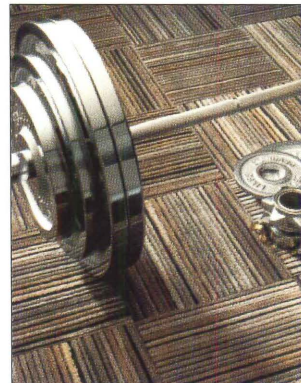


When selecting natural building materials for the home or commercial building, choose carpets woven with nature's resilient fibers. Sisal, coir, reed, jute, and wool are woven on power looms into traditional textures and patterns. With the proper care, these floor coverings will retain for years the characteristics of their natural origins. Design Materials, Inc., 241 S. 55th St., Kansas City, KS 66106, 800-654-6451

Design Materials, Inc.

Circle 63 on Inquiry card

Flex-Tuff Flooring Stands Up to the Challenge



Durability, traction and easy maintenance make Flex-Tuff flooring perfect for athletic environments indoors or out. Its anti-skid, ribbed construction is soft enough to be comfortable to walk on, yet sturdy enough to withstand heavy wear. Available in four contemporary colors in 12-by-12-inch tiles and 30-foot rolls. Call Flexco at 1-800-633-3151.

Flexco

Circle 64 on Inquiry card

New TimberForm® Willow™ Site Furniture Family

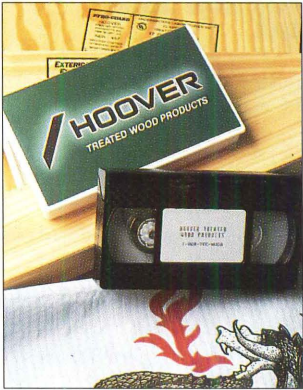


The makers of TimberForm® Site Complements have released a new family of public-space furnishings, the all-steel Willow™ series. Going beyond the standard bench, backless seat and litter container, this series includes a matching chair, settee, ash receptacle and planter. Designed for use indoors or out, elements may be movable, attached to existing pavement or permanently embedded in concrete footings. Over 170 "designer" coating colors offered. Patents are pending. Free catalog is available by calling toll-free 1-800/547-1940; request extension 561.

Columbia Cascade

Circle 65 on Inquiry card

Hoover Treated Wood Products

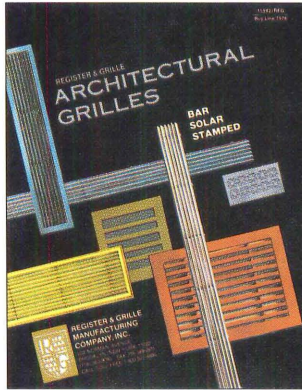


New video from the U.S.'s largest producer of fire retardant treated wood shows how treated wood is produced and tested, and describes Hoover's complete line of treated wood products including **PYRO-GUARD** interior type fire retardant treated lumber and plywood, **EXTERIOR FIRE-X** exterior type fire retardant treated lumber and plywood, and **CCA KDAT** preservative treated lumber and plywood that's kiln dried after treatment.

Hoover Treated Wood Products, Inc.

Circle 66 on Inquiry card

Decorative Grilles

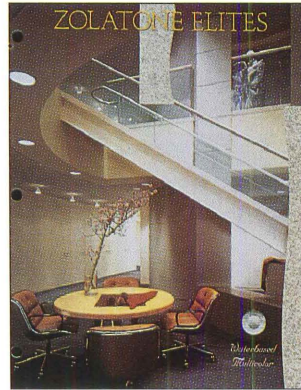


Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Ave., Bklyn. NY 11222. 800-521-4895. Fax: 718-349-2611.

Register & Grille Mfg., Co.

Circle 67 on Inquiry card

Zolatone Elites

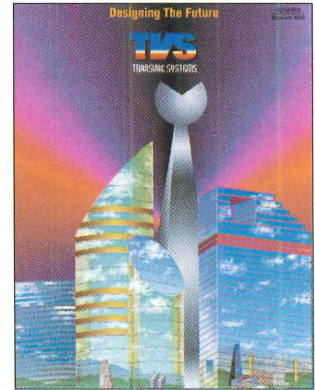


Zolatone introduces a new dimension in multicolor, Zolatone *Elites*... For the first time, find the quality and experience of Zolatone, the original manufacturer of multi-color-in-a-waterbased product. Zolatone *Elites* is a Class-A fire rated, waterbased formulation, which is spray applied. Zolatone *Elites* is ideal for application in facilities which are occupied consistently throughout the week, such as health care, hospitality, education, retail and office space. Create a beautiful and aesthetically pleasing environment with Zolatone *Elites*.

Surface Protection

Circle 68 on Inquiry card

Automated Vacuum Transport Systems



Waste and/or soiled Linen

- Perfect for large hospitals and similar buildings that serve thousands of people
- Improve the building environment, management, and maintenance
- Full-vacuum and gravity/vacuum technology
- Custom design each system to building specifications

Transvac System, Inc.

Circle 69 on Inquiry card

Architectural Sign Products



As the industry leader for 29 years, APCO knows how important an attractive and reliable sign system is in providing direction for visitors and in conveying a favorable impression of a facility. APCO manufactures a broad range of architectural sign products and offers professional services such as Sign Planning, ADA consultation, Project Management, and Factory Installation. Call (404) 688-9000 for more information.

APCO USA

Circle 70 on Inquiry card

Recycled Flooring with Non-Slip Traction

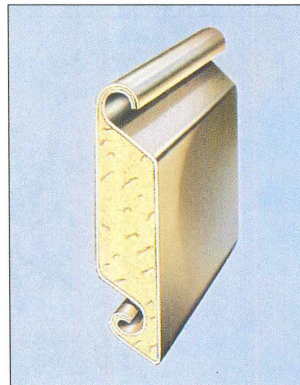


Tuflex flooring is tough enough to withstand damage from dropped weights, golf cleats and ice skate blades, and resilient enough to look fresh for years. The 3/8-in.-thick rubber tiles are available in 16 color patterns, with 6 solid color feature strip accents. A free publication, *Creative Flooring Design*, offers ideas to customize designs. Toll-free 1-800-543-0390. Fax 813-875-2312.

Tuflex Rubber Products Flooring

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Atlas Thermal Insulated Slats



Atlas Door Corporation has set the standard by which all other thermal doors are measured. Unrivaled in quality and construction, Atlas thermal insulated slats are pressure injected with environmentally safe polyurethane foam that expands and cures to prevent gaps and voids. Superior materials and engineering combine to offer the best thermal slat available in the industry today. R=6.25. Call 800-959-9559.

Atlas Door Corporation

Circle 72 on Inquiry card

Interior Systems LaCrosse



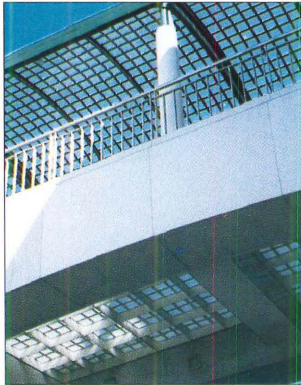
Arkid tecture Funscapes is the newest addition to **Interiors Systems' Signature Series**. The Arkid tecture collection uses a unique computerized cutting system to produce standard and custom acoustical ceiling tile designs for schools, children's clinics, hospitals, daycare centers, retail stores. Use single or multiple panels with any design, logo, or color. Call 1-800-782-0070.

Interior Systems

Circle 73 on Inquiry card

Manufacturers' Spotlight

91R Glass Paver & Steel Panel System

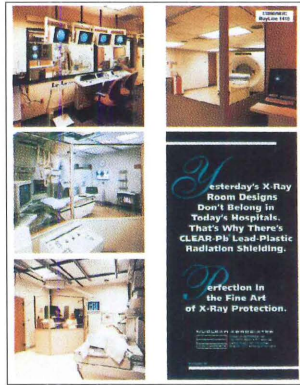


91R allows for maximum glass paver coverage. Preglazed glass pavers set in an inverted steel T internal grid and frame structure, enjoy smaller joints between glass pavers and a thinner cross section than other systems available. Install as Decklights, Floorlights, Stairtreads, Skybridges or in Vertical Wall applications. Call (800) 358-3888.

Circle Redmont, Inc.

Circle 74 on Inquiry card

FREE X-ray Shielding Brochure

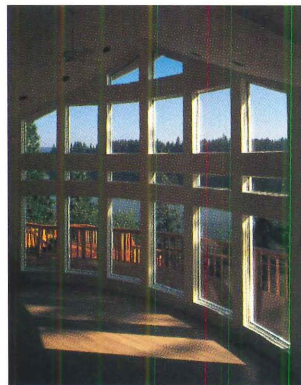


New full-color brochure showcasing user-designed CLEAR-Pb® Lead-Plastic Radiation Shielding Modular Barrier Control Booths and Windows. CLEAR-Pb® Lead-Plastic is unique, lead-impregnated transparent plastic that is rugged and shatter-resistant. Window Panels are available in over 200 stock sizes up to 6' x 8', with lead equivalencies from 0.3 to 2.0 mm. Larger sizes available on special order. The design possibilities are endless! Before specifying any radiation shielding product, get the facts on the #1 choice in radiation shielding, CLEAR-Pb®. For your clients who demand the best!

Nuclear Associates

Circle 75 on Inquiry card

Vinyl Windows

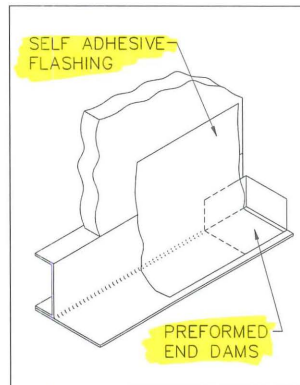


Louisiana-Pacific's vinyl windows and patio doors meet demanding energy codes and fit perfectly with both new construction and replacement. Made with a new generation of stronger, modified uPVC, they resist rust, rot, scratches and dents. Available in a wide range of sizes and styles, including a variety of custom shapes. Full line of wood windows and patio doors are also available. For a free brochure, please call (800) 299-0028, ext. 336.

Louisiana-Pacific

Circle 76 on Inquiry card

A Thru Wall Flashing System Which Waterproofs Also



Polyguard, already named in 54% of major below grade waterproofing membrane specifications, has tackled the national problem of moisture related failures in masonry cavity walls. Polyguard's Thru Wall Waterproofing System includes self adhesive flashing, pre formed end dams, pre formed corners, drip edges ... and more. Our goal - the most user friendly system available, plus low installed cost compared to metal flashings. Call 800 541-4994.

Polyguard

Circle 77 on Inquiry card

U. S. POSTAL SERVICE STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION (ACT OF AUGUST 12, 1970: SECTION 3685, TITLE 39, UNITED STATES CODE)

1. Title of publication—Architectural Record (combined with American Architect, Western Architect and Engineer).

Publication number: 132-650

2. Date of filing—September 20, 1995

3. Frequency of Issue—Monthly. Number of issues published annually: 12. Annual subscription price: \$54.00.

4. Complete Mailing Address of Known Office of Publication—1221 Avenue of the Americas, New York, NY 10020.

5. Complete Mailing Address of Headquarters of General Business Offices of the Publisher—same as above.

6. Full Names and Complete Mailing Addresses of Publisher, Editor and Managing Editor—Publisher: Elaine Shusterman, 1221 Avenue of the Americas, New York, NY 10020; Editor: Stephen A. Klimant, 1221 Avenue of the Americas, New York, NY 10020; Managing Editor: Carolyn De Witt Koenig, 1221 Avenue of the Americas, New York, NY 10020.

7. The owner is The McGraw-Hill Companies, Inc., 1221 Ave. of the Americas, New York, NY 10020. Stockholders holding 1 percent or more of outstanding common stock are: Donald C. McGraw, Jr.; Elizabeth M. Webster; Harold W. McGraw, Jr.; John L. McGraw; William H. McGraw; June M. McBroom; all The McGraw-Hill Companies, Inc., 1221 Ave. of the Americas, New York, NY 10020. Private Banking Group c/o Chemical Bank, 4 New York Plaza, New York, NY 10004; Boatmen's Trust Company, 100 N. Broadway, P. O. Box 147, St. Louis, MO 63102.

8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities—None.

9. Not applicable.

10. Extent and nature of circulation:

A. Total number of copies—average number of copies of each issue during preceding 12 months, 59,623; actual number of copies of single issue published nearest to filing date, 74,548.

B. Paid and/or requested circulation—1. Sales through dealers and carriers, street vendors and counter sales—average number of copies of each issue during preceding 12 months, 1,386; actual number of copies of single issue published nearest to filing date, 1,697. 2. Mail subscriptions—average number of copies of each issue during preceding 12 months, 48,956; actual number of copies of single issue published nearest to filing date, 62,695.

C. Total paid circulation—average number of copies of each issue during preceding 12 months, 50,342; actual number of copies of single issue published nearest to filing date, 64,392.

D. Free distribution by mail, carrier or other means—samples, complimentary and other free copies—average number of copies of each issue during preceding 12 months, 5,648; actual number of copies of single issue published nearest to filing date, 6,541.

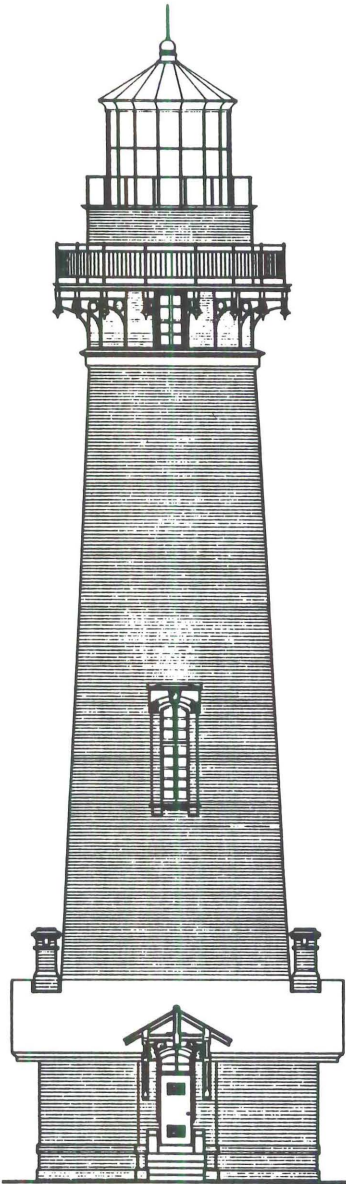
E. Total distribution—average number of copies of each issue during preceding 12 months, 55,990; actual number of copies of single issue published nearest to filing date, 70,933.

F. Copies not distributed—1. Office use, left over, unaccounted, spoiled after printing—average number of copies of each issue during preceding 12 months, 2,004; actual number of copies of single issue published nearest to filing date, 1,509. Returns from news agents—average number of copies of each issue during preceding 12 months, 1,629; actual number of copies of single issue published nearest to filing date, 2,106.

G. Total—average number of copies of each issue during preceding 12 months, 59,623; actual number of copies of single issue published nearest to filing date, 74,548.

11. I certify that the statements made by me are correct and complete.

THE MCGRAW-HILL COMPANIES, Elaine Shusterman, Publisher



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The ideal candidate will possess a Masters degree in Architecture or a closely related field and at least seven years progressive experience including 3 years of supervisory experience. This candidate will have a full understanding of construction materials, site development, practices and codes.

Starting salary for this position will be between \$35,888 and \$45,667 per year and is based on experience and qualifications. Please submit a resume including cover letter and salary history by November 30, 1995 to:

Mary E. Kann
**LAKE COUNTY
FOREST PRESERVE**
2000 N. Milwaukee Ave.
Libertyville, IL 60048
EOE

Regional Sales Manager - U.S. Itg. manufacturer seeks sales-oriented, dynamic individual for East Coast based (NYC area) regional sales mgr. pos. Must be willing to travel throughout region. Exp. in Itg. indust. & sales presentations a must. A following in the region will be definite plus. Specification, distribution, and contractor vectors are targets. Mail resume, sal. hist. & references to Box #7748, AR. All replies will be confidential.

CAD Systems Coordinator: \$41,600/yr. salaried position. 40hrs./wk, M-F, 8 a.m.-4:30 p.m. To develop in-house training on CAD for all professional staff (architects and engineers). Review existing CAD software, modify as required; evaluate new software and recommend purchase; establish in-house training for all newly acquired software. Consult with professional staff on CAD problems. Applicant must have Doctorate of Architecture. In lieu of Doctorate of Architecture, applicant may have Master's Degree in Architecture and two years experience in CAD training. Interested applicants should submit resumes to: 7310 Woodward Avenue, Room 415, Detroit, MI 48202, Reference # 166295. Employer paid ad.

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Director of Design - Established architectural planning and interior design firm seeks a Director of Design who is experienced in managing design teams, helping others to further develop their talents and taking lead responsibility for the firm's design standards. If you are articulate, outgoing, committed to your work, but sensitive to others, with 15+ years of experience, we would like to hear from you. We are a self-motivated, goal-oriented, entrepreneurial firm and offer an opportunity for career advancement within a supportive team environment with the desire for a long term relationship. Please write HR Manager, P.O. Box 68750, Portland, Oregon 97268-0750.

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Tenured/Tenure-Track Positions:

The Architecture Programs in the College of Architecture and Urban Planning are seeking applicants who are qualified for tenured and tenure track appointments for its faculty. Candidates should be able to demonstrate that they have advanced academic degrees and professional experience in one or more of the following areas: Architectural Design, Design Theory, Urban Design, Professional Practice, Structures, Environmental Technology, and CAD. The College offers undergraduate education in architecture, graduate professional degrees in architecture and urban planning, a post professional degree in architecture, and doctoral degrees in both architecture and planning. Tenured faculty at the University of Michigan are expected to be widely recognized for their scholarly and creative work. Tenure track faculty are expected to demonstrate a record of accomplishments leading to such recognition. A doctoral degree is desirable but not required. Applications will be reviewed starting December 1, 1995. New appointments will be made beginning September 1996.

Fellowships in Architecture:

Fellows are appointed as Visiting Assistant Professors of Architecture and spend one academic year at the University of Michigan in Ann Arbor. Fellows are given studio teaching responsibilities and time to devote to other creative activities, scholarship, professional and design work. Fellows are required to present the results of their activities to the College at end of their tenure.

The Muschenheim Fellowship

The William Muschenheim Fellowship supports and encourages individuals who show promise as design instructors and are at or near the beginning of their professional career. An M.Arch. or

B.Arch. degree received prior to September 1996 or equivalent degree is a prerequisite for appointment.

The Sanders Fellowship

The Walter B. Sanders Fellowship supports and encourages experienced practitioners who are interested in architectural design and education and provides them the opportunity to pursue research or other creative activities. Candidates should be persons with three to five years of experience in architectural practice as indicated by a professional license or other equivalent credentials.

The Oberdick Fellowship

The Willard A. Oberdick Fellowship supports and encourages individuals who show promise in building science, information technologies, and design. Candidates should be at or near the beginning of their professional or academic career. An M.Arch., B.Arch., and/or Doctoral degree received prior to September 1996 or equivalent degree is a prerequisite for appointment.

Interested applicants in tenured/tenure-track positions should send a full curriculum vitae and the names of three references. Dossiers and interviews will be requested of qualifying candidates. Fellowship applicants should send a letter of interest specifying the position you are applying for, curriculum vitae, names of three references, and a portfolio of professional work, research, scholarship, teaching and/or other creative work. Send materials to Brian Carter, Chair, Architecture Programs Search Committee, College of Architecture and Urban Planning, 2000 Bonisteel Boulevard, University of Michigan, Ann Arbor, MI 48109-2069. The University of Michigan is a non-discriminatory, affirmative action employer. Ethnic, minority and women applicants are strongly encouraged to apply.

Cornell University

The Department of Architecture Is seeking Candidates For a Faculty Position in Architectural Technology.

The Department of Architecture at Cornell University invites applications for a full-time tenure-track faculty position in architectural technology (environmental controls). Candidates must be qualified to teach in the following areas: lighting, acoustics, passive solar, and mechanical systems. In addition to teaching required undergraduate courses in the areas listed above the position requires developing and teaching advanced elective courses in related areas; serving on undergraduate and graduated thesis committees; participating in design studio reviews; research/scholarly work; and administrative committee responsibilities. Candidates will be evaluated according to the following criteria: previous teaching experience, professional degrees at the graduate level, professional experience in the areas listed above, and research/scholarly work. Rank and salary will be commensurate with experience. Screening of applications will begin Jan. 22, 1996 and will continue until the position is filled. The appointment is expected to begin Fall 96. Submit letter of application, curriculum vitae, and a brief statement outlining your teaching and research/scholarship objectives to: **Architectural Technology Search Committee, Department of Architecture, 143 East Sibley Hall, Cornell University, Ithaca, NY 14853-6701.** Cornell University is an Equal Opportunity / Affirmative Action Employer.

Teaching Overseas: The Faculty of Engineering and Architecture at the American University of Beirut (AUB) in Beirut, Lebanon, has openings beginning October 1996 for teaching and research in the following fields: Architecture, Urban Planning and Urban Design. Expertise in Geographic Information Systems would be a distinct advantage. Applicants in Urban Planning and Urban Design should have a Ph.D. degree,

whereas applicants in Architecture should have at least a Master's Degree. Applicants should have a minimum of three years of professional and/or teaching experience and are expected to teach graduate and undergraduate courses in Urban Planning and Urban Design, and undergraduate courses in Architecture and be active in research. Salary and rank are commensurate with qualifications. Applications should include a complete resume and

the names and addresses of three references. They should be sent air mail before the end of January 1996 to the Dean, Faculty of Engineering and Architecture, American University of Beirut, Personnel Services, 850 Third Avenue, 18th Floor, New York, NY 10022. The American University of Beirut is an Affirmative Action, Equal Opportunity Employer. U.S. passports are presently invalid for travel to, in or through Lebanon, and for residence in Lebanon, by order of the Department of State, and therefore applications from individuals who would travel to or reside in Lebanon on a U.S. passport cannot at this time be considered.

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DEPARTMENT OF ARCHITECTURE AND URBAN DESIGN

Chairperson

The department of Architecture and Urban Design of the School of the Arts and Architecture at UCLA invites applicants for a full-time tenured position as Chair of the department beginning the academic year 1996-97. The department is seeking a distinguished, independent, and energetic candidate with strong leadership capabilities and an appropriate background in education. The department is newly located within the School of the Arts and Architecture with a unique opportunity for interdisciplinary studies. The Chair will have an important role in recruiting for open faculty positions. Los Angeles itself is a center for creative work in a variety of disciplines which are already shaping the emerging urbanism of the next century. The Chair is expected to maintain and enhance the department's national and international reputation, and support innovation in programs and diversity in faculty, students, and staff.

Qualifications: A degree in architecture or related field, with recognized accomplishments in one or more of the following: scholarship, teaching, practice, research, professional service, or civic contribution. The applicant should be able to meet University criteria for appointment as professor with tenure.

Send letter of application, curriculum vitae, and a list of five academic and/or professional references by January 1, 1996; the position will remain open until filled. Send to: Kathleen Ryczek, UCLA School of the Arts and Architecture, 303 East Melnitz, Box 951427. Los Angeles, CA 90095-1427.

Proof of U.S. citizenship or eligibility for U.S. employment will be required prior to employment (Immigration Reform and Control Act of 1996). The University of California, Los Angeles is an Equal Opportunity/Affirmative Action Employer.

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(G) General Building & Renovation
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(I) Industrial Construction & Renovation
(H) Homebuilding & Remodeling
(C) Contract Interiors
(L) Light Source

Bold Face - page number
Italics - Reader Service number

- A**
Access Industries, Inc., **112** ; 31 [G]
(800) 925-3100
American Specialties, Inc., **46** ; 18 [G]
(914) 476-9000
American Wood Preservers Institute,
20 ; 12
(800) 356-AWPI
Andersen Commercial Group,
49 to 56 ; 20 [G-H]
(800) 426-7691
Architectural Area Lighting, **38S** ; 95
(714) 994-2700
Armstrong World Industries, Inc.,
Cov.II-1 ; 1 [G-E]
(800) 448-1405
Artemide, **5S** ; 88
(800) 359-7074
Artifice, Inc., **119** ; 38
(800) 203-8324
Autodesk, **68 to 70**
(800) 964-6432
Azrock Industries, Inc., **116** ; 35 [G-C]
(800) 921-1717
- B**
Baldinger Architectural Lighting,
Inc., **41S** ; 99
(718) 204-5700
Birdair, Inc., **Cov.IV** ; 83 [G]
(800) 622-2246
Bryant Electric, Inc., **14S-15S** ; 90
(800) 554-2791
- C**
CalComp, **115** ; 34
(800) 445-6515
California Products Corp., **47** ; 19 [G]
(800) 225-1141
Castelite Steel Products, **24** ; 14
(800) 775-4611
Cominco, Ltd., **28** ; 16
(905) 822-2022
Con-Tech Lighting, **40S** ; 98
(708) 559-5500
Copper Development Association,
Inc., **26-27** ; 15 [G]
(800) CDA-DATA
Cornell Iron Works, **57** ; 21 [G-E-I]
(800) 233-8366
CPI International, **13** ; 8
(800) 759-6985
- D**
Dodge Dataline, **117**
(800) 426-7766
DPIC Companies, Inc., **8** ; 5
(800) 227-4284
DuPont Co. - Corian, **22** ; 13
(800) 4-CORIAN
DuPont Co. - Textile Fibers, **10-11** ;
6 [D-C]
(800) 4-DUPONT
- E**
Edison Price, Inc., **38S** ; 96
(212) 838-5212
Efco Corp., **61** ; 25 [G]
(800) 221-4169
EFCO/RotoSwing Division, **63** ; 27 [G]
(800) 221-4169
Elliptipar, Inc., **4S** ; 87
(203) 931-4455
- F**
FIT, Inc., **60** ; 24
(800) 931-3171
Flos USA, Inc., **Cov.IIS** ; 84
(800) 939-3567
Follansbee Steel, **111** ; 30 [G]
(800) 624-6906
Fujitsu Microelectronics, Inc., **45** ; 17
(800) 642-7616
- G**
GE Lighting, **16S** ; 91 [G-E]
(800) GE-LAMPS
Georgia-Pacific Corp., **65 to 67** ; 29
[G-I-H]
(800) BUILD GP
- H**
Hewlett-Packard Co./Designjet, **6** ; 4
(800) 851-1170
Hydrel, **Cov.IIIS** ; 108
(818) 362-9465
- I**
Irideon, **35S** ; 93
Italian Trade Commission-Tile
Center, **112-113** ; 32
- J**
Julius Blum & Co., Inc., **18** ; 11
[G-E-I-C]
(800) 526-6293
- K**
Kim Lighting, **6S** ; 89
(818) 968-5666
- L**
Leucos USA, Inc., **2S** ; 85
(908) 225-0010
Libbey Owens Ford Corp., **2-3** ; 2 [G]
(419) 247-4721
Litecontrol, **34S** ; 92
(617) 294-0100
Luxo Corp., **39S** ; 97
(800) 222-5896
- M**
Mannington Commercial, **64** ; 28 [G]
(800) 241-2262
Manufacturers' Spotlight, **122 to 126**
42 to 77
- P**
Petersen Aluminum Corp., **16** ; 10 [G]
(800) PAC CLAD
Philips Lighting, **36S-37S** ; 94 [E-L]
(800) 631-1259
Precision Architectural Lighting
(PAL), **43S** ; 101
(713) 796-8395
- R**
Raceway Components, Inc., **62** ; 26
(201) 279-1116
RECORD HighLIGHTS, **44S** ;
102 to 107
- S**
Seiho International, Inc., **121** ; 40
(800) 248-0030
Sherwin-Williams Wholesale, **114** ;
33
[G-E-I]
(800) 321-8194
Simpson Strong Tie Co., Inc., **121** ;
41 [G-H]
(800) 999-5099
Smith Steelite, **Cov.III** ; 82 [G-I]
(800) 759-7474
Southern Aluminum Finishing Co.,
120 ; 39
(800) 241-7429
SPI Lighting, Inc., **Cov.IVS** ; 109
(414) 242-1420
Spring City Electrical Mfg. Co.,
42S ; 100 [G-L]
(610) 948-4000
Sweet's Group, McGraw-Hill, Inc.,
58-59 ; 22, 23
(800) 992-0535
- T**
Tischler und Sohn, **117E** ; 37
(800) 282-9911
- V**
Visa Lighting Corp., **3S** ; 86
(800) 788-VISA
- W**
Weyerhaeuser Architectural Door
Div., **14** ; 9 [G]
(800) 869-DOOR
Wiremold, **5** ; 3
(800) 621-0049
- Z**
Zero International, Inc., **12** ; 7 [G]
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